

STRÖMSTAD AKADEMIS FRIA SKRIFTSERIE

Alfred Holl



**The earliest printed arithmetic book
in each of 35 European languages**

No. XXIII, IULIUS MMXXIII

ISBN: 978-91-89331-37-2

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Alfred Holl

The earliest printed arithmetic book
in each of 35 European languages

– supplemented with all vernacular arithmetic incunabula and
post-incunabula until 1515 –

with an appendix of the earliest printed arithmetic book
in each of 45 selected languages worldwide in less detail

Corrected and extended edition, version 3 (July 2023)

ISBN: 978-91-89331-37-2

Strömstad Akademi

2023

Preface

Since I started around 2005 – as a historian of mathematics – to research into the history of arithmetic in the early modern times, my interest – as a linguist – in gaining knowledge about early printed books was constantly growing. There is a considerable amount of secondary literature dealing with aspects of the history of mathematics in different cultural regions. What I was missing, however, was a systematic catalog of printed arithmetic books in various languages, especially focusing on the earliest one in every language.

My primary motivation was to know these arithmetic books in more detail and to answer issues such as: When did mathematics education start in which cultural region? Which word problems were used in different cultural regions? Furthermore, I wanted to provide a basis for other researchers interested in issues of that kind.

My plans to compile this catalog already date some years back. I finally started working on it in late spring 2020 when the Nuremberg Institute of Technology (Technische Hochschule Nürnberg) in Germany, where I am professor for information systems, granted

funding for a research assistant. Ms. Shima Amini supported this project considerably in 2020. I am happy to express my thanks for her good job. In the end of 2021, I finished version 1. For version 2 (Feb. 2023), I added all the vernacular arithmetic incunabula (that is books from the 15th century) and post-incunabula until 1515. For the current version 3, I added Section 0.6 on the categorization of the common mathematical problems in these arithmetics.

This catalog can be considered as (rather) complete for European languages. As I am not an expert for non-European languages, however, I have to leave the corresponding part (appendix) in the state of a prototype that needs additions and completions in future editions by other researchers specialized in these languages.

My thanks to friendly, helpful and competent colleagues in libraries and at universities are mentioned in the language sections. Above all, I am indebted to a great many of libraries that provide digital copies of early books for free.

Alfred Holl

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(Purple: earliest printed arithmetic book after 1900 or no arithmetic book at all)

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(Purple: earliest printed arithmetic book after 1900; turquoise: only coarse description)

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0 Introduction

0.1 Overview

The main objective of this catalog is to present the earliest printed arithmetic book in each of the 45 most important European languages. If it was printed before 1900, it is described briefly (author, title facsimile, title transcription, title translation and content overview). That applies to 35 European languages. For the rest of 10 European languages, the earliest arithmetic book was either published after 1900 or there is no arithmetic book at all (purple color in the table of contents).

Similar descriptions of all vernacular arithmetic incunabula and post-incunabula until 1515 are added.

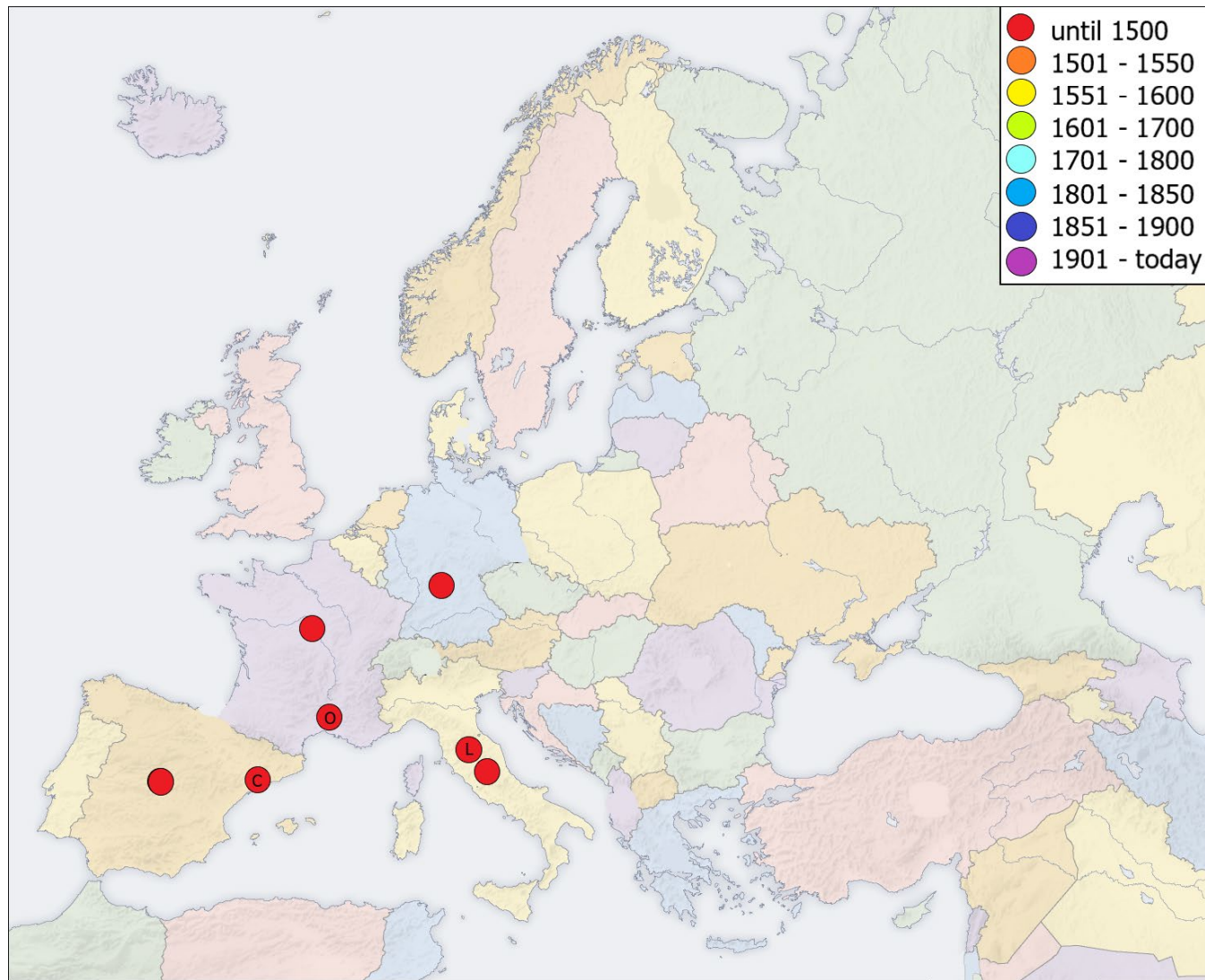
This core focus is extended by descriptions of the earliest printed arithmetic book in each of selected languages worldwide, also only if it was printed before 1900. The selection is done pragmatically. It depends on the ‘readability’ (from a European point of view) of the script used and the general accessibility of books via library catalogs (e.g. WorldCat, national catalogs), via digital copies and via the entire Internet.

With regard to that, the descriptions will differ in their degree of detail, from the high level achieved for European languages to only rough and coarse descriptions (turquoise color in the table of contents).

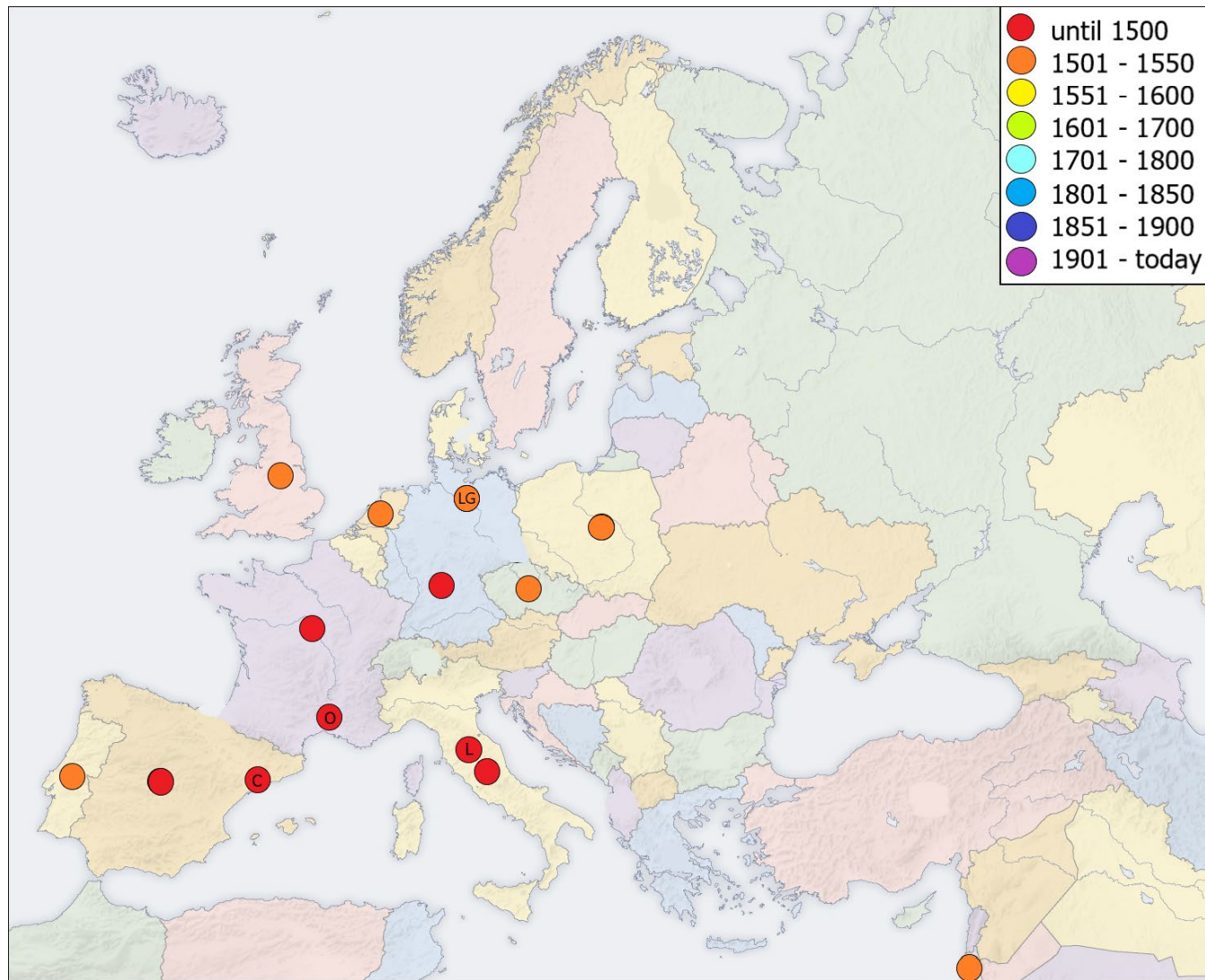
For European languages, the catalog can therefore be considered as (rather) complete, for non-European languages, it is a first rough view into their history of mathematics.

The languages are arranged in four categories, from Indo-European and non-Indo-European languages in Europe to – in the appendix – Indo-European and non-Indo-European languages outside Europe. Within the categories, the languages are grouped according to 24 traditional language families and within the families according to the geographic location.

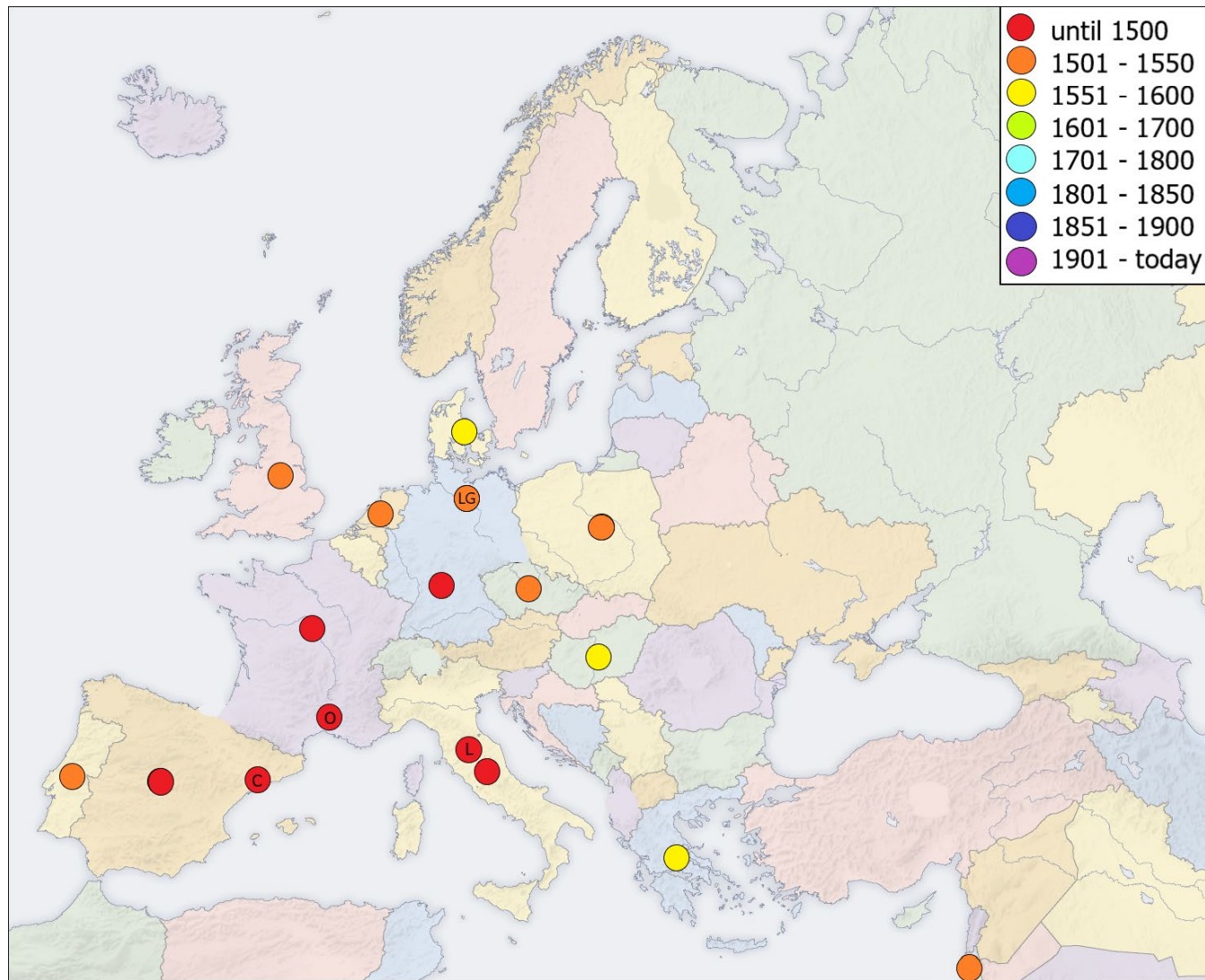
The catalog shall open the access to the history of mathematics in various ethnic and linguistic groups for researchers of different disciplines from cultural studies to the history of mathematics education and motivate to launch deepening and comparative analyses.



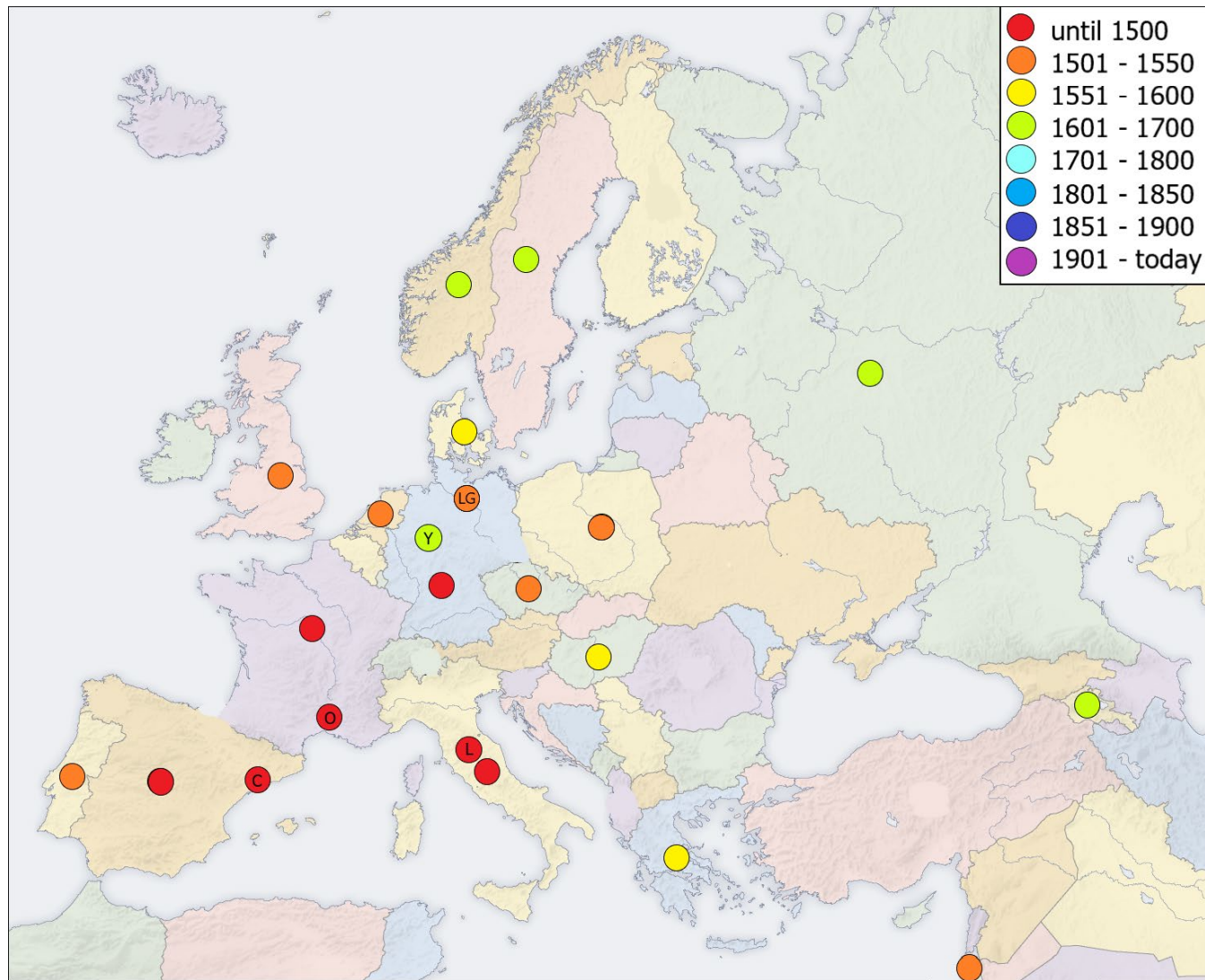
The earliest publications of arithmetic books in European and Levantine languages (Afr Afrikaans, B Basque, Br Breton, C Catalan, G Galician, L Latin, LG Low German, O Occitan, R Romansh, S Sorbian, SG Scottish Gaelic, W Welsh, Y Yiddish).
 The temporal intervals are oriented towards entire or half centuries.



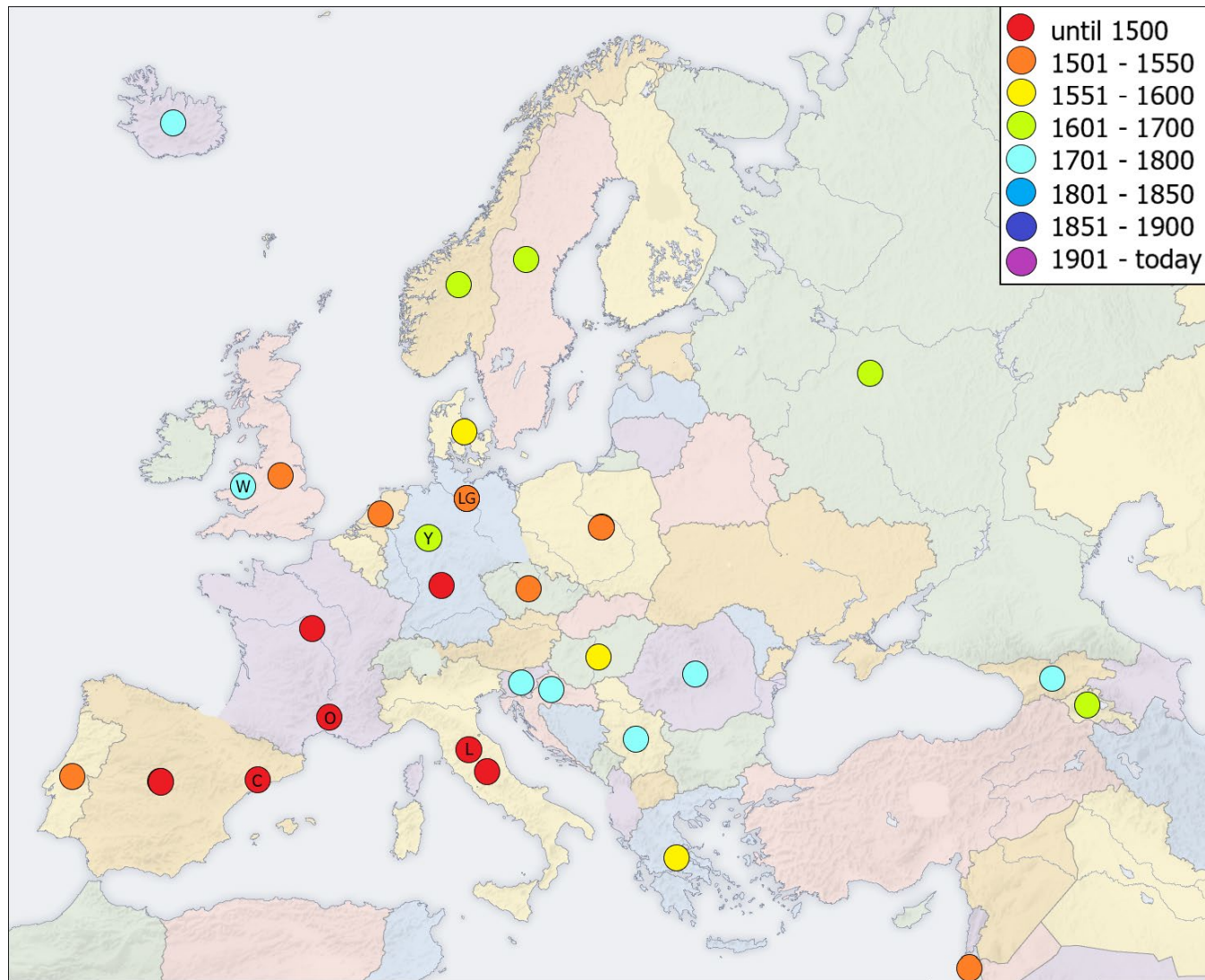
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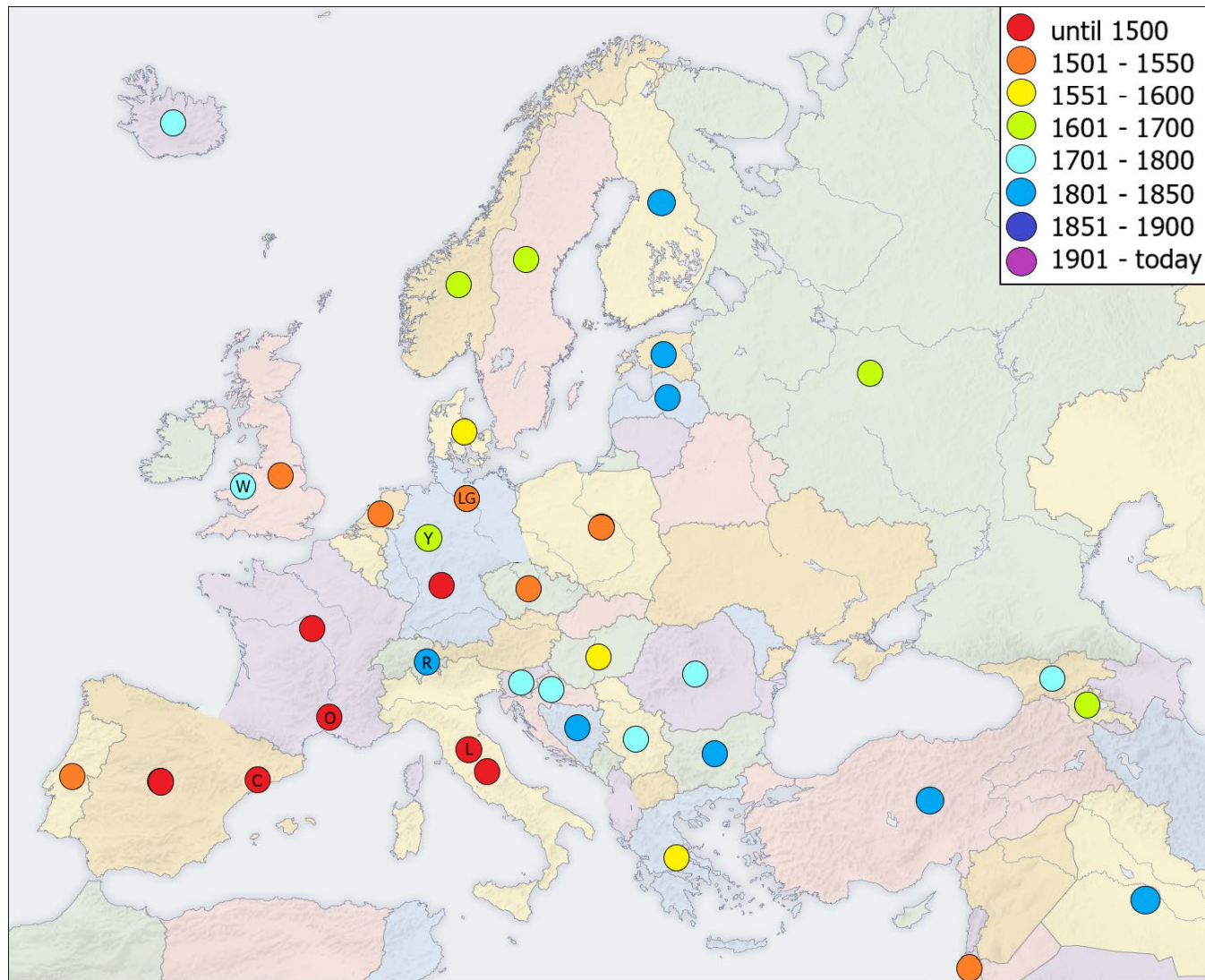
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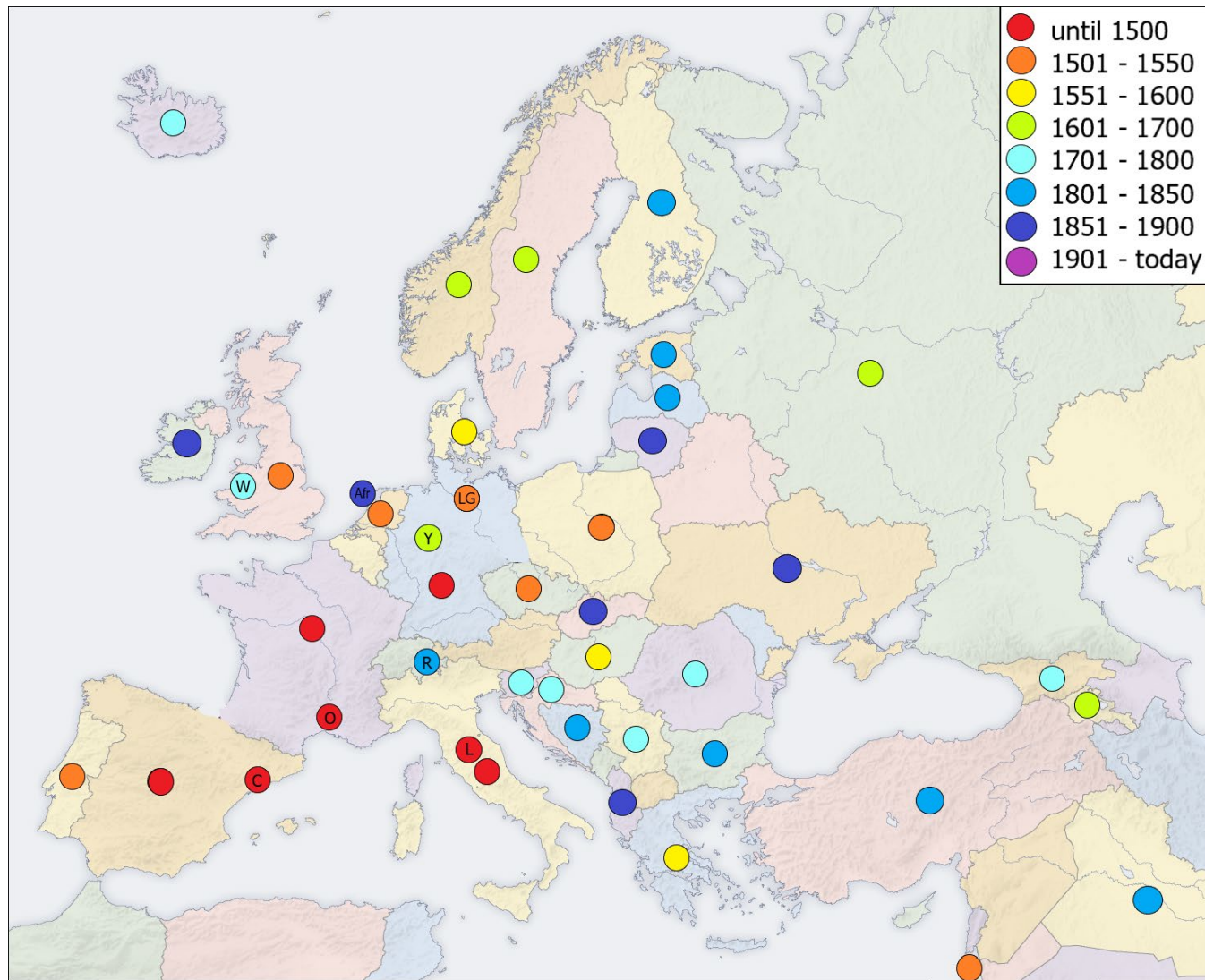
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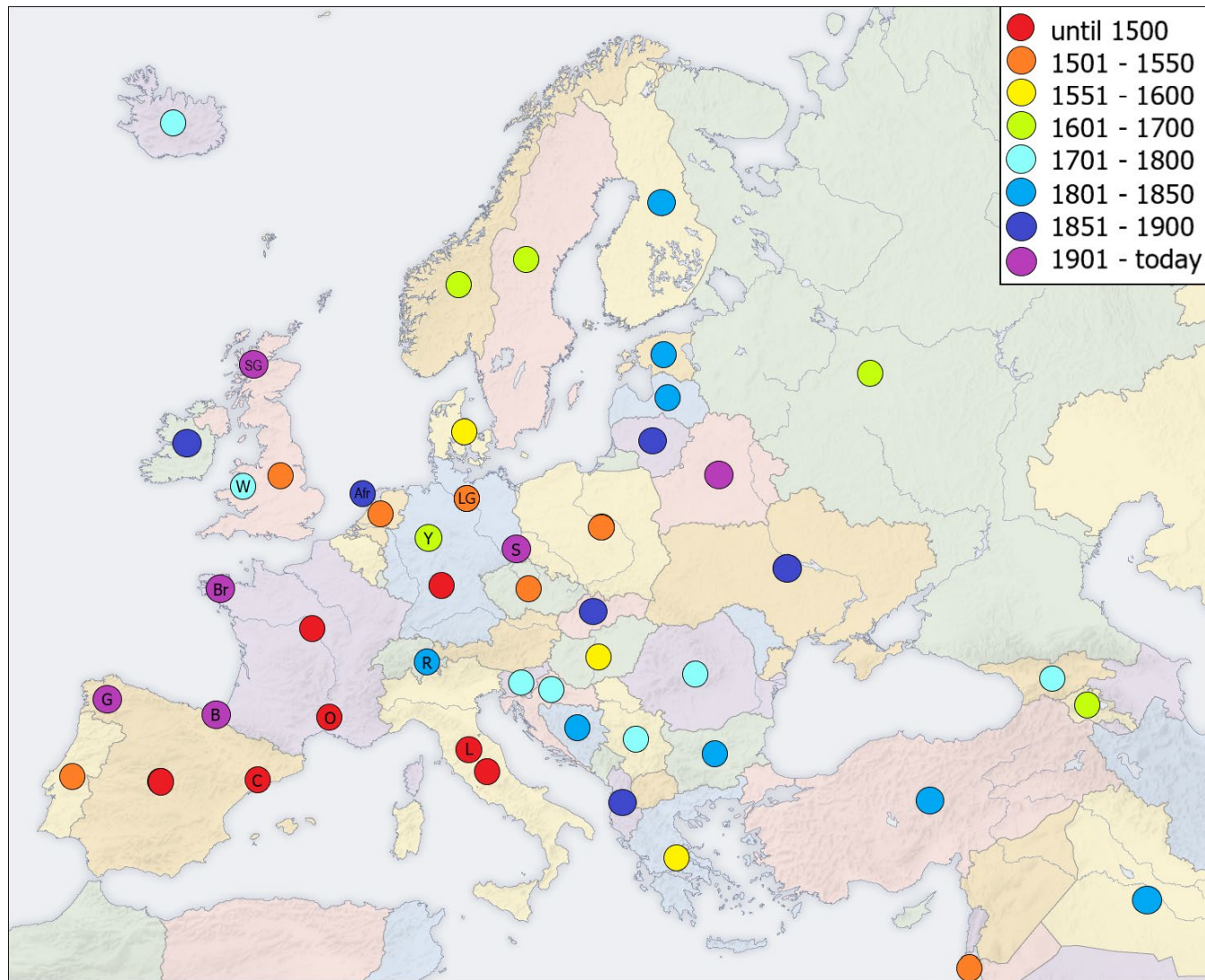
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The earliest publications of arithmetic books in European and Levantine languages (Afr Afrikaans, B Basque, Br Breton, C Catalan, G Galician, L Latin, LG Low German, O Occitan, R Romansh, S Sorbian, SG Scottish Gaelic, W Welsh, Y Yiddish).
The temporal intervals are oriented towards entire or half centuries.

West Germanic	German	1475
	Dutch	1508
	English	1526
	Low German	1527
	Yiddish	1699
	Afrikaans	1882
Romance	Italian	1478
	Catalan	1482
	Latin	1483
	Spanish	1486
	Occitan	1492
	French	1496
	Portuguese	1519
	Romanian	1777
	Romansh	1808
	Galician	1979
West Slavic	Czech	1530
	Polish	1538
	Slovak	1884
	Sorbian	1951
Afro-Asiatic	Hebrew	1533
	Arabic	1812
North Germanic	Danish	1552
	Swedish	1614
	Norwegian	1645
	Icelandic	1746

Hellenic	Greek	1569
Finno-Ugric	Hungarian	1577
	Estonian	1806
	Finnish	1835
Armenic	Armenian	1675
East Slavic	Russian	1699
	Ukrainian	1863
	Belarusian	1916
Kartvelian	Georgian	1731
South Slavic	Croatian	1758
	Serbian	1767
	Slovene	1781
	Bosnian	1827
	Bulgarian	1833
Celtic	Welsh	1768
	Irish	1900
	Breton	1943
	Scottish Gaelic	2006
Baltic	Latvian	1806
	Lithuanian	1885
Turkic	Turkish	1831
Albanic	Albanian	1886
Basque	Basque	1913

The earliest arithmetic books in European and Levantine languages arranged by language families

Family	1470–	1501–	1551–	1601–	1651–	1701–	1751–	1801–	1851–	1901–
West Germanic	German 1475	Dutch 1508 Eng., LG			Yiddish 1699				Afrikaans 1882	
Romance	Ital. 1478 C, S, O, F	Portuguese 1519					Romanian 1777	Romansh 1808		Galician 1979
West Slavic		Czech 1530 Polish							Slovak 1884	Sorbian 1951
North Germanic			Danish 1552	Swed. 1614 Norweg.		Icelandic 1746				
Hellenic			Greek 1569							
Finno-Ugric			Hungarian 1577					Eston. 1806 Finnish		
East Slavic					Russian 1699				Ukrainian 1863	Belarusian 1916
South Slavic							Croat. 1758 Serb.,Slov.	Bosn. 1827 Bulgarian		
Celtic							Welsh 1768		Irish 1900	Bret. 1943 Scot.Gael.
Baltic								Latvian 1806	Lithuanian 1885	
Albanic									Albanian 1886	
Basque										Basque 1913

The earliest publications of arithmetic books in European languages arranged by language families and half centuries

Year	Lang	Author	Title
ca. 1475	Germ 1	German Anonym ₁	<i>Trento algorism</i>
1478	Italian 1	Italian Anonym ₁	<i>Treviso arithmetic</i>
1476/ 80	Italian 2	Italian Anonym ₂	<i>Venezia arithmetic</i> <i>Algurisimo</i>
< 1484	Italian 3	Borghi, Pietro 1	<i>Libro de abaco</i> [not found]
1482	Catalan	Sant Climent, Francesc de	<i>Suma de la art</i> <i>de arismetica</i>
1482	Germ 2	Wagner, Ulrich	<i>Rechnung</i>
1483	Germ 2	Wagner, Ulrich 2	<i>Rechnung</i>
1484	Italian 3	Borghi, Pietro 2	<i>Libro de abaco</i>
ca. 1486	Span 1	San Clemente, Francisco de	<i>Arismetica</i>
1488	Italian 3	Borghi, Pietro 3	<i>Libro de abaco</i>
1489	Germ 3	Widmann, Johann 1	<i>Rechnung</i>
1491	Italian 3	Borghi, Pietro 4	<i>Libro de abaco</i>
1491	Italian 4	Calandri, Filippo	<i>Trattato</i>
1492	Occitan	Pellos, Francés	<i>Compendion</i>
1494	Italian 5	Pacioli, Luca	<i>Summa de arithm.</i>
≤ 1496	French 1	French Anonym ₁ 1	<i>L'art et science</i>
1500	Germ 3	Widmann, Johann 2	<i>Rechnung</i>

Arithmetic incunabula (without Latin)

Year	Lang	Author	Title
1501	French 1	French Anonym ₁ 2	<i>Livre de chiffres</i>
1501	Italian 3	Borghi, Pietro 5	<i>Libro de abaco</i>
1505	Italian 3	Borghi, Pietro 6	<i>Libro de abaco</i> [not found]
1508	Dutch	Dutch Anonym ₁ 1	<i>Die maniere</i>
1508	Germ 3	Widmann, Johann 3	<i>Rechnung</i>
1509	Italian 3	Borghi, Pietro 7	<i>Libro de abaco</i>
ca. 1510	Dutch	Dutch Anonym ₁ 2	<i>Die maniere</i>
1512/ 15	French 2	French Anonym ₂ [printer Nyverd]	<i>Arismétique corr.</i> [other tradition]
1512/ 19	French 1	French Anonym ₁ 3 [printer Trepperel]	<i>L'art et science</i>
1512	Span 2	Ortega, Juan de	<i>Conpusición</i>
1514	Germ 4	Böschenstein, Joh.	<i>Rechenbüchlein</i>
1514	Germ 5	Köbel, Jacob 1	<i>Rechenbüchlein</i>
1514	Germ 5	Köbel, Jacob 2	<i>Rechenbüchlein</i>
1515	Span 3	Andrés, Juan	<i>Sumario breve</i>
1515	Italian 6	Ortega, Juan de	<i>Suma de Arithm.</i>
1515	French 3	Ortega, Juan de; Platin, Claude	<i>Oeuvre tressubtile</i>
1515	Italian 7	Tagliente, Girolamo	<i>Libro d'abaco</i>

Arithmetic post-incunabula until 1515 (without Latin)

0.2 Motivation of the research focus

The reasons why this catalog concentrates on always the earliest printed arithmetic book in various vernacular languages are:

- 1 Arithmetic: It is the gateway to other branches of mathematics, such as algebra, astronomy, geometry (incl. land surveying, architecture, painting, military science) etc. Merchants and traders in the early modern times needed arithmetic for all sorts of commercial calculations.
- 2 Vernacular¹ languages: Using classical Latin as *lingua franca* of science restricted knowledge to people who understood Latin. This language was taught (and used as teaching language for advanced pupils) in monastery schools, cathedral schools and high schools (at that time called gymnasium) as preparation for university studies. Mathematics only played a subordinate role in that school system;

¹ Whether a language is vernacular, can depend on the region: e.g. English was not a vernacular in colonial India, but is a vernacular in the United Kingdom.

students learnt it as part of the quadrivium at universities during introductory studies in the seven liberal arts. The upcoming demands of merchants for alphabetization and fundamentals of mathematics in the 15th century, however, lead to the foundation of municipal schools where vernaculars were used as teaching languages (mathematics was taught by so-called master arithmeticians, German *Rechenmeister*). That allowed knowledge to leave the former Latin-based educational system and made it available for larger parts of the population (nevertheless I include selected Latin arithmetic books in this catalog).

- 3 Printed books: In contrast to exhaustingly copying manuscripts, the invention of printing with moveable types could quickly produce big quantities of the same text. Thus, it was easier to spread knowledge to more and more people. Even autodidactic studying independent of any human teacher and any school became possible.
- 4 The earliest printed books: You gain information about the beginning of textbook-based teaching in various languages.

You understand how a certain discipline was taught in class and which parts of it were considered as important and profitable for pupils from the very beginning. The earliest years of publication for each language show the temporal process of spreading a discipline throughout the world. As a side effect, the earliest years of publication also show the ‘national awakening’, the development of nation states and national awareness. In addition, you often find attractive bibliophile rarities.

0.3 The temporal and regional focuses

1 The temporal focus

If the earliest printed arithmetic book in a certain language was published before 1900, it is described with author, title facsimile, title transcription, title translation and content overview according to the structure in 0.5. Otherwise, it is only briefly mentioned as, after 1900, you find more and more simple arithmetic textbooks for primary schools. These textbooks do no longer contain the typical commercial mathematics of the early modern times. They have another quality as they address pupils at an earlier age.

2 The regional focus

Within this catalog, a complete investigation of all of the languages where arithmetic books might have been printed before 1900 is impossible. It focuses on Europe and reduces completeness, exactness and details, the farther one moves away from Europe.

The earliest printed arithmetic books in all European languages are examined, including minor languages that were established as school languages before 1900.

If a still existing language had no arithmetic books before 1900, this information (partly including data about its earliest arithmetic textbook later than 1900) is mentioned on an extra page (e.g. Basque, Belarusian, Galician etc.)

European languages which were not standardized and codified before 1900 are excluded. This applies especially to language varieties in dialect continua, such as Montenegrin and North Macedonian in the South Slavic dialect continuum. Therefore, the catalog only presents fairly prominent varieties from dialect continua.

A dialect continuum is defined as a regionally continuous group of language varieties. Neighboring varieties are mutually well understandable, but the larger the distances, the less understandable the varieties get. Examples: Romance from Portuguese to Italian, North Germanic from Icelandic to Danish, West Germanic from English to German, South Slavic from Slovene to Bulgarian, West Slavic from Czech to Polish.

Regarding languages outside Europe (in the appendix), completeness of the presented languages cannot be achieved, nor completeness of the descriptions of individual arithmetic books. Europe's neighboring languages in the Middle East (e.g. Arabic, Armenian, Hebrew, Turkish) are covered as far as possible. Regarding languages in Africa, South Asia (including the Eastern Indo-European languages), East Asia, Oceania, only some highlights can be picked out.

This is due to the following facts:

- ‘Readability’ (from a European point of view) of the local scripts: Some of those languages use syllabic and ideographic scripts of their own so that even library catalogs are not accessible for a standard European historian of mathematics and it can be difficult to find competent scientists willing to help with search, transcriptions, Romanizations (transliterations) and translations.
- Availability in libraries: The general accessibility of books in a given language via library catalogs (e.g. WorldCat, national catalogs), via digital copies and via the entire Internet can be very restricted.

- Local history of mathematics as research focus: In some of those ethnic groups, the local history of mathematics has not yet been a research focus so that one does not find any corresponding secondary literature, at least not in English.

Remark: It turns out that in only five (!) languages outside Europe the earliest printed arithmetic book was published before 1800: Armenian, Chinese, Georgian, Hebrew and Japanese. Outside Europe, book printing was not used before 1800 with two exceptions: China and Japan play a special role. There, book printing was introduced earlier than in Europe, but often not with moveable types, but using woodcut printing for entire pages. The reason could be the high expenses for providing several copies of each of the different characters, e.g. the ca. 5,000 of Chinese compared to around 25 in European languages.

0.4 Research methods

1 Methods to find early arithmetic books

Depending on the (expected) year of publication of the earliest arithmetic book in a given language, you search the following bibliographic sources:

- *Union Catalog of Incunabula* (Berlin State Library; period 1470–1500)
- *Incunabula Short Title Catalog ISTC* (London British Library; period 1470–1500)
- *Karlsruher Virtueller Katalog*
- *WorldCat*
- *CERL* (Consortium of European Research Libraries) *Thesaurus*
- National library catalogs
- Catalogs of early printed books in certain languages, countries and regions
- *Ars mercatoria* (by Hooek, Jochen; Jeannin, Pierre; Paderborn 1991, 1993; period 1470–1700)
- *arxiv.org* (open-access archive for scholarly articles in the fields of physics, mathematics, etc.)
- Publications on the history of mathematics in certain languages, countries and regions
- The Internet

In addition, you consult librarians in national libraries and foreign researchers.

2 Methods to translate the contents of early arithmetic books

Regarding the contents of the arithmetic books found in a catalog, you cannot just rely on the keywords mentioned there, but you yourself have to understand title and table of contents in order to judge a book. That is, you have to translate them with the help of online and printed dictionaries and grammar books, machine translation systems (Google translate – only for today’s language states) and even friendly and competent native speakers (librarians and researchers).

This task is challenging as:

- Many vernaculars underwent considerable changes in the period since the print of the earliest arithmetic book.
- At the time of the print of an early arithmetic book, a language norm was possibly not yet established and several dialects were competing.

– Mathematical terminology was often not yet established either at the time of the print. Especially in agricultural societies and farming cultures, authors of mathematical treatises had to coin mathematical terms from scratch on their own. Different authors could do that in different ways, some of which later completely disappeared and became extinct. Terms of that type cannot be found in dictionaries; their meaning has to be reconstructed by investigating the mathematical content of a book.

In cases of doubt, my own linguistic and mathematical knowledge had to serve as final instance for the check of syntactic correctness and semantic sense.

0.5 Structure of the catalog entries

A description of an arithmetic book in this catalog comprises up to five parts. One part normally corresponds to one page, but can sometimes have more than that, especially in the case of long tables of contents.

Part one, left column

Language

Number of the arithmetic book in this language following the temporal sequence of the years of publication starting with 1 for the earliest arithmetic book (if I describe more than one)

Author

Biographic data of the author

Title

Place of publication: printer (publisher) year
(with very early prints: date **YYYY-MM-DD**)

Brief information about later editions if I consider them as important.

Number of pages

C(atalog): if existing, ID in *Ars mercatoria* (Hooock/Jeannin, abbreviated Hooock); if existing, ID in *Union Catalog of Incunabula* (UCatInc) and in *Incunabula Short Title Catalog* (ISTC); if necessary, *WorldCat* (with OCLC (Online Computer Library Center) Number) etc.

D(igital): URL for digital copy; serves also as reference for the illustrations

R(eprint): bibliographic data

L(ibrary): (selected) holding libraries

E(dition) or detailed comments

S(econdary literature): bibliographic data [Ries-Kolloquium means Conference Proceedings, edited by Gebhardt, Rainer under various titles, in the series “Schriften des Adam-Ries-Bundes Annaberg-Buchholz”]

V(erification): reference that it is the earliest arithmetic book if not mentioned in *Ars mercatoria*

Place names (biographical places, places of publication and places of libraries) are indicated in the local language: e.g. Lyon, not Lyons, München, not Munich, Praha, not Prague, Roma, not Rome.

A library is indicated with the place name in the local language followed by the library name, in standard cases using a few abbreviations:

B Bibliothek, bibliothèque, biblioteca

BSB Bayerische Staatsbibliothek (München)

BL British Library (London)

BN biblioteca nazionale, biblioteca nacional

BNF Bibliothèque Nationale Française (Paris)

HAB Herzog-August-Bibliothek (Wolfenbüttel)

L library

LMU Ludwig-Maximilians-Universität (München)

NL national library

ÖNB Österreichische Nationalbibliothek (Wien)

SB Staatsbibliothek (Berlin), Staatliche Bibliothek (Bamberg)

SSB Staats- und Stadtbibliothek (Augsburg)

SUB Staats- und Universitätsbibliothek (Dresden, Göttingen, Hamburg)

U university (library)

ULB Universitäts- und Landesbibliothek (Darmstadt, Halle/Saale, Jena)

– no library recorded in WorldCat; no digital copy in the internet

Due to the availability of space on this page, information in the left column can be moved to the left column of the following parts, or the information can be arranged in another suitable way.

Part one, right column

Photo of the title page

Photo of the colophon (inscription at the end of a book that can contain facts relative to its author, title, printer, publisher, place of publication, year or date of publication) – if there is any at all.

Part two

Transcription and/or Romanization of the title page (and of the colophon).

Transcription means: conversion to modern letters in the same script.

Romanization (transliteration) means: literal conversion to the Latin script; correct pronunciation requires that the reader is familiar with the original script.

Depending on the original script, there is a transcription or a Romanization or both.

Latin script:

Transcription only

Greek script:

Romanization only. A transcription is not necessary as the original prints are well readable.

Conservative Romanization with *ch* (not *kh*) for χ , *ph* (not *f*) for φ and *th* for θ as those spellings are still well known in English from foreign words.

Cyrillic script:

Romanization only. A transcription is not necessary as the original prints are well readable.

In general, the transliteration is based on ISO 9 that takes its Latin letters from the Czech alphabet. ISO 9 is an extension of the one-to-one corresponding Cyrillic and Latin scripts for varieties of the Serbian language.

ISO 9 represents national Cyrillic alphabets in a single transliteration table.

National differences in the phonetic value of Cyrillic characters are neglected, e.g. и corresponds to the phoneme /i/ in Russian and to /y/ in Ukrainian.

Hebrew script:

Transcription, partly Romanization. A transcription is necessary as most original prints are not well readable.

In general, the Romanization is based on ISO 259 and not on DIN 31636: that is, *w* (not *v*) for װ, *s* (not *ts*) for שׂ, *q* (not *k*) for ק and in certain cases *š* (not *sh*) for שׁ.

The following phonetic distinctions are borrowed from DIN 31636:

b/*b* (instead of *b/v*) for בּ, *k*/*k* (instead of *k/kh*) for כּ and *p*/*f* for פּ. *b* designates a בּ pronounced as *v*, *k* a כּ pronounced as *kh*, *f* a פּ pronounced as *f*.

Trailing ם can be omitted in the Romanization.

א and י are Romanized as consonants or vowels.

The mere consonant Romanization is completed with the necessary vowels.

As in Latin, the vowel lengths (macrons ¯) are mostly not indicated.

For other scripts (e.g. Arabic, Armenian, Bengali, Thai), there is neither transcription nor Romanization, only a translation.

The following table shows the Romanization principles for Greek, Cyrillic and Hebrew scripts:

Greek	Romanization	Russian Cyrillic	Romanization	Hebrew	Romanization
α	a	а	a	א	–, vowel
β	b	б	b	ב	b, <u>b</u>
		В	v		
γ	g	Г	g	ג	g
δ	d	Д	d	ד	d
		ђ (Serbian)	đ		
ε	e	е, ё	e, ё	ה	h
		ε (old)	ê		
ς (stigma) [Ϝ (digamma)]	st [w]			ו	w (not v), o, u
		ж	ž (not zh)		
ζ	z	з	z	ז	z
η	ē			ח	ḥ
θ	th	θ (old)	ḥ	ט	ṭ
ι	i	и; ѣ	i; j	י	y, i
		і (old; Ukr.)	i, ï (not ì)		
κ	k	К	k	כ	k, <u>k</u>
λ	l	Л	l	ל	l

Greek	Romanization	Russian Cyrillic	Romanization	Hebrew	Romanization
μ	m	М	m	מ	m
ν	n	Н	n	נ	n
ξ	x	ѡ (old)	x	ס	s
ο	o	О	o	ע	‘
π	p	Π	p	פ	p, f
				צ	ṣ (not ts, tz)
ϙ (koppa)	q			ק	q (not k)
ρ	r	Р	r	ר	r
σ	s	С	s	ש	ś; š (not sh)
τ	t	Т	t	ת	t
		ћ (Serbian)	ć		
υ	y, u (diphthong)	у oy (old)	u u		
		ѵ (old)	ÿ		
φ	ph (not f)	φ	f		
χ	ch (not kh)	χ	ḫ (not h, kh)		
ψ	ps	ψ (old)	ps		
ω	ō	ω (old)	ō		

Greek	Romanization	Russian Cyrillic	Romanization	Hebrew	Romanization
´ (spiritus asper)	h				
		Ц	c (not ts)		
		Ч	č (not ch)		
		Ш	š (not sh)		
		Щ	š̂ (not shch, šč)		
		Ъ	”		
		Ы	y		
		Ь	’		
		Ѡ (old)	ě (not ye)		
		Э	è		
		Ю	û (not û, ju, yu)		
		Я	â (not â, ja, ya)		
		Ѧ (old)	ø		
		Ѧ (old)	ę		

Part three

English translation of the title page (and of the colophon).

Part four

Content overview in English compiled according to the table of contents and/or the section headings and/or information in the title and/or the mathematical text itself.

For some languages, there is a photo of the table of contents or a part of it.

Page or pdf numbers are added only if finding a section in the original is very complicated.

Interesting vernacular mathematical terminology is added in parentheses in italics (partly reduced to the lexical base, that is, the nominative singular for nouns and the infinitive for verbs).

I translate the old expressions *whole number* and *broken number* and their corresponding expressions in other languages with *integer* and *fraction* although in many early arithmetic books only non-negative integers and non-negative fractions are referred to.

I use the Latin arithmetic terminology as explained in the glossary (0.7). Therefore, I say *species* instead of *basic arithmetic operation* etc.

Part five – Supplement

Additional brief information about arithmetic books published later than the last numbered one if I consider it as useful.

0.6 Optimized problem categories on the basis of Tropfke 1980, Chapter 4

Already most of the earliest printed arithmetic books categorized their problems with ample book titles, introductions, tables of contents and section headings. The classifications, however, were different in different arithmetics. E.g. the calculation of the price of a textile of a certain length from the known price for a known length could be assigned to purchase/sales, rule of three or fractions. For a systematic historic comparison of arithmetic books, one, therefore, needs a universal categorization that is independent of individual particularities.

The current standard categorization was published as Chapter 4 *Das angewandte Rechnen* [Applied calculations] in the completely revised 4th edition (Berlin, New York) 1980 of vol. 1 (*Arithmetik und Algebra*) of the seven volume *Geschichte der Elementarmathematik* by Johannes Tropfke (1866–1939). The chapter was arranged by the Munich mathematics historian Kurt Vogel (1888–1985) together with Karin Reich (b. 1941). Such a categorization can never be complete. Many arithmetics contain surprising unique

problems so that specific editions have to introduce new fine categories.

After more than 40 years with new research results in the history of mathematics, the standard categorization needs an update. In the following, I will present my approach for a comprehensive, pragmatic and evolutionary optimization that I use throughout the entire catalog. The category keys are the corresponding section numbers in Tropfke 1980 without the leading 4.

In the beginning, I present possible principles for a categorization:

- 1 The category is recognizable by the mere wording of the problem without knowing any concrete method to solve it. That applies for example to Tropfke's categorization of the business mathematics problems.
- 2 The category is recognizable by the algebraic equation that leads to the solution. That applies for example to Tropfke's categories 2.1 *Lineare Probleme mit einer Unbekannten* [Linear problems with one unknown] and 2.2 *Lineare Probleme mit mehreren Unbekannten* [Linear problems with several unknowns].

3 The category is recognizable by the solution method to be used. This categorization can often be found in early arithmetics if problems are assigned to *regula de tri*, *regula de tri inversa*, *regula quinque* or *regula falsi*.

Principle 3 is not adequate for a categorization in the history of mathematics as all mathematical problems can always be solved using different methods. E.g. already in the early Modern Times, some authors of arithmetic textbooks considered the *regula quinque* as too complicated and suggested to replace it by two successive applications of the *regula de tri*.

Principle 2 requires the knowledge of an algebraic equation. That causes two difficulties:

- 1 The wording of the problem has to be so well understandable that one is really able to establish an algebraic equation. This is not at all trivial regarding some problems where a contemporary solution is not known.
- 2 The wording of the problem and mathematical considerations can contradict each other. Example: “Find two numbers. Let their sum be 7 and the sum of their squares be 25.” For the solution, one can

construct two algebraic equations with two unknowns x and y . Or one states from the very beginning that the two numbers wanted are x and $7 - x$; then, mathematically spoken, there is only one unknown.

That is why principle 2 should be dropped for a categorization, too. Therefore, I support a consequent categorization according to principle 1.

Furthermore, I consider it a methodological problem to mix two categorization principles as in Tropfke 1980 with categorizations according to principle 1 (business mathematics) and principle 2 (recreational mathematics). Therefore, the second group needs the strongest revision.

In the following, I will successively discuss Tropfke's main categories and introduce clearer definitions, description changes, universal refinements and assignment changes.

Additionally established category keys are marked with pointed brackets $\langle \rangle$, and categories with considerably changed category descriptions with brackets $[]$. I introduce comprehensive category descriptions so that the superordinate category is recognizable in the case of categories with three-digit or four-digit category keys.

The distinction between the main categories 1 *Business mathematics* and 2 *Recreational mathematics* turns out to be quite simple. The latter comprises reenactable problems (e.g. 2.1.3.2 *Gatekeepers in the apple garden*) and merely fictive problems (e.g. [2.1.2.2] *Shared work – Animal actors: carnivores*).

In the main category 2 *Recreational mathematics*, I also explicitly include problems from pure mathematics (that is, problems with non-denominate numbers) ($\langle 2.1.1.7 \rangle$ *Find a non-denominate number*, $\langle 2.2.1.5 \rangle$ *Additive partition – Non-denominate numbers*).

The categories will now be discussed in detail.

1 *Business and commercial mathematics in everyday life*

1.1 *Purchase and sales, commerce (price, quantity, profit and loss)*. Includes problems with regard to the “loaf of penny” that is the bigger, the less the crops cost and the other way round (to be solved with *regula de tri inversa*). Against the background of the high number of problem types of this kind, neither Tropfke nor I can suggest any universal refinement. I move such problems that contain explicit percentage calculation to 1.4 *Percentage*.

1.2 *Barter (German Stich)*:

$\langle 1.2.1 \rangle$ *Barter – Cash (no special barter prices)*

$\langle 1.2.2 \rangle$ *Barter – Simple*

$\langle 1.2.3 \rangle$ *Barter – Complex (with profit part, cash part, due date)*. This category contains various subcategories that can hardly be systematically classified and that partly only have little practical importance, but rather belong to recreational mathematics.

1.3 *Work and service*. Each of the actors involved produces the same performance (partly solved with *regula quinque* and *regula de tri inversa*):

- <1.3.1> *Work and service – Transports: transport fee*
- <1.3.2> *Work and service – Human actors (persons): craftsmen, drunkards*
- <1.3.3> *Work and service – Inanimate actors (instruments): mills, money*
- <1.3.4> *Work and service – Digging a well (arithmetic series)*

This refinement is probably not complete.

In contrast to 1.3, the actors in 2.1.2 *Shared work* produce different performances.

I move work and service contracts that are interrupted before their intended end to the new category <1.15> *Interrupted contract*.

1.4 *Percentage*. Against the background of the high number of problem types of this kind, neither Tropfke nor I can suggest any universal refinement.

1.5 *Tare and tret (fusti)*. Tret means a portion of bad quality in a natural product:

- <1.5.1> *Tare and tret – Only tare*
- <1.5.2> *Tare and tret – Only tret*
- <1.5.3> *Tare and tret – Both*

1.6 *Interest (loans and investments)*:

- <1.6.1> *Interest – Simple interest*: Partly similar to <1.3.3>.

- <1.6.2> *Interest – Compound interest*
- <1.6.3> *Interest – Pension calculation, payment by installments, annuity*

1.7 *Discount*:

- <1.7.1> *Discount – Simple discount*
- <1.7.2> *Discount – Compound discount*

1.8 *Balance and due date (claim (receivable, credit) and liability (payable, debt))*:

- <1.8.1> *Balance and due date – Several debts, different due dates*
- <1.8.2> *Balance and due date – Mutual debts (compensation)*
- <1.8.3> *Balance and due date – Payment with due date*

<1.8.4> *Balance and due date – Labor leasing*

This refinement is probably not complete.

1.9 *Company (proportional additive partition)*:

- <1.9.1> *Company – Equal periods of investment (regula societatis simplex)*
- <1.9.2> *Company – Different periods of investment (regula societatis temporum)*
- <1.9.3> *Company – Mining companies*
- <1.9.4> *Company – Travels*

<1.9.5> *Company – Special case: sum of the parts unequal 1*. Includes special testaments.

This refinement is probably not complete.

I move companies that are interrupted before their intended end to the new category <1.15> *Interrupted contract*.

1.10 *Subcontractor (Latin: factor)*: no refinement.

1.11 *Rent and lease*:

<1.11.1> *Rent and lease – Rent*

<1.11.2> *Rent and lease – Pasture lease*

1.12 *Currency exchange and measure conversion*:

<1.12.1> *Exchange and conversion – Only currency exchange*

<1.12.2> *Exchange and conversion – Only measure conversion*

<1.12.3> *Exchange and conversion – Both*

<1.12.4> *Exchange and conversion – Regula inventionis*: Find how many lower units are equal to one higher unit.

1.13 *Gold and silver, coinage*. No refinement. This category deals with weight of fine metal, precious metal proportion (fineness) and prices of precious metals.

1.14 *Mixture*. In contrast to 1.13 *Gold and silver, coinage*, this category comprises mixtures of arbitrary materials with different mass fractions (percentages by weight/mass):

[1.14.1] *Mixture – Alloy, loading the crucible (regula alligationis)*

[1.14.2] *Mixture – Various mixtures*

Tropfke's original category 1.14.1 becomes [1.14.2]; the original 1.14.2 *Das Problem der 100 Vögel* [*The problem of the 100 birds*] belongs to recreational mathematics and is – together with 2.2.6 where it was treated a second time in Tropfke – completely moved to <2.2.1.1> *Additive partition – The 100 birds*.

<1.15> *Interrupted contract (partial payment)*. I introduce this new category in order to unite this subject in one place. Problems of this kind could originally be found in 1.3 *Work and service*, 1.9 *Companies*, 1.11 *Rent and lease*, 2.1.5.3 *Unterbrochenes Dienstverhältnis* [*Interrupted service contract*]. There can either be a simple solution with proportional partition or a complex one, e.g. in the case of interrupted pasture lease.

2 Recreational mathematics

[2.1] *Find a number (linear and non-linear problems).*

This category description replaces Tropfke's original *Lineare Probleme mit einer Unbekannten* [*Linear problems with one unknown*] which I consider as inadequate as explained above in my criticism against principle 2. Furthermore, the former description neglected non-linear problems that also occur and that were not included in any other of Tropfke's categories.

[2.1.1] *Find a number (linear and non-linear problems) – Various problems.* This category combines Tropfke's original category 2.1.1 *Hau-Rechnungen* [*Linear problems with a fraction of the unknown; no exact definition of the type*] and parts of the original category 2.1.5 *Diverse Probleme* [*Various problems*]. As the former category requires the knowledge of an algebraic equation, I consider it as inadequate as explained above in my criticism against principle 2.

I introduce the following refinement:

2.1.1.1 *Find a denominate number – Hi all problems.* Find the number of persons one says hello to (*Gott grüß euch*).

2.1.1.2 *Find a denominate number – Find age*

2.1.1.3 *Find a denominate number – Find length or weight (whole from parts).* Find the total length of an object (spear in the water, tower in the water, a textile) from the lengths of its parts or find the total weight from the weights of its parts (fish sold in pieces).

<2.1.1.4> *Find a denominate number – Regula equalitatis (purchase of equal quantities).* This is Tropfke's original category 2.1.5.1. Special case: The quantities of the goods or the persons are not equal, but are in a given integer proportion.

<2.1.1.5> *Find a denominate number – Too much and too little.* This is Tropfke's original category 2.1.5.2. Find the number of persons, who shall receive equal numbers of objects, from the rest/lack of objects. Or find the price of a product from different prices per unit and different rests/lacks of money. Or find the quantity of a product from different sales prices and different profits/losses (e.g. batch of pepper). Etc. Tropfke mentioned two unknowns although there is only one main unknown the problem aims at.

<2.1.1.6> *Find a denominate number – Other problems.* This category comprises for example the

calculation of the weight of the future rations in a prolonged siege, of the length of a fuse etc.

<2.1.1.7> *Find a non-denominate number*

2.1.2 *Shared work*. Different actors with different performances do a job together. I introduce a semantic refinement instead of Tropfke's enumeration:

[2.1.2.1] *Shared work – Human actors: masons, drinkers*. This category comprises Tropfke's original categories 2.1.2.2 *Hausbau* [*Building a house*] and 2.1.2.6 *Trinker verschiedener Leistung* [*Drinkers with different performances*].

[2.1.2.2] *Shared work – Animal actors: carnivores*. This is Tropfke's original category 2.1.2.4 *Löwe, Wolf und Hund* [*Lion, wolf and dog*].

[2.1.2.3] *Shared work – Inanimate actors: fountains, sails, mills*. This category comprises Tropfke's original categories 2.1.2.1 *Eigentliche Zisternenaufgaben* [*Genuine cisterne problems*], 2.1.2.3 *Schiff mit mehreren Segeln* [*Ship with several sails*] and 2.1.2.5 *Mühle mit verschiedenen Mahlgängen* [*Several mills*].

In contrast to 2.1.2, the actors in 1.3 *Work and service* produce equal performances.

2.1.3 *Nesting (first from last)*. A certain number of objects or a certain amount of money remains after several nested steps. Find the number or amount in the beginning. Refinement according to Tropfke:

2.1.3.1 *Nesting – Business trips (profit/loss chains)*

2.1.3.2 *Nesting – Gatekeepers in the apple garden*

2.1.3.3 *Nesting – Si quis intrat monasterium (The poor and the sacrifice), Three saints*

2.1.3.4 *Nesting – Other problems (e.g. to play dice)*

2.1.3.5 *Nesting – The unknown inheritance / forgotten amount*. An unknown amount has to be distributed to an unknown number n of children using the rule “the n -th child receives n coins plus a certain fix part of the remaining money” or some other similar rule. Finally, each of the children gets the same amount. The problem appears also in the form “Forgotten amount”, “Money forgotten with a changer”.

2.1.4 *Motion*:

[2.1.4.1] *Motion – Pursuit*

[2.1.4.2] *Motion – Encounter*

[2.1.4.3] *Motion – To and fro*

Tropfke mentioned these types, too, but in the framework of a completely inadequate geographic refinement.

[2.1.5] *Temporal part:*

[2.1.5.1] *Temporal part – The lazy worker* (“working and playing”). This is Tropfke’s original category 2.1.5.4. Find the temporal part of the contract duration when the lazy worker was working.

[2.1.5.2] *Temporal part – Find the clock time.* This is Tropfke’s original category 2.1.5.5. Find the temporal part of the daylight period that has passed since sunrise.

Tropfke’s original category 2.1.5 *Lineare Probleme – Diverse Probleme* [*Linear problems – Diverse problems*] is dropped. 2.1.5.1 *Regula equalitatis* becomes <2.1.1.4>, 2.1.5.2 *Zu viel – zu wenig* [*Too much – too little*] becomes <2.1.1.5>, 2.1.5.3 *Unterbrochenes Dienstverhältnis* [*Interrupted service contract*] belongs to business mathematics and is moved to <1.15> *Interrupted contract*, 2.1.5.4 *Der faule Arbeiter* [*The lazy worker*] aims at a temporal part and becomes [2.1.5.1], 2.1.5.5 *Wieviel Uhr ist es?* [*What time is it?*] also aims at a temporal part and becomes [2.1.5.2].

[2.2] *Find several numbers (linear and non-linear problems).* This category description replaces Tropfke’s original *Lineare Probleme mit mehreren Unbekannten* [*Linear problems with several unknowns*] with an analogous motivation as above in [2.1].

2.2.1 *Additive partition of a number (parts from whole):*

<2.2.1.1> *Additive partition – The 100 birds.* This category comprises Tropfke’s original category 1.14.2 with the same description and parts of the original category 2.2.6 *Das Problem der 100 Vögel und die Zechenaufgaben* [*The problem of the 100 birds and the regula caecis*]. One has to buy 100 birds of different types for a certain amount. Each type costs a specific price. Find the number of each bird type.

<2.2.1.2> *Additive partition – Regula caecis or regula virginum.* This category comprises parts of Tropfke’s original category 2.2.6 *Das Problem der 100 Vögel und die Zechenaufgaben.* [*The problem of the 100 birds and the regula caecis*]. A group of people of different types has to pay a certain amount for their meals. Each type pays a specific price. Find the number of each type of persons.

<2.2.1.3> *Additive partition – Twin inheritance.* This is Tropfke’s original category 2.7.4 that was inadequately assigned to arrangement problems. A dying man makes a testament for his pregnant wife with special rules for a male or female child.

After his death, the wife gives birth to son daughter twins. Find the partition of the inheritance.

<2.2.1.4> *Additive partition – Denominate numbers, other problems*

<2.2.1.5> *Additive partition – Non-denominate numbers*

In category 2.2.1, I unite all the problem types that carry the common feature of an additive partition in several summands. One has to find parts of a whole. Although the category 2.2.1 already existed in Tropfke's work, it there contained only pure-mathematical problems that I classify under <2.2.1.5> *Additive partition – Non-denominate numbers*. Tropfke did not clearly assign some other types of this kind to categories, but treated them in scattered places.

2.2.2 *Find several numbers – The found purse*. Find the amount of money in the found purse and the amounts in the finders' purses.

2.2.3 *Find several numbers – Joint purchase* ("If you give me"). Find the amounts of money in the purses of several potential buyers. One alone cannot buy; each amount alone is not sufficient for the purchase.

2.2.4 *Find several numbers – Give and take*. Find the amounts of money or quantities of goods belonging to different persons.

2.2.5 *Find several numbers – Two cups and a lid*. Find the weights of the three pieces.

One will probably be able to establish further subcategories of [2.2] *Find several numbers* (linear and non-linear problems).

2.3 *Geometry*:

2.3.1 *Geometry – Plane – The Pythagorean Theorem*

2.3.2 *Geometry – Plane – Similarity of triangles*

<2.3.3> *Geometry – Plane – Further polygons*. Partly *regula de tri inversa* for rectangles.

<2.3.4> *Geometry – Plane – Circle* (area, circumference)

<2.3.5> *Geometry – Space – Cube, rectangular cuboid, sphere, cone, cylinder, barrel* (volume, surface)

Tropfke mentioned refinements of 2.3.1 and 2.3.2. The categories 2.3.1 to <2.3.5>, however, contain so many different problem types that I cannot suggest any universal refinements.

2.4 *Progression and series*. Refinement according to Tropfke:

2.4.1 *Progression and series – Arithmetic progression and series, magic square*

2.4.2 *Progression and series – Geometric progression and series*

Tropfke mentioned a refinement of 2.4.2. The categories 2.4.1 and 2.4.2, however, contain so many different problem types that I cannot suggest any universal refinements.

2.5 *Remainder*. Refinement according to Tropfke:

2.5.1 *Remainder – The Regula Ta-yen*

2.5.2 *Remainder – The egg woman*

2.5.3 *Remainder – The three sisters*

This refinement is probably not complete.

2.6 *Number guessing*. Refinement according to Tropfke:

2.6.1 *Number guessing – Backward calculation*

2.6.2 *Number guessing – Guessing with 9*

2.6.3 *Number guessing – Even or odd*

2.6.4 *Number guessing – Guessing game in a circle*

2.6.5 *Number guessing – Where is the ring?*

2.6.6 *Number guessing – The three players*

2.6.7 *Number guessing – Distribution of three objects*

This refinement is probably not complete.

2.7 *Arrangement and other funny problems*:

2.7.1 *Arrangement – Equal proceeds in spite of selling different quantities*. E.g. Three women selling apples on a market.

2.7.2 *Arrangement – Profit with sales for purchase price*

2.7.3 *Arrangement – To throw Saracens in the sea (German Josephsspiel)*

[2.7.4] *Arrangement – Wolf, goat and cabbage*

[2.7.5] *Arrangement – Transfer of liquids*

[2.7.6] *Arrangement – Combinatorial problems: linear and cyclic permutations; least common multiple*

This refinement is probably not complete.

I do not consider Tropfke's category 2.7.4 *Zwillingserbenschaft* [*Twin inheritance*] an arrangement problem, but an additive partition, so that I move it to <2.2.1.3> *Additive partition – Twin inheritance*.

2.8 *Other problems: Figurate numbers, text encoded with numbers, mistakes of pupils, linear functions*. One needs a last category for rare problem types.

0.7 Future research

For a future edition, this catalog needs additions and completions regarding non-European languages.

It will be necessary

- to research languages not yet examined
- to refine and complete currently coarse and rough descriptions
- to order or find digital copies of further early arithmetic books
- to find earlier arithmetic books in languages already examined

This catalog provides basic material for research into the history of mathematics in specific cultures, e.g.

- mathematical terminology
- mathematical notations (arithmetic operators, algebraic equations)
- pure-mathematical techniques (e.g. basic arithmetic operations, rule of three, algebra, false position method)

- mathematical applications in commercial problems (e.g. profit and loss, barter, interest, company, currency exchange, measure conversion, mixture etc.)
- mathematical applications in recreational problems (e.g. find a number, shared work, nesting, motion, temporal part, additive partition, progression and series)
- origin and spreading of individual problems or problem types
- etc.

0.8 Glossary

Algorismus	Guide to calculation using the Indo-Arabic numeral system
Coss	Algebra
Duplatio	Duplication, doubling
Factor	Subcontractor
Involution, evolution	Exponentiation, extraction of roots
Mediatio	Halving
Numeratio	Notation/representation of numbers: digits, number symbols, numerals
Numerus numerans	Simple, pure number
Numerus numeratus	Denominate (compound) number
Reductio (ascendens), elevatio [Germ. <i>reduzieren</i>]	Conversion of a numerical value/s given in lower units of a system of currency, measure, weight or time to a value/s in higher units (ascending reduction)
Reductio (descendens), resolutio [Germ. <i>resolvieren</i>]	Conversion from higher units to lower units (descending reduction)
Reductio [only regarding a set of fractions]	Identifying a common denominator of a set of fractions
Regula alligationis	Rules for calculating alloys and mixtures
Regula aurea	Regula de tri (2 numbers given; 2 directly proportional quantities)
Regula caecis	Rules for integer problems with several unknowns (drink bill; 100 birds)
Regula commutationis, baratto [Italian]	Rule of bartering [from Italian <i>barattare</i> ‘change, deceive’], goods exchange
Regula de tri ((simplex) directa)	Rule of three (three numbers given; direct proportionality of two quantities)
Regula (de tri simplex) inversa/conversa	Inverse rule of three (inverse proportionality of two quantities)
Regula equalitatis	Rule for equal quantities of different objects
Regula falsi (simplicis positionis, duplicis positionis)	Simple false position method, double false position method
Regula fusti, faecis	Rules for tret, i.e. for natural products containing portions of bad quality
Regula positionum	Regula falsi
Regula quinque (= r. dupla, r. de tri composita)	Double/compound rule of three (5 numbers given; 3 directly proportional quantities)
Regula quinque inversa	Inverse double rule of three (indirect proportionality of three quantities)
Regula societatis simplex, regula societatis temporum	Rules for companies of merchants without or with time; proportional partition
Regula virginum	Regula caecis
Regula vulgaris	Regula de tri with denominate numbers
Species	Basic arithmetic operation, partly including Numeratio, Mediatio, Duplatio

Latin 1

Prosdocimus de Beldomandis

Prosdocimo de Beldemandis

Algorismi [de integris] tractatus

(e.g. manuscript Padova 14(60)[10]-06-10)

Johannes de Lineriis

Jean de Lignères/Linières

De minutiis

(e.g. manuscript dated 1356 in Clm 14684)

Padua [Matthaeus Cerdonis]

1483-02-22

36 p. + 18 p. (from fol. 19 on)

C/V: UCatInc 03799; ISTC ib00299000

D: Internet Archive (Yale Medical L)

L: London BL, New York Columbia U

Plimpton L, Perugia B Augusta, Wien

ÖNB

b. ca. 1375/80 Padova

d. 1428 Padova

Mathematician, music theorist; professor for astronomy in Padova
(Dizionario biografico degli Italiani)

b. ? Active in Paris from 1320 on

d. 1350/55 Paris

Astronomer, mathematician in Paris

S: Cantor, Moritz: Geschichte. Leipzig 1900, II 204–207, 126–127

Favaro, Antonio. In: Bollettino Boncompagni XII

Busard, Hubert L L: Het rekenen met breuken in de middeleeuwen.

In: Mededelingen van de Kon. Vlaamse Acad. voor Wetenschappen
30 (1968) Nr. 7

2nd ed. by Federico Delfino;

De minutiis ascribed to Johannes de Liveriis [sic!] from Sicily

Venezia: Johannes Antonius de Vulpinis de Castrogiofredo 1540-04-08

84 p. [Beldomandis pdf 7–58; Johannes de Lineriis pdf 58–88]

D: bibdig.museogalileo.it

Latin 1

Prosdocimus de Beldomandis

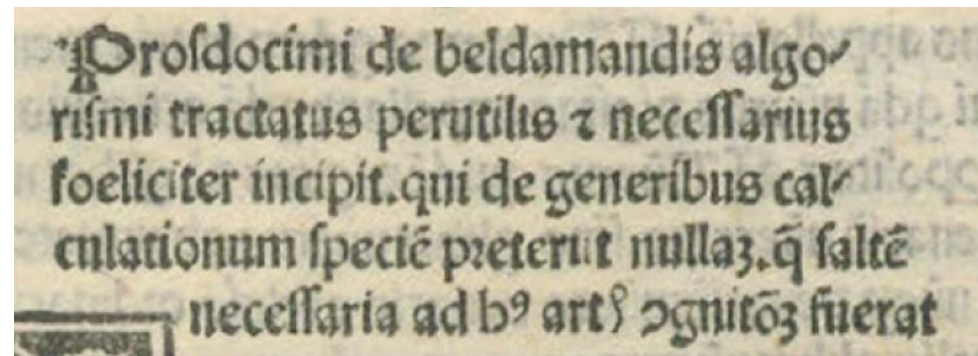
Algorismi tractatus

Johannes de Lineriis

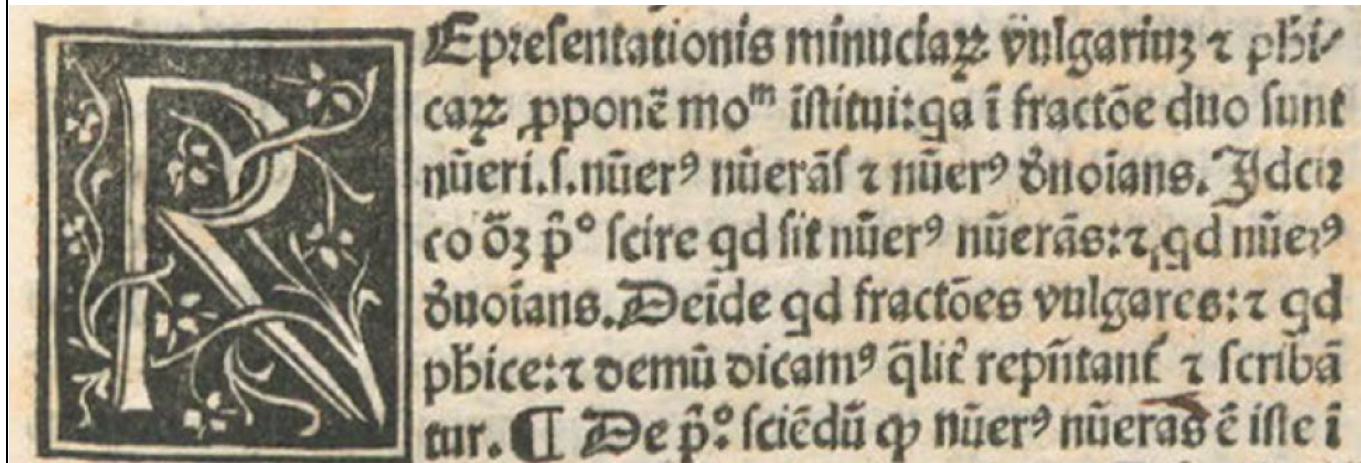
De minutiis

Padua: Cerdonis 1483

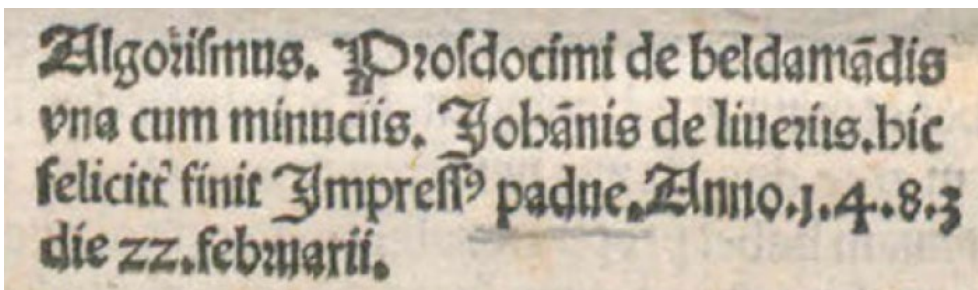
Title informations and colophon



Prosdocimi de beldamandis algo-
rismi tractatus perutilis ⁊ necessarius
foeliciter incipit. qui de generibus cal-
culacionum speciē preterit nullaz. q̄ saltē
necessaria ad b⁹ art⁹ cognitōz fuerat



Representationis minuclaz vulgariz ⁊ phis-
caz pponē mo^m istitui: qa ī fractōe duo sunt
nūeri. s. nūer⁹ nūerās ⁊ nūer⁹ duoians. Ydciz
co dōz p^o scire qd sit nūer⁹ nūerās: ⁊ qd nūer⁹
duoians. Deide qd fractōes vulgares: ⁊ qd
phisice: ⁊ demū dicam⁹ qlic repñtant ⁊ scribā-
tur. ¶ De p^o sciēdū q nūer⁹ nūerās ē iste ī



Algorismus. Prosdocimi de beldamādis
vna cum minuclis. Johānis de liueriis. hic
felicite finit Impress⁹ padue. Anno. 1. 4. 8. 3
die 22. february.

Latin 1

Prosdocimus de Beldomandis

Algorismi tractatus

Johannes de Lineriis

De minutiis

Padua: Cerdonis 1483

Transcription of the title
informations
and of the colophon

*Prosdocimi de beldamandis algo-
rismi tractatus perutilis et necessarius
foeliciter incipit. qui de generibus cal-
culationum speciem preteriit nullam. quae saltem
necessaria ad huius artis cognitionem fuera[n]t*

*Representationis minuciarum vulgarium et phisi-
carum proponere modum institui: quia in fractione duo sunt
numeri .s[cilicet]. numerus numerans et numerus denominans. Idcir-
co oportet primo scire quid sit numerus numerans: et quid numerus
denominans. Deinde quid fractiones vulgares: et quid
physice: et demum dicamus qualiter representantur et scriban-
tur*

*Algorismus. Prosdocimi de beldamandis
vna cum minuciis. Johannis de lineriis. hic
feliciter finit Impressus padue. Anno .1.4.8.3
die 22. february.*

Latin 1

Prosdocimus de Beldomandis

Algorismi tractatus

Johannes de Lineriis

De minutiis

Padua: Cerdonis 1483

Translation of the title
informations
and of the colophon

Physical fractions are fractions with
denominator 60 and its powers.

Prosdocimi de Beldamandis
useful and necessary treatise on algorism
starts happily. It did not skip any species of the ways of
calculation. At least these had been
necessary for understanding this art

I made it my business to present a way of representing
common and physical fractions: As in a fraction there are two
numbers, that is, the numerator and the denominator,
therefore, it is at first necessary to know
what the numerator is and what the denominator;
then what common fractions [are] and what physical ones;
and finally, we want to talk about
how they are represented and written

The Algorism of Prosdocimus de Beldomandis
together with the “Fractions” by Johannes de Lineriis
mercifully terminates here. Printed in Padova in the year 1483
on the 22nd day of February.

Latin 1

Prosdocimus de Beldomandis

Algorismi tractatus

Johannes de Lineriis

De minutiis

Padua: Cerdonis 1483

Content overview
(according to the text)

Integers

- 1 Numeration
- 2 Addition
- 3 Subtraction
- 4 Halving (*mediatio*)
- 5 Duplication
- 6 Multiplication
- 7 Division
- 8 Arithmetic progressions
- 9 Extraction of square and cube roots

Common and physical (denominator 60^n) fractions

- 1 Numeration
- 2 Identifying a common denominator (*reduction*)
- 3 Addition
- 4 Subtraction
- 5 Duplication
- 6 Halving (*mediatio*)
- 7 Multiplication
- 8 Division
- 9 Extraction of square and cube roots
- 10 Geometric progression (*proportio continua*)
- 11 Regula de tri (*proportio discontinua*)

Latin 2

Anonym

(Georgius de Hungaria?)

[Same introduction as Georgius de Hungaria 1499, but not the same work]

De arte numerandi siue arismetice summa quadripartita

Paris: Antoine Caillot

or Louis Martineau 1485/90

Caillaut active: 1482–1506

(cnp02226310 CERL Thesaurus)

Martineau active 1482–1498

(cnp02244059 CERL Thesaurus)

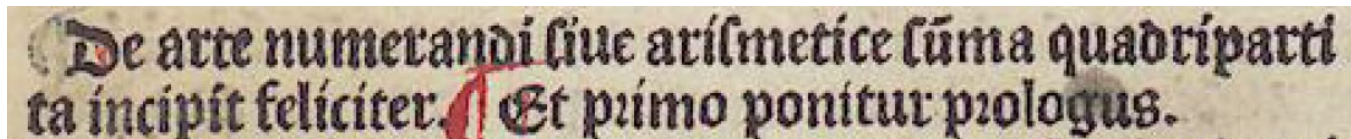
40 p.

C: UCatInc 0266410N; ISTC ia01136100

D: Freiburg U

L: London BL

Title



De arte numerandi siue arismetice summa quadripartita incipit feliciter. Et primo ponitur prologus.

De arte numerandi siue arismetice summa quadripartita incipit feliciter. Et primo ponitur prologus.

The textbook about the art of counting or of arithmetic in four parts starts mercifully. And in the beginning, the prolog is placed.

Content overview (according to the prolog pdf 6, pdf 7)

- 1 Species with the pen for integers
- 2 Species with the pen for fractions
- 3 Species with the counters (*proiectiles*)
- 4 Various rules (among others regula de tri) and questions

Latin 2

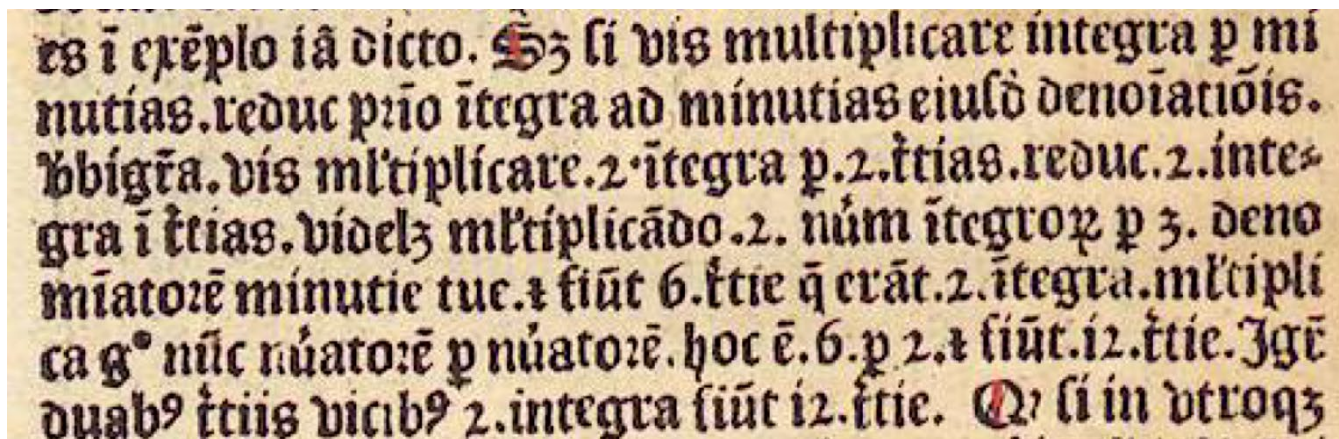
Anonym

*De arte numerandi siue
arismetice summa quadripartita*

Paris: Antoine Caillot

or Louis Martineau 1485/90

Mistakes with
the multiplication of fractions
(pdf 26); cf. French 1



es i exēplo iā dicto. § Si vis multiplicare integra p mi-
nutias. reduc p̄o itēgra ad minutias eiusdē denoiatiōis.
Vbi ḡra. vis mltiplicare. 2. itēgra p. 2. t̄tias. reduc. 2. inte-
gra i t̄tias. videlz mltiplicādo. 2. nūm itēgroꝝ p 3. deno-
miatorē minutie tue. et fiūt 6. t̄tie q̄ erāt. 2. itēgra. mltipli-
ca ḡ nūc nūatorē p nūatorē. hoc ē. 6. p 2. et fiūt. 12. t̄tie. Igit̄
duab⁹ t̄tiis vicib⁹ 2. integra fiūt 12. t̄tie. Q̄ si in vtroqz

*Secundum si vis multiplicare integra per mi-
nutias, reduc primo integra ad minutias eiusdem denominationis.
Verbi gratia vis multiplicare 2 integra per 2 tertias, reduc 2 inte-
gra in tertias, videlicet multiplicando 2 numerum integrorum per
3 deno-
minatorem minutiae tuae et fiunt 6 tertiae, quae erant 2 integra;
multipli-
ca ergo nunc numeratorem per numeratorem, hoc est 6 per 2, et
fiunt 12 tertiae. Igitur
duabus tertiis vicibus [times] 2 integra fiunt 12 tertiae.*

$$2 \cdot \frac{2}{3} = \frac{6}{3} \cdot \frac{2}{3} = \frac{12}{3}$$

Latin 2

Anonym

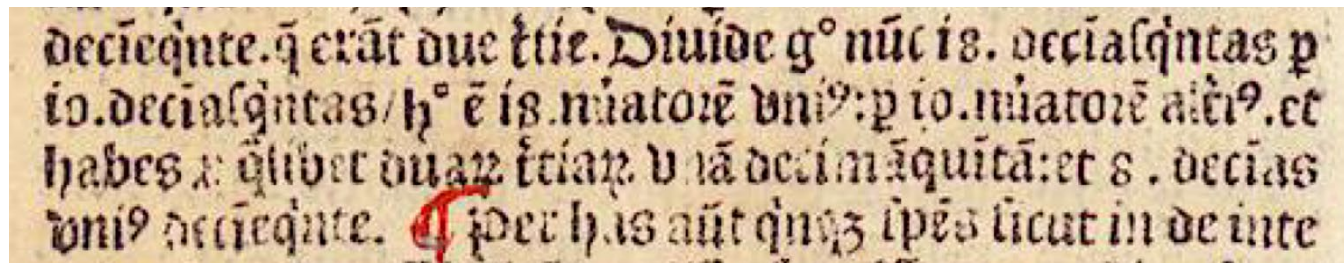
*De arte numerandi siue
arismetice summa quadripartita*

Paris: Antoine Caillot

or Louis Martineau 1485/90

Mistakes with
the division of fractions
(pdf 27); cf. French 1

Problem: $\frac{6}{5} : \frac{2}{3}$; at first identify common denominator.



*Divide ergo nunc 18 decimas quintas per
10 decimas quintas, hoc est 18 numeratorem unius per
10 numeratorem alterius et
habes igitur [?] quaelibet duarum tertiarum [how many
of two thirds [6/5 are]], unam decimam quintam et 8
decimas
unius decimae quintae.*

$$\frac{6}{5} : \frac{2}{3} = \frac{18}{15} : \frac{10}{15} = \frac{18/10}{15} = \frac{1}{15} + \frac{8}{10} \cdot \frac{1}{15}$$

Latin 2

Anonym

*De arte numerandi siue
arismetice summa quadripartita*

Paris: Antoine Caillot

or Louis Martineau 1485/90

Fifteen problems of business
and recreational mathematics
from Part 4

All of the problems except **nr 6**

can be found in French 1:

2, 4, 6, 8, 14, 16, 17, 21, 23, 24

- 1 Regula de tri (pdf 32)
- 2 Regula societatis simplex (pdf 34)
- 3 Regula societatis temporum (pdf 35)
- 4 *Lepus*: pursuit with margin (pdf 36)
- 5 *Agonizans*: twin inheritance (pdf 36)
- 6 *Ementes*: company (purchase), sum of the parts > 1 (pdf 37)
- 7 *Canonici et sacerdotes*: company (pdf 38)
- 8 *Denarii obliti* (unknown inheritance, forgotten amount ($n+r/10$)): nesting (pdf 39)
- 9 *Cambium*: regula equalitatis (pdf 40)
- 10 *Metalla commixta* (fragment): alloy (pdf 41)
- 11 *Molendinae* (mills): shared work (pdf 42)
- 12 *Vas* (vessel with three fountains): shared work (pdf 42)
- 13 *Turris*: find length (pdf 43)
- 14 *Regula contraria de tri* (loaf of penny): purchase and sales, regula de tri inversa (pdf 43)
- 15 *Regula aedificandi*: rectangular cuboid, price of a wall (pdf 44)

Latin – Supplement 1

Under the title *Arithmetica*, there are also:

1 Treatises about *arithmetica speculativa* (and *musica*), that is the ancient theory of proportions in the Pythagorean tradition: posthumous editions of earlier manuscripts, e.g. Albertus de Saxonia 1476, Boethius 1488/92, Thomas Bradwardine 1496, Jordanus Nemorarius 1496.

2 Mere *Algorismus linealis* texts (calculation with the counters; German *Linienrechnung*) without calculations with the pen, e.g. Johann Widmann 1490/95, Balthasar Licht 1500.

3 Verbose treatises with very few examples and without commercial applications, e.g. Georg Peurbach 1495.

These three groups are not relevant for this catalog.

Further Latin incunabula on arithmetic (selection)

Anonym

Ars numerandi

Köln: Ulrich Zell ca. 1482

12 p.

C: UCatInc 02663; ISTC ia01136000

D: –; L: New York Columbia U, London BL, København Royal L
[only about the declension of numerals]

Latin – Supplement 2

Johannes de Sacro Bosco

Algorithmus [vulgaris de arte numerandi]

Firenze: Francesco Bonaccorsi ca. 1490

Leipzig: Konrad Kachelofen ca. 1500

16 p.

C: UCatInc M14567, M1456310

L: London BL, Wien U

Cirvelus / Ciruelo, Petrus / Pedro Sánchez

b. ca. 1470 Daroca/Aragón, d. 1560 Salamanca

Mathematician and philosopher in Alcalá

Tractatus Arithmetice Practice qui dicitur

Algorismus

Paris: Guy Marchant 1495-02-22

25 p.

C: UCatInc 07052, 07053;

ISTC ic00699580, ic00699600

D: Internet Archive

L: Paris Bibliothèque Saint Geneviève

Further Latin incunabula on arithmetic (selection)

Anonym

Ars numerandi

Paris: Antoine Caillot ≤ 1490

16 p.

C: UCatInc 02664; ISTC ia01136300

D: –; L: Paris B Mazarine, Bourges B Municipale, Troyes B Municipale

Anonym (Widmann, Johann?) (ca. 1460/65 – ca. 1505/15)

Algorismus linealis etc.

Leipzig: Martin Landsberg 1490/95 etc.

26 p.

C: UCatInc 01269–01280; ISTC ia00462000

D/L: München BSB, Wolfenbüttel HAB

[incipit: *Ad evitandum multiplices Mercatorum errores*]

S: Gärtner, Barbara 2000

P(e)urbach, Georg (1423–1461)

Algorismus

Wien: Johann Winterburg ca. 1495 etc.

10 p.

C: UCatInc M36629–M36632; ISTC ip01133500 etc.

D/L: Berlin SB, München BSB, Wien ÖNB

[concise; few business problems added by the editor]

Latin – Supplement 3

Georgius de Hungaria

(not the author of *De moribus ... Turcorum*)

Arithmetice summa tripartita

Schoonhoven: Fratres apud S. Michaellem

in den Hem 1499-04-05

20 p.

C: UCatInc 10652; ISTC ig00150800

D: –; L: Gießen U, Wolfenbüttel HAB

E: Smeur, Facsimile of the first arithmetic printed in the NL; Dutch classics on hist. sc. 14

Anonym (Widmann, Johann?)

Algorismus novus de integris, de minutiis vulgaribus et physicalibus

Köln: Kornelius von Zierikzee ca. 1500 etc.

19 p.

C: UCatInc 01276–01278;

ISTC ia00466000 etc.

D/L: Darmstadt ULB, München BSB,
Wolfenbüttel HAB

[common fractions, hexagesimal fractions
(*minutiae physicales*),
regula de tri (*regula proportionum*,
regula mercatorum)]

Latin arithmetic books around 1500

Licht, Balthasar (active 1500–1515)

Algorismus linealis

Leipzig: Melchior Lotter not before 1500

30 p.

C: UCatInc M18204, M18206; ISTC il00202000

D/L: München BSB

S: Gärtner, Barbara: Ries-Kolloquium 1999

[species with the counters (ill.), fractions,
regula de tri, regula societatis]

Huswirt(h), Johannes (active around 1500)

Enchiridion novus Algorismi

Köln: Heinrich Quentell 1501 etc.

39 p.

C: VD16 H 6208

D/L: München BSB, Wien ÖNB

[very detailed; species with the pen and with the counters (*proiectiles*),
common fractions, 28 problems of business and recreational
mathematics, based upon *Algorismus Ratisbonensis*]

Anonym, *Enchiridion algorisme*. Deventer: Richard Paffraet 1498/99

C: UCatInc 2 Sp. 11b/11a; L: could not be traced in any library

Portuguese

Gaspar Nicolas

b. Guimarães

No other biographical data known (reprint)

Contributed to *Reportório dos Tempos* 1518

Tratado da pratica D arismetyca

Lisboa: Germão Galharde

1519-11-15

242 p.

C/V: Hoock I/N4 (editions until 1716)

D: fc.up.pt/fa/index.php?p=nav&f=books.0223.0

R: Porto 1963 (Mendonça de Albuquerque, L)

L: Porto U, Faculdade de Ciências,
Fundo Antigo

S: Gropp, Harald: Ries-Kolloquium 2023

Costa Clain, Teresa. In: *Revista Brasileira
Hist. Mat.* 19 (2019) 105–137

Frick, Berta M: The first Portuguese
arithmetic. In: *Scripta Mathematica* 11
(1945) 327–339

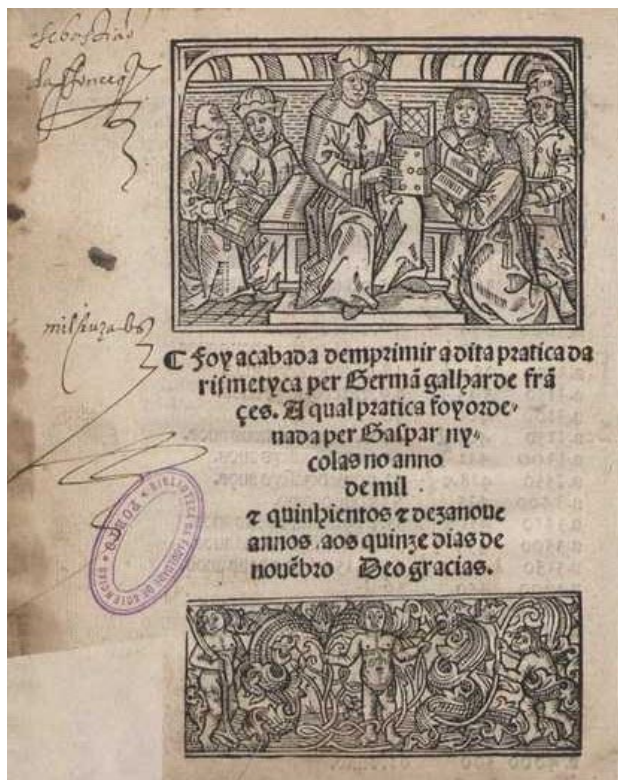


Portuguese

Gaspar Nicolas

Tratado da pratica D arismetyca
Lisboa: Germão Galharde 1519

Transcription of the title page
and of the colophon



Tratado da pratica D arismetyca
ordenada per Gaspar nycolas
E empremida Com preui-
legio del Rey nosso
Senhor

[Brasão de armas dos duques do Cadaval]

Foy acabada d emprimir a dita pratica d a-
rismetyca per German galharde fran-
çes. A qual pratica foy orde-
nada per Gaspar ny-
colas no anno
de mil
& quinhientos & dezanoue
annos aos quinze dias de
novembro Deo gracias.

Portuguese

Gaspar Nicolas

Tratado da pratica D arismetyca
Lisboa: Germão Galharde 1519

Translation of the title page
and of the colophon

*Treatise on the practice of arithmetic
arranged by Gaspar Nicolas
and printed with the privilege
of the King, our
sovereign*

[Coat of arms of the Dukes of Cadaval]

*The print of the mentioned [treatise on the] practice
of arithmetic was finished
by Germão Galharde from France.
This [treatise on the] practice was arranged
by Gaspar Nicolas
in the year 1519 on the 15th day of November.
Thanks be to God.*

Portuguese

Gaspar Nicolas

Tratado da pratica D arismetyca
Lisboa: Germão Galharde 1519

Content overview

(according to the section headings)

O quarto e vintena

(a quarter and a twentieth of the rest)

tax rate at the Casa da Índia in Lisboa:

$$\frac{1}{4} + \frac{3}{4} \cdot \frac{1}{20} = \frac{23}{80}$$

(cf. Costa Clain, Teresa. In: Revista Brasileira Hist. Mat. 19 (2018) 83–97)

Units:

1 quintal (hundredweight) = 4 arrobas

1 arroba = 32 arráteis

1 arrátel = 16 onças

Tables for simple and compound multiplication

(*tavoada pequena, tauoada grande*)

Numeration (*numerar*)

Addition with check by seven (*assomar, prova pellos setes*)

Subtraction (*demenuir*)

Multiplication (*multiplicar, multiplicar*)

Division (*repartir*)

Regula de tri (*regra de tres*)

Regula societatis (*regra de companhias*)

Tax (*tirar o quarto e vintena*)

Species for fractions (*quebrados*)

Regula de tri for fractions

Regula positionum (*regra das oposições* [sic])

Calculation of Flanders (*conta de frandes*) – money exchange

Progressions (*pergressios*)

Barters (*baratos*)

Problems (“Find a number”, *numeros*)

Problems (questions, *preguntas*)

Extract square and cube roots (*tirar raizes*)

Geometry of triangle and circle

Silver alloys

Galician

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

Information:

An early arithmetic book in Galician is not known. The L of the Real Academia Galega holds a copy of the first mathematics school textbook written in Galician:

Coletivo Vacaloura: *Matemáticas I*.

Vigo: Edicións Xerais de Galicia, D. L. 1979.

Reference: L of the Real Academia Galega, La Coruña

Date: December 2020

Spanish 1

Francisco de San-Clemente

No biographical data known (Wiki català)

Compilatio de arismetica sobre la arte mercantiuol

[Zaragoza: Paul (or Hans) Hurusca. 1486]

Spanish adaptation of the Catalan
Suma de la art de Arismetica 1482

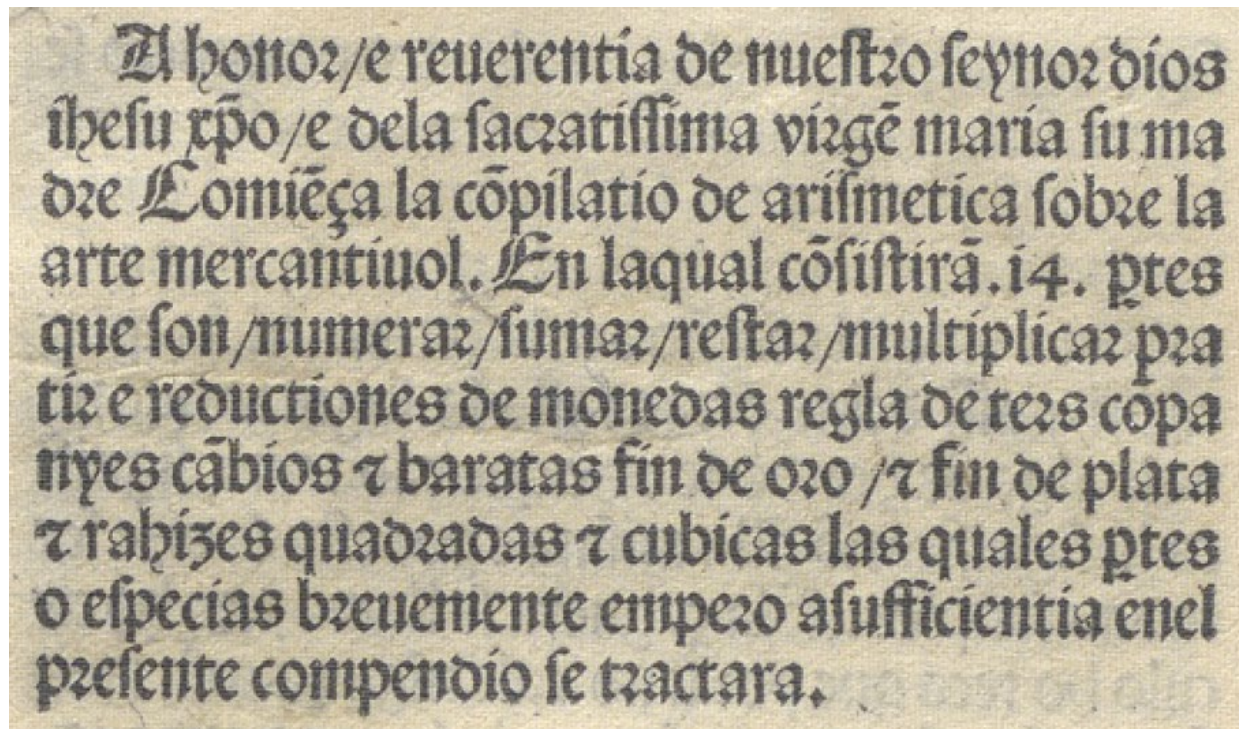
96 p.

C/V: UCatInc M0087710

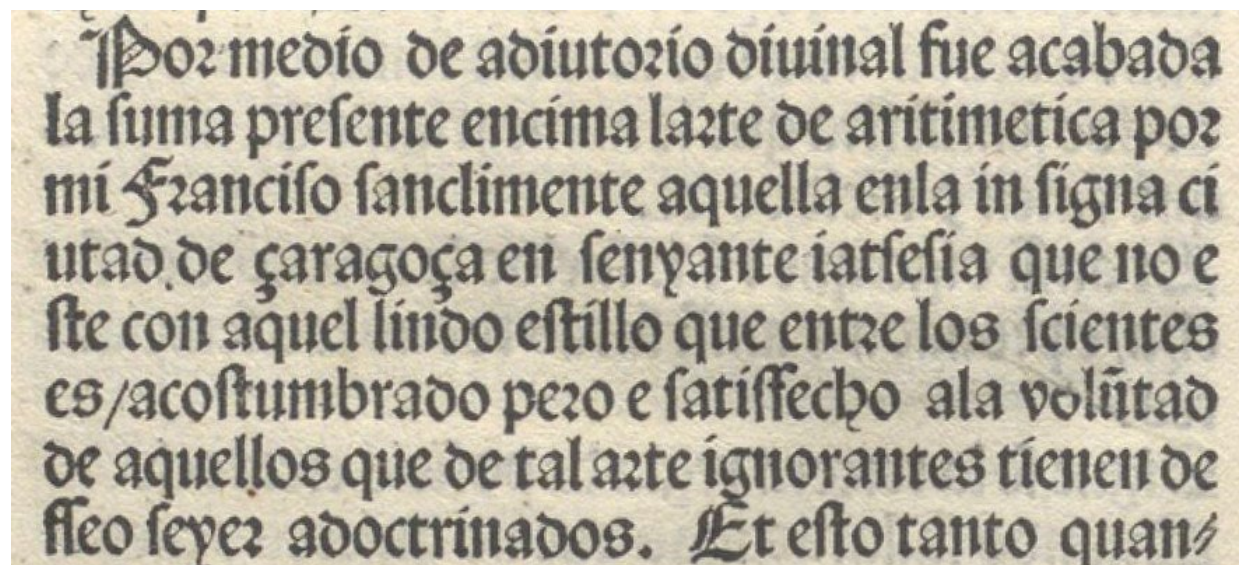
D: internetculturale.it

L: Cagliari BU (Inc. 235)

S: Coni, Franco: Un incunabolo spagnolo sinora sconosciuto. In: Pubblicazioni della Sezione Regionale Sarda dell'Associazione Italiana per le Biblioteche. Cagliari 1951, 11 p.



A honoz/e reuerentia de nuestro seynor dïos ihesu xpo/e dela sacratissima virgē maria su madre Comiēça la cōpilatio de arismetica sobre la arte mercantiuol. En laqual cōsistirā. i4. ptes que son/numeraz/sumaz/restaz/multiplicaz pra tiz e reducciones de monedas regla de ters copanyes cābios 7 baratas fin de oro /7 fin de plata 7 rahizes quadradas 7 cubicas las quales ptes o especias breuemente empero asufficiētia enel presente compendio se tractara.



Por medio de adiutorio diuinal fue acabada la suma presente encima la arte de arismetica por mi Francisco sanclimente aquella en la in signa ciudad de çaragoça en senyante iatsesia que no este con aquel lindo estillo que entre los scientes es/acostumbrado pero e satisfecho ala volūdad de aquellos que de tal arte ignorantes tienen de fleo seyer adoctrinados. Et esto tanto quan

Spanish 1

Francisco de San-Clemente

*Arismetica sobre la arte
mercantiuol*

[Zaragoza: Paul Hurus ca. 1486]

Transcription of the title
information (first page) and
of the author information
(third to the last page)

*A honor/ e reuerentia de nuestro seynor dios
ihesu christo/ e de la sacratissima virgen maria su ma-
dre Comiença la compilatio de arismetica sobre la
arte mercantiuol. En la qual consistiran 14 partes*
[The content overview follows.]

*Por medio de adiutorio diuinal fue acabada
la suma presente encima l arte de aritimetica por
mi Franciso san climente aquella en la insigna ci-
udad de çaragoça ensenyante iatsesia [jatsia,
Catal. word from Latin *iam se siat] que no e-
ste con aquel lindo estilo que entre los scientes
es/ acostumbrado pero e satisfecho a la voluntad
de aquellos que de tal arte ignorantes tienen de-
sseo seyer adoctrinados. [etc.]*

Spanish 1

Francisco de San-Clemente

*Arismetica sobre la arte
mercantiuol*

[Zaragoza: Paul Hurus ca. 1486]

Translation of the title
information (first page) and
of the author information
(third to the last page)

*To the honor and reverence of our lord God, of
Jesus Christ and of the holiest virgin Mary, his
mother, begins the compilation of arithmetic on the
art of commerce, in which there will be 14 parts
[The content overview follows.]*

*By means of the divine help, the present textbook
on the art of arithmetic was finished by
me Francisco San-Clemente, who teaches it [sc.
arithmetic] in the outstanding city of Zaragoza,
although it is not with this nice style
which is customary among the scientists,
but adapted to the satisfaction of those
who do not know this art and have the wish to be
instructed. [etc.]*

Spanish 1

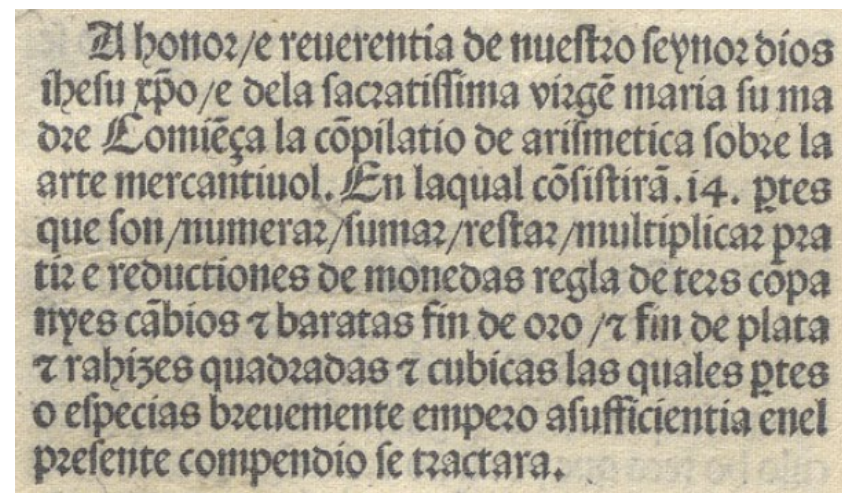
Francisco de San-Clemente

*Arismetica sobre la arte
mercantiuol*

[Zaragoza: Paul Hurus ca. 1486]

Content overview

(according to title and section headings)



Al honoz/e reuerentia de nueſtro ſeynoz dios
ihesu xpo/e dela ſacratiffima virgē maria ſu ma
dre Comiēça la cōpilatio de arifmetica ſobre la
arte mercantiuol. En laqual cōſiſtirā .i4. ptes
que ſon/numeraz/ſumar/reſtar/multiplicaz pra
tiz e reduccionez de monedas regla de tres cōpa
nyes cābios 7 baratas fin de oro /7 fin de plata
7 rahizes quadradas 7 cubicas las quales ptes
o eſpecies breuemente empero aſufficiencia enel
preſente compendio ſe tractara.

- 1 Numeration (*numerar*)
- 2 Addition (*ayustar, sumar*) – check by nine
- 3 Subtraction (*restar*)
- 4 Multiplication – check by nine
- 5 Division (*partir*) – check by nine, by inverse operation
- 6 Reductio descendens (*reduction*) (pdf 43)
- 7 Regula de tri (*regla de tres*) for: 1 textile (*draperia*),
2 weight (*peso*), 3 measures (*mesuras*), 4 money (*moneda*),
5 time (interest; *tiempo*)
- 8 Regula societatis (*companyas*): simplex and temporum
- 9 Currency exchange (*cambios*): without and with time
- 10 Barter (*baratas*)
- 11 Precious metal content of silver and gold (*ley, fin de plata, fin de oro, sou de fi*): mixtures (*fondir*) of alloys (*billons*; cf. French *billon*: ‘silver copper alloy with less than a half of silver’, ‘Scheidemünze’ [German: the legal / nominal value is bigger than the intrinsic / metal value])
- 13 [12] Arithmetic progressions (*progreciones*)
- 14 [13] Square and cube roots (*rahizes quadradas e cubicas*)
- 14 Regula falsi simplicis positionis (*una falsa posicion*),
regula falsi duplicis positionis (*dos falsas posiciones*)

Spanish 2

Juan de Ortega

b. ca. 1480 Palencia (León)

d. 1568

Friar of the Order of Saint Dominic

Conpusicion de la arte de la arismetica

Lyon: Nicolaus de Benedictis /
Benedetti (for Joannes Trinxer,
Barcelona) 1512-12-30

406 p.

C: Hooek I/O6

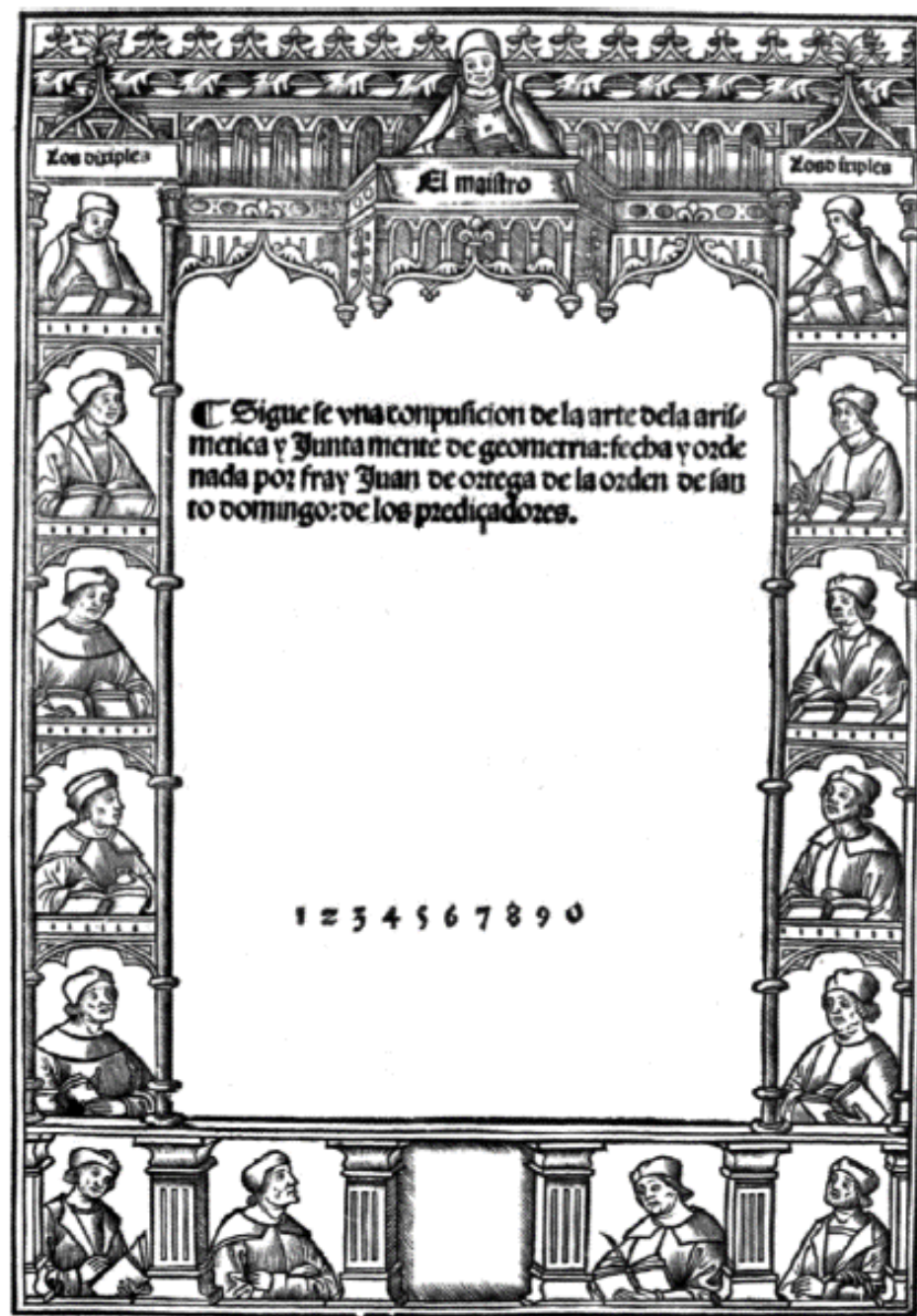
D: <http://hdl.handle.net/10366/83271>;
gredos.usual.es/handle (Salamanca U)

L: Madrid BN

S: Labarthe, Marie-Hélène. Toulouse 2004

Docampo Rey, Javier: Reading Luca
Pacioli's Summa in Catalonia.

In: *Historia Mathematica* 33 (2006) 43–62



Spanish 2

Juan de Ortega

Arte de la arismetica

Lyon: Benedictis/Benedetti 1512

French adaptation: Lyon 1515

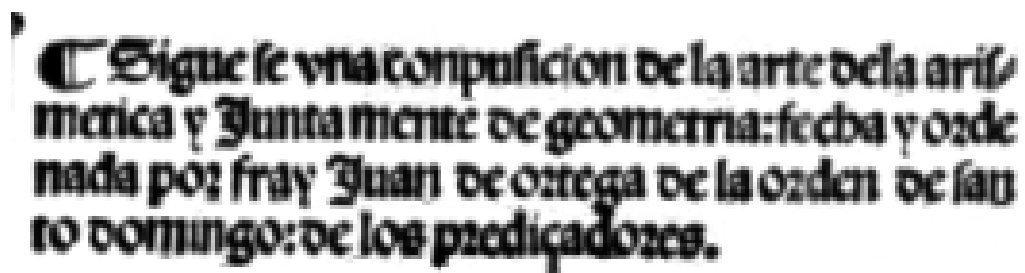
Italian adaptation: Roma 1515

Transcription of the title page
and of the colophon

S: Jewers, Caroline A. Claude Platin. In:
Literary Encyclopedia

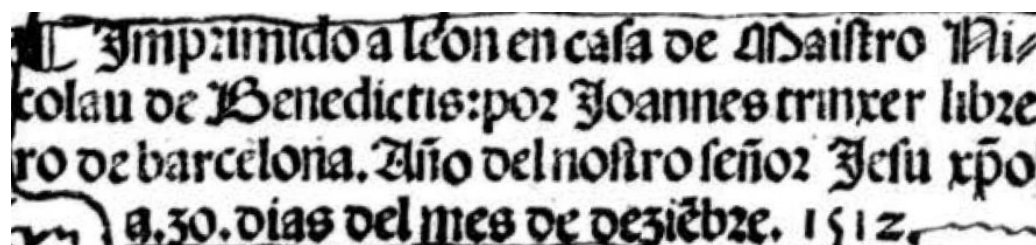
Kirsop, Joan L. Claude Platin. In: Austral.
Journal of French Studies 17 (1980) 86–
120 (liverpooluniversitypress.co.uk)

Los diciples – El maistro – Los diciples



¶ Sigue se vna conpusicion de la arte de la aris-
metica y Juntamente de geometria: fecha y orde-
nada por fray Juan de ortega de la orden de san-
to domingo: de los predicadores.

*Sigue se vna conpusicion de la arte de la aris-
metica y Juntamente de geometria: fecha y orde-
nada por fray Juan de ortega de la orden de san-
to domingo: de los predicadores*



¶ Imprimido a leon en casa de Maistro Ni-
colau de Benedictis: por Joannes trinxer libre-
ro de barcelona. Año del nostro señor Jesu xpo
a .30. dias del mes de deziembre. 1512.

*Imprimido a leon en casa de Maistro Ni-
colaus de Benedictis: por Joannes trinxer libre-
ro de barcelona. Año del nostro señor Jesu Christo
a .30. dias del mes de deziembre .1512.*

Spanish 2

Juan de Ortega

Arte de la arismetica

Lyon: Benedictis/Benedetti 1512

Translation of the title page
and of the colophon

The students – The lecturer – The students

*It follows a composition of the art of
arithmetic and connected [with it] one of geometry:
made and arranged by friar Juan de Ortega
of the Order of Saint Dominic, [Order] of Preachers*

*Printed in Lyon in the house of master
Nicolau de Benedictis for Joannes Trinxer,
bookseller in Barcelona.*

*In the year of our lord Jesus Christ 1512
on the 30th day (of the month) of December.*

Spanish 2

Juan de Ortega

Arte de la arismetica

Lyon: Benedictis/Benedetti 1512

Content overview

(table of contents)

Tabla de los capítulos que está en el presente tratado.

Capitulo.1. de numerar todas sumas	a fojas	2
Capitulo.2. de sumar todas sumas por entero	a fojas	4
Capitulo.3. de restar todas sumas por entero	a fojas	8
Capitulo.4. de multiplicar por entero	a fojas	17
Capitulo.5. de partir por entero	a fojas	19
Capitulo.6. q̄ trata de progresiones	a fojas	23
Capitulo.7. de las raizes quadrada y cubica	a fojas	27
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Capitulo.9. de reduzir todo nōbre roto	a fojas	44
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Capitulo.14. de sumar por extraordinario	a fojas	60
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Capitulo.18. de los nōbres que tienē regla onco	a fojas	70
Capitulo.19. de desminuciones	a fojas	73
Capitulo.20. de regla de tres sin tiempo por entero	a fojas	76
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Capitulo.22. de regla de l. bras y onzas	a fojas	86
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Capitulo.29. de regla de cōpañias	a fojas	110
Capitulo.30. de reglas de testamentos.	a fojas	154
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Capitulo.33. de regla de viages	a fojas	160
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Capitulo.36. de geometria	a fojas	108

Spanish 2

Juan de Ortega

Arte de la arismetica

Lyon: Benedictis/Benedetti 1512

Content overview

(according to the table of contents)

- 1 Numeration (*numerar*)
- 2 Addition (*sumar*) of integers (*enteros*)
- 3 Subtraction (*restar*) of integers
- 4 Multiplication of integers
- 5 Division (*partir*) of integers
- 6 Progressions (*progresiones*)
- 7 Square and cube roots (*raíces*)
- 8 Check by seven and nine for arbitrary calculations (*por sietes, nueves*)
- 9 Identifying a common denominator (*reducir*) of a set of fractions
- 10 Addition of fractions (*nonbres rotos*)
- 11 Subtraction of fractions
- 12 Multiplication of fractions
- 13 Division of fractions
- 14 Difficult (*por extraordinario*) additions
- 15 Difficult subtractions
- 16 Difficult multiplications
- 17 Difficult divisions
- 18 Numbers with integer factors (*que tienen regla*)
- 19 Reducing fractions (*disminuyciones*)
- 20 Regula de tri without time (*regla de tres sin tiempo*) for integers
- 21 Regula de tri with time (interest) for fractions
- 22 Rule of pounds and ounces (*libras y onzas*)
- 23 Regula quinque (interest; *regla de tres con tiempo*)
- 24 Regula quinque for fractions
- 25 Currency exchange (*cambiar*) with division and multiplication
- 26 Currency exchange with regula de tri
- 27 Lending and gaining (*emprestar y ganar*)
- 28 Capacity, weight and price (*reglas quadradas*)
- 29 Regula societatis simplex and temporum (*regla de compañías*)
- 30 Testaments (*testamentos*): twin inheritance, unknown inherit. etc.
- 31 Barthers without/with time (*regla de baratas*)
- 32 Silver and gold (*regla de argentería, plata y oro*)
- 33 Business trips (*regla de viajes*): nesting
- 34 Regula falsi simplicis positionis (*regla de una falsa posición*)
- 35 Regula falsi duplicis positionis (*regla de dos falsas posiciones*)
- 36 Geometry

Spanish 3

Juan Andrés

Priest in Zaragoza

Sumario breve

Valencia:

Juan Joffre 1515-08-30

288 p.

C: Hooek I/A6.1

D: Biblioteca Valenciana Digital

bivaldi.gva.es (1–148, 149–297; last page with colophon missing);

U Madrid

L: Madrid BN (R 9124)

R: Valencia 1999



Spanish 3

Juan Andrés

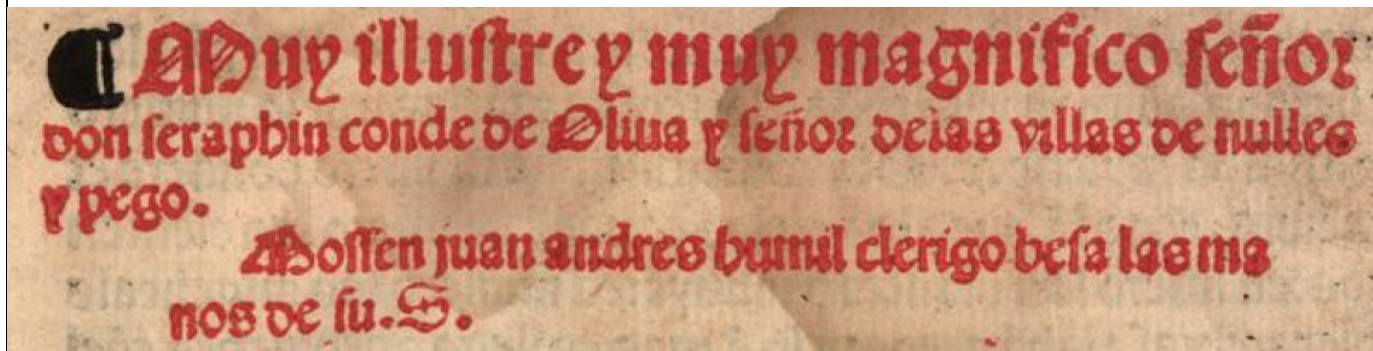
Sumario breve

Valencia: Juan Joffre 1515

Transcription of the title page
and of the dedication

Conte vell baralla noua.

*Sumario breve de la
pratica de la arith-
metica de todo el cur-
so de l arte mercantiuol bien
declarado: el qual se llama
maestro de cuento.*



CA muy illustre y muy magnifico señor
don seraphin conde de Oliua y señor de las villas de nulles
y pego.
Mossen juan andres humil clerigo besa las ma-
nos de su. S.

*Muy illustre y muy magnifico señor
don seraphín conde de Oliua y señor de las villas de nulles
y pego.
Mossén juan andrés humil clérigo besa las ma-
nos de su Señoría.*

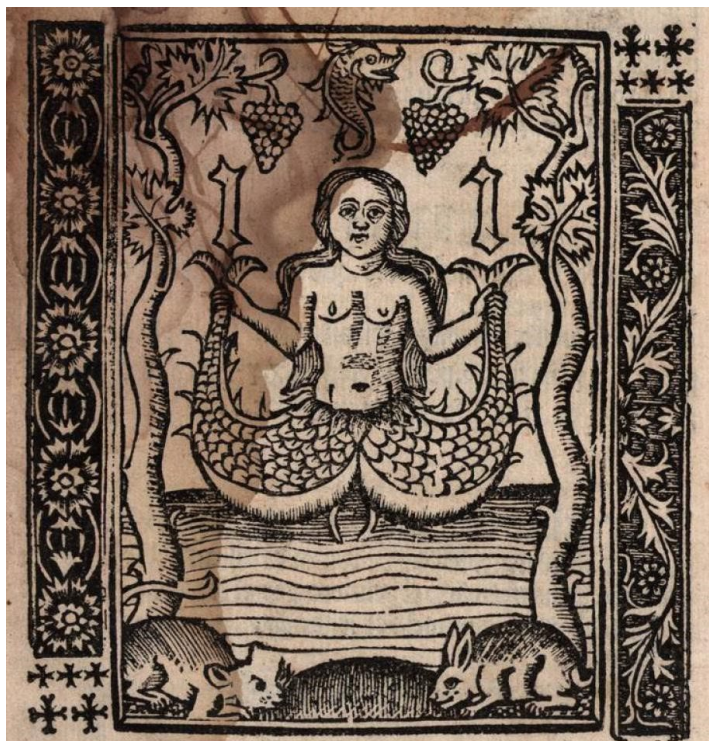
Spanish 3

Juan Andrés

Sumario breve

Valencia: Juan Joffre 1515

Translation of the title page
and of the dedication



Old story new fight [Catalan].

*Brief and well explained compendium
of the practice of arithmetic
over the entire course* [sc. for all activities]
*of the art of commerce:
it is called master of calculation.*

*My illustrious and my magnificent lord Don Seraphin
[Serafin de Centelles Giménez de Urrea (ca. 1460–1536)]
count of Oliva [province of Valencia] and
lord of the cities of Nules [province of Castellón] and
Pego [province of Alicante].*

*The priest Juan Andrés, a humble cleric, kisses the
hands of your lordship.*

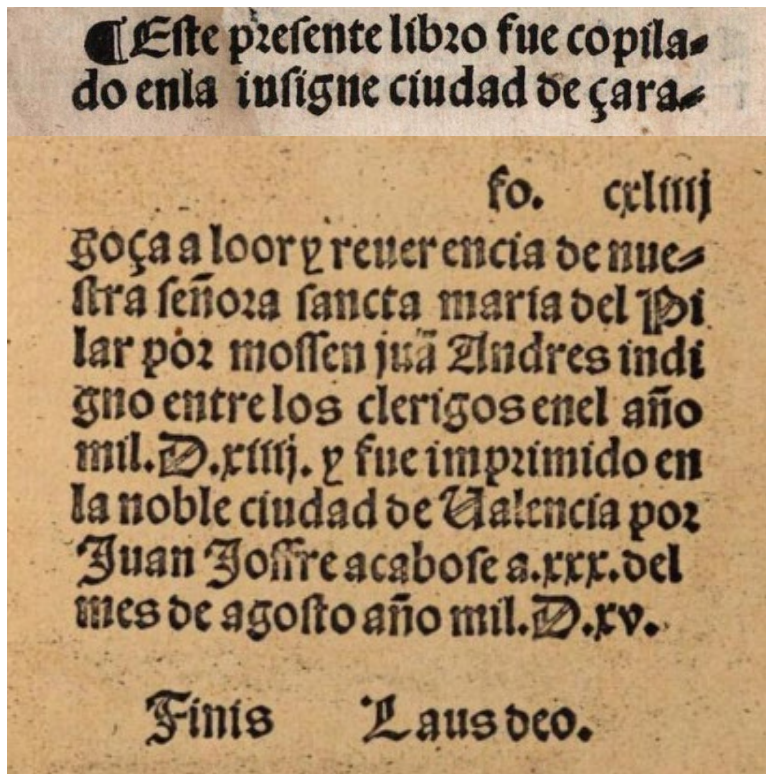
Spanish 3

Juan Andrés

Sumario breve

Valencia: Juan Joffre 1515

Transcription and translation
of the colophon



Este presente libro fue copilado en la insigne ciudad de çaragoça al oor y reuerencia de nuestra señora sancta maria del Pilar por mossen juan Andres indigno entre los clerigos en el año mil .D.xiiij. y fue imprimido en la noble ciudad de Valencia por Juan Joffre acabose a .xxx. del mes de agosto año mil.D.xv.

Finis. Laus deo.

*This present book was compiled
in the outstanding city of Zaragoza
to the honor and reverence*

of our holy Lady Saint Mary of the Pillar

[Nuestra Señora del Pilar: miraculous wooden image
in the Cathedral-Basilica Nuestra Señora del Pilar in Zaragoza]

by the priest Juan Andrés,

unworthy among the clerics, in the year 1514.

*And it was printed in the noble city of Valencia by Juan Joffre,
finished on the 30th of the month of August in the year 1515.*

The end. Praise be to God.

Spanish 3

Juan Andrés

Sumario breve

Valencia: Juan Joffre 1515

Content overview

(according to the table of contents:
pdf 11–13, 16–19)

- 1 Finger numbers; multiplication table; types of numbers: even (*par*), odd, perfect, imperfect, square, cube
- 2 Seven species for integers (*enteros*): numeration, addition (*sumar*), subtraction (*restar*), multiplication, division (*partir*), progression, square root (*rayzes quadradas*), cube root; checks by nine and seven
- 3 Four species for fractions (*quebrados*): addition, subtraction, multiplication, division, common denominator (*reduzir*)
- 4 Regula de tri, check (*prueua*), five types, without time, with time (interest), for integers and fractions, per thousand (*por mil*), percentage (*por ciento*), profit and loss (*ganar y perder*), reductio a/descendens (*reduzir de mayor a menor* etc.)
- 5 Regula societatis (*regla de companyas*) simplex (*sin tiempo*), temporum (*con tiempo*), profit and loss
- 6 Rule of bartering (*regla de baratas*), simple, compound (*compuestas*) and with time
- 7 Currency exchange (*reduzir* ‘convert’): bill of exchange (*cambio real = con letra de cambio*), ‘immediate’ (foreign currency) cash exchange “to the minute” (*cambio minuto*)
- 8 Precious metal content of gold and silver (*fin de oro y de plata*)
- 9 Regula falsi simplicis positionis (*regla de una falsa posicion*), regula falsi duplicis positionis (*de dos falsas posiciones*)
- 10 **Some very important commerce problems** (*algunas preguntas muy necessarias en el arte mercantiuol*)

Catalan

Francesc de Santcliment

No biographical data known (Wiki català)

Suma de la art de Arismetica

Barcelona: Pere Posa 1482

272 p.

C/V: Hooek I/S1; UCatInc M00877

D: World Digital L wdl.org

R: Malet, Antoni (ed.). Barcelona: Eumo Editorial 1998 (Textos d'Historia de la Ciència 1)

L: Barcelona B de Catalunya

E: Escobedo, Joana: Un incunable científic català. 2 vol. Barcelona 2007

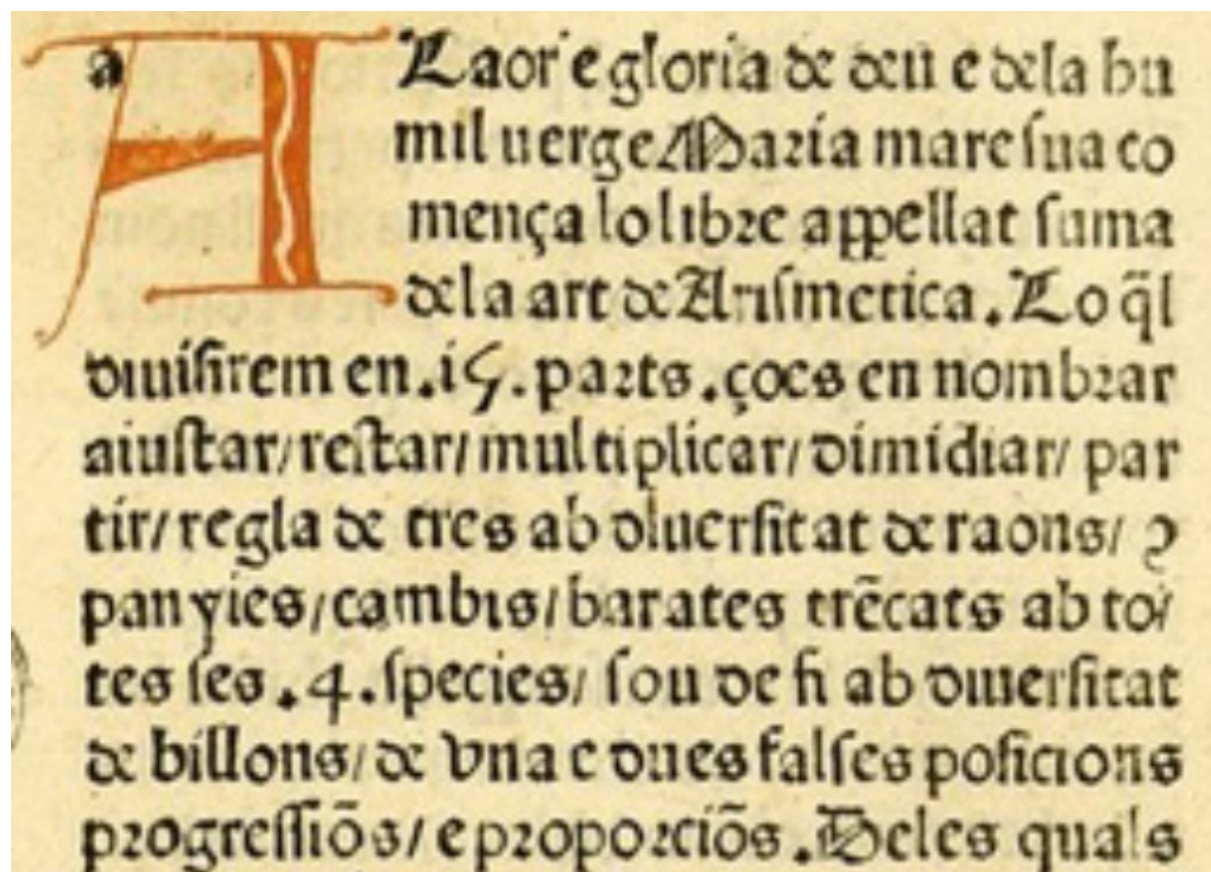
Malet, Antoni. Vic 1998

S: Gropp, Harald: Ries-Kolloquium 2023

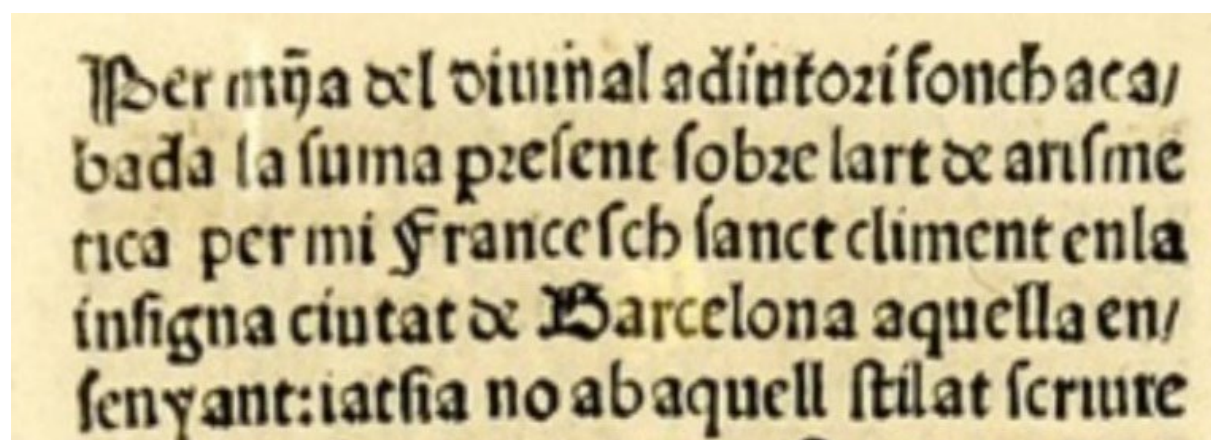
Pla i Carrera, Josep. In: Butlletí Societat Catal. de Mat. 25 (2010) 43–80, 171–210

Labarthe, Marie-Hélène. Toulouse 2004

Karpinski, L C: The first printed arithmetic of Spain. In: Osiris 1 (1936) 411–420



Alor e gloria de deu e de la humil uerge Maria mare sua comença lo libze appellat suma de la art de Arismetica. Lo q̄l diuisrem en .iij. parts. çoes en nombrar aiustar/reitar/multiplicar/dimidiar/partir/regla de tres ab diuersitat de raons/ ç panyies/cambis/barates trècats ab totes les .4. species/ sou de fi ab diuersitat de billons/ de vna e dues falses posicions progressiōs/ e propoziōs. Deles quals



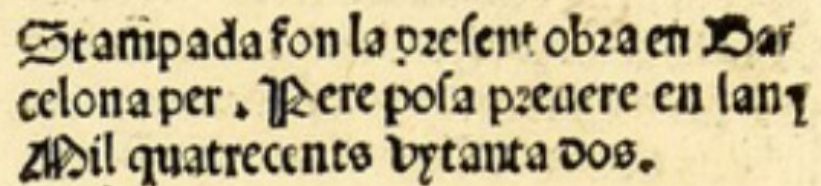
Per m̄na del diuinal adintozí fonch acada bada la suma present sobre lart de arismetica per mi Francesch sanct climent en la insigna ciutat de Barcelona aquella ensenyant: iatfia no ab aquell stilat scriure

Catalan

Francesc de Santcliment

Suma de la art de Arismetica
Barcelona: Pere Posa 1482

Transcription of the title information (first page), of the author information (next to the last page) and of the colophon



Stampada fon la present obra en Barcelona per . Pere posa preuere en lany Mil quatrecentos vytanta dos.

The Spanish adaptation [Zaragoza: Paul Hurus ca. 1486] is the earliest printed Spanish arithmetic.

AL aor e gloria de deu e de la humil uerge Maria mare sua comença lo libre appellat suma de la art de Arismetica. Lo qual diuisirem en .15. parts.

[The content overview follows.]

Per manya [or misericordia] del diuinal adiutori fonch acabada la suma present sobre l art de arismetica per mi Francesch sanct climent en la insigna ciutat de Barcelona aquella ensenyant [etc.]

Stampada fon la present obra en Barcelona per Pere Posa preuere en l any Mil quatrecentos vytanta dos.

Catalan

Francesc de Santcliment

Suma de la art de Arismetica

Barcelona: Pere Posa 1482

Translation of the title
information (first page),
of the author information
(next to the last page) and
of the colophon

*To the honor and glory of God and of the
humble virgin Mary, his mother,
the book, called “Textbook on the art of arithmetic”,
begins, which
we will divide in 15 parts.*

[The content overview follows.]

*By means of the divine help,
the present textbook on the art of arithmetic
was finished by me Francesc Santcliment,
who teaches it [sc. arithmetic] in the
outstanding city of Barcelona [etc.]*

*The present work was printed in
Barcelona by Pere Posa, priest, in the year
1482*

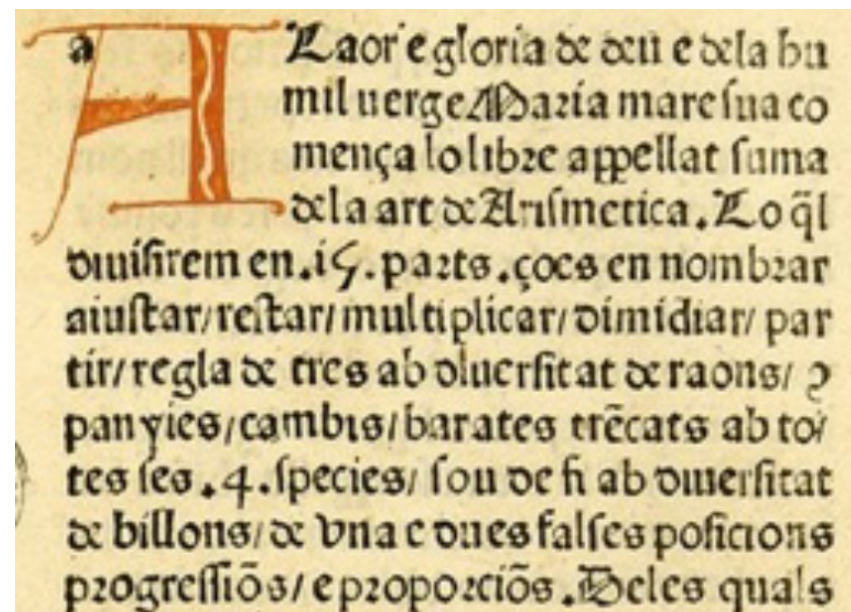
Catalan

Francesc de Santcliment

Suma de la art de Arismetica
Barcelona: Pere Posa 1482

Content overview

(according to title and section headings)



The structure of 15 parts and their sequence mentioned in the title does not coincide with the 13 section headings which are partly not numbered

- 1 Numeration (*nombrar, numerar*)
- 2 Addition (*aiustar*) – check by nine
- 3 Subtraction (*restar*)
- 4 Multiplication
- 5 Division (*partir*)
- 6 Regula de tri (*regla de tres*) for various occasions
- 7 Fractions (*trencats*): identify a common denominator (*reduir*), four species (*species*), duplication (*doblar*), halving (*mediar*)
- [8] Regula de tri for fractions
- 9 Regula societatis (*companyies*), currency exchange (*cambis*)
- 10 Barthers (*barates*)
- 11 Regula falsi simplicis positionis (*una falsa posicion*), regula falsi duplicis positionis (*dues falses posicions*)
- [12] Precious metal content of gold and silver (*ley, fin del or, fin del argent, sou de fi*), mixtures (*ligament, mescla, fonder*) of alloys (*billons*; cf. French *billon*: ‘silver copper alloy with less than a half of silver’, ‘Scheidemünze’ [German: the legal / nominal value is bigger than the intrinsic / metal value])
- 13 Arithmetic progressions (*progressions*) and proportions

Occitan (Niçois)

Francés Pellos

Nobleman, citizen of Nice

No other biographical data known (edition)

Compendion de lo abaco

Torino: Nicolò Benedetti,

Jacobinus Suigus 1492-09-28

[written around 1456/57 (Sesiano 2023)]

160 p.

C/V: Hoock I/P9; UCatInc M30595

D: bibdig.museogalileo.it

L: Paris BNF, Torino B Reale

E: Lafont, Robert; Tournerie, Guy.

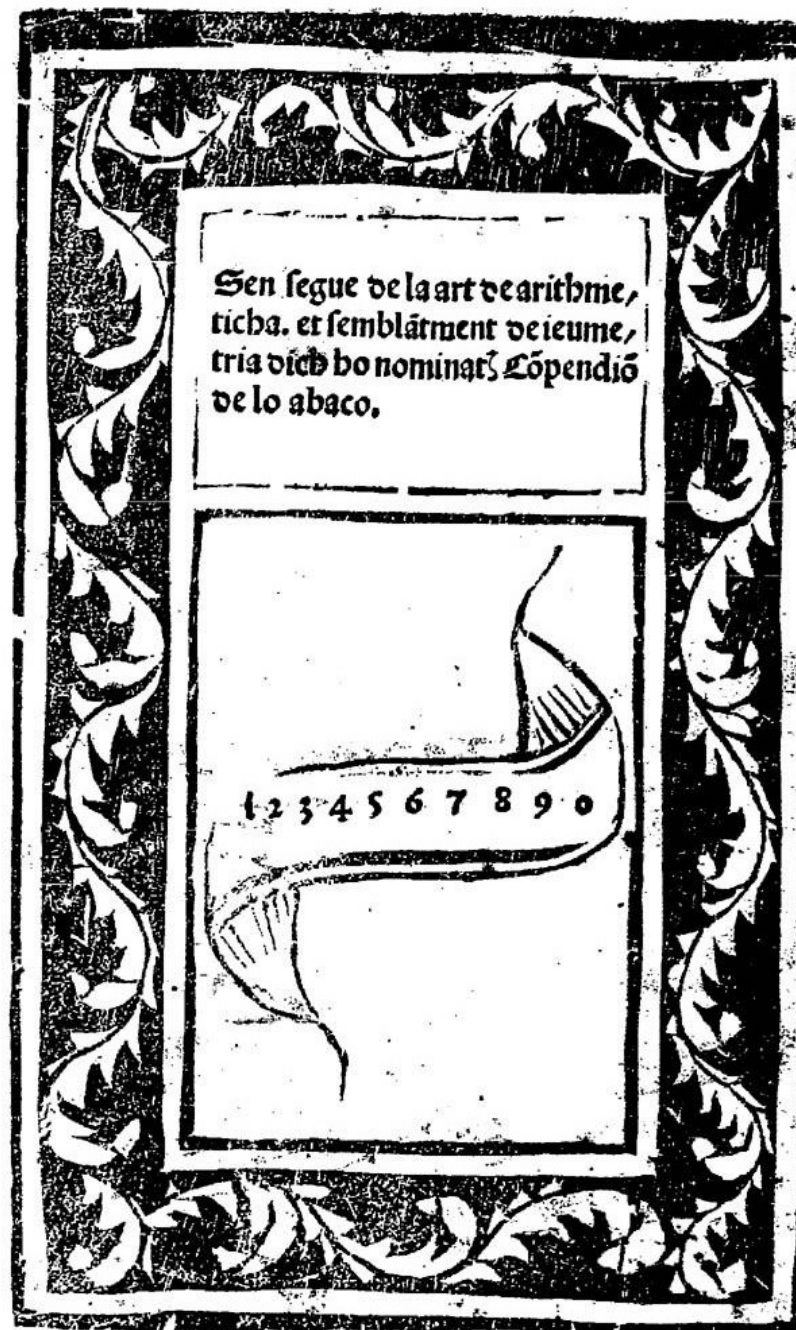
Montpellier 1967 [text only]

S: Sesiano, Jacques: Ries-Kolloquium 2023

Sesiano, Jacques: Une arithmétique médiévale en langed provençale.

In: Centaurus 27 (1984) 26–75

[refers to a manuscript, mentions books]



Occitan

Francés Pellos

Compendion de lo abaco

Torino: Benedetti, Suigus 1492

Transcription of the title page
and of the colophon

Complida es la opera. ordenada. he condida
Per noble Frances pellos. Citadin es de Nisa
La qual opera. ha fach. primo ad laudē del criator
Et ad laudour. de la ciutat sobredicha
La qual es cap: de terra noua en puenta
Contat es renommat. per la terra vniuerssa.

*S ensegue de la art de arithme-
tica, et semblantment de ieume-
tria dich bon ominatz [or: bo[n] nominatz]
Compendion de lo abaco*

*Complida es la opera, ordenada, he condida
Per noble Frances pellos, Citadin es de Nisa
La qual opera, ha fach, primo ad laudem del criator
Et ad l audour, de la ciutat sobredicha
La qual es cap: de terra noua en prouensa
Contat es renommat, per la terra vniuerssa.*

**Impresso in Thaurino lo present cōpendiō de abaco per mei-
stro Nicolo benedeti he meistro Jacobino suigo de sancto ger-
mano. Nel anno .1 4 9 2. ad Di. 2 8. de septembrio.**

*Impresso in Thaurino lo present compendion de abaco per mei-
stro Nicolo benedeti he meistro Iacobino suigo de sancto ger-
mano. Nel anno .1492. ad Di .28. de septembrio.*

Occitan

Francés Pellos

Compendion de lo abaco

Torino: Benedetti, Suigus 1492

Translation of the title page
and of the colophon

*It follows –
on the art of arithmetic
and similarly on [the art of] geometry –
the present “Compendium on the abacus”
provided with good wishes
[cf. Latin: bonis ominibus prosecutum]
[alternative: the present approved “C.”]*

*The work was finished, composed and arranged
by the noble Francés Pellos, he is citizen of Nice.
He has made this work first to the glory of the creator
and to the reputation of the city mentioned above.
It is the capital of the new land in Provence.
It is cited and praised in the entire world.*

*The present compendium on the abacus
[was] printed in Torino
by master Nicolò Benedetti and
master Jacobinus Suigus from Saint Germain
in the year 1492 on the 28th day of September*

Occitan

Francés Pellos

Compendion de lo abaco

Torino: Benedetti, Suigus 1492

Content overview

Tabula dels capitols ptingut en lo pñt libre.	
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Lo quart de multiplicar nūmers entiers en	8
Lo quint de partir nūmers entiers en	10
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Sostrayre en rot. en	24
Multiplicar en rot. en	27
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Lo xvij. dels exēples de la art de leuimetria en	72

- 1 Numeration (*nummar*)
- 2 Addition (*aiustar*) of integers (*nummers entiers*)
- 3 Subtraction (*sostrayre*) of integers
- 4 Multiplication of integers
- 5 Division (*partir*) of integers
- 6 Arithmetic, geometric progressions (*progressions*)
- 7 Extraction of the square root (*trayre la rays quadrata*)
- 8 Extraction of the cube root
- 9 Calculation checks (check by seven)
- 10 Fractions (*rot*)
- 11 Regula de tri (*regula de tres*); regula quinque (interest; time *temps*); regula de tri inversa (weight *pes*; loaf of penny *pan de un patac*)
- 12 Regula societatis (*compagnias*)
- 13 Barters (*baratas*)
- 14 Interest, discount (*merit e discōtar*)
- 15 Precious metal content (*sout de fin*) of gold, silver in alloys (*aligansas*)
- 16 Regula falsi simplicis positionis (*una falsa posicion*)
- 17 Regula falsi duplicis pos. (*doas falsas posiciones*)
- 18 Examples regarding geometry

Occitan – Supplement

Johan / Jouan Francès Fulconis

b. Isola (occ. Lieusola); inhabitant of Nice

*Opera Nova D'Arismethica
intitulada Cisterna Fulcronica*
Lyon: Thomas Bertheau 1562

[written around 1555 (Sesiano 2023)]

320 p.

C: Hooek I/F17

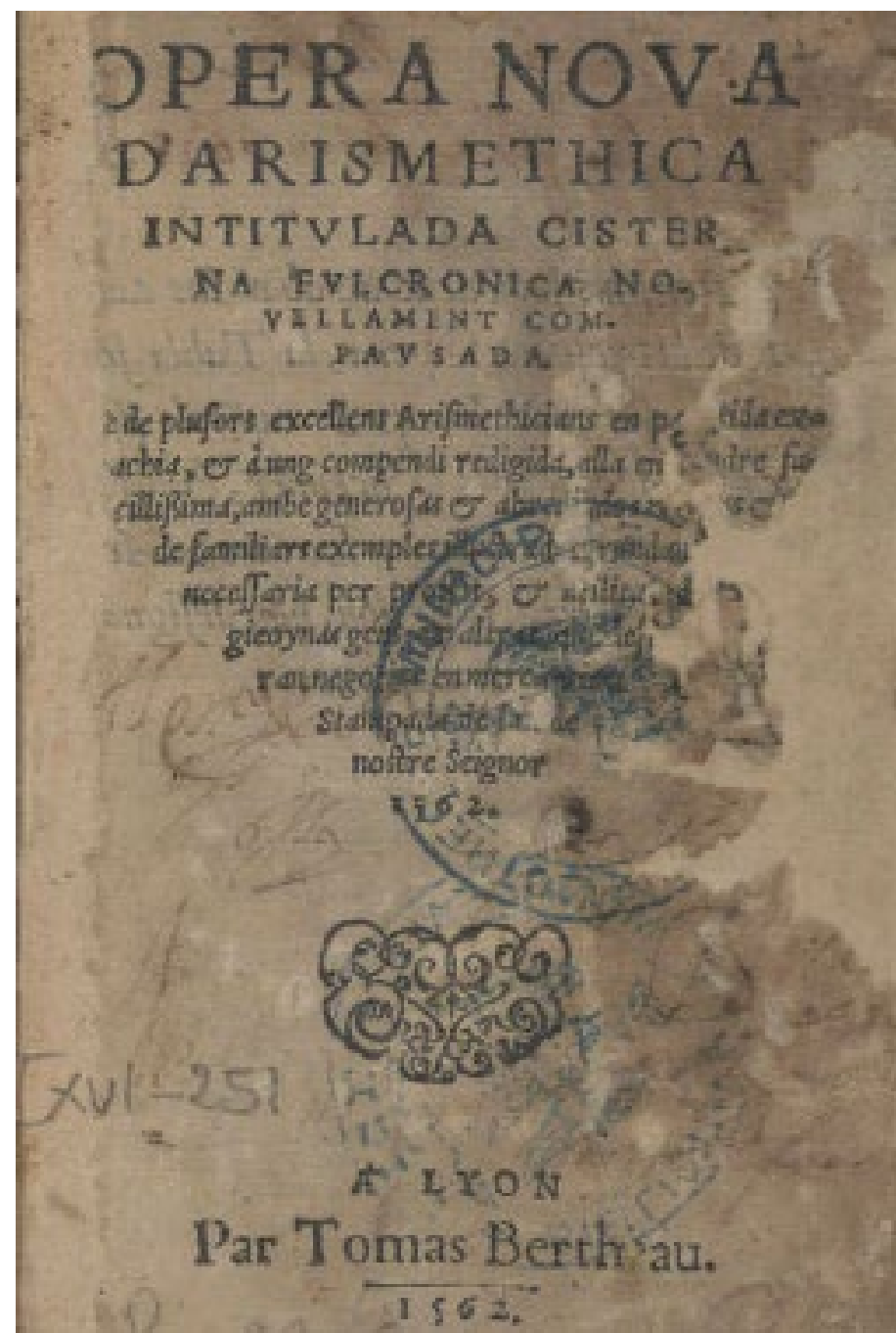
L: Nice B Municipale, bmvr.nice.fr;
Paris BNF (Rés. p.V. 367)

E: Rocca, Roger. Nizza 1996

S: Sesiano, Jacques: Ries-Kolloquium 2023

Pellos and Fulconis use the local variety of Nice, the Niçois, Nissart or Niçard.

It belongs to the Provençal group which in turn belongs to the Occitan group (erroneously distinguished by Hooek).



French 1

Anonym

L'art et science d'arithmétique

Paris: Michel Thoulouze

latest 1496

Toulouse active: 1492–1505

(cnp02243351 CERL Thesaurus)

ENSBA: <= 1496 [d'après l'adresse (Coq)]

112 p.

C/V: UCatInc 0267250N;

ISTC ia01140600;

Coq, Dominique: Catalogues régionaux,
Vol. XVIII. 2012, p. 45

D: –

L: Paris École nationale supérieure des
beaux arts ENSBA (Cote: Masson 0603)

bibliotheque@beauxartsparis.fr

ensba.fr/aloes/opacwebaloes

Cat'zArts-Livres

S: Holl, Alfred: Ries-Kolloquium 2023

Est lart et sciēce
arithmetique par exē
ples & pratique. moult
subtile & profitable a tou
tes gens et facile a en
tendre par le gect subtil. Nouvel
lemēt translatee de latin en fran
cois et extraicte de plusieurs vo
lumes. La quelle moyenant un
chaque se pourra istruire & exerci
ter par soy mesmes.

Cy finist le tractie
d'art et science d'arithmetique p
exēples & pratique: facile a en
tendre p le gect subtil: trāslate de
latin en frācoys: cōtenent plusi
eurs effectz cōme il appart dess'
Nouvellemēt Imprime apis p
Michel thoulloze demourant
aumont saint hyaire
1496

French 1

Anonym

L'art et science d'arithmétique
Paris: Michel Thoulouze ≤ 1496

Transcription of the first page
and of the colophon



*C Est l art et science
d arithmetique par exem-
ples et pratique mout
vtile et profitable a tou-
tes gens et facile a en-
tendre par le gect subtil Nouuel-
lement translatee de latin en fran-
cois et extraicte de plusieurs Vo-
lumes La quelle moyenant vng
chascun se pourra instruire et exerci-
ter par soy mesmes*

*Cy finist le tractie
d art et science d arithmetique par
exemples et pratique: facile a en-
tendre par le gect subtil: translate de
latin en francoys: continent plusi-
eurs effectz comme il appart dessus
Nouvellement Imprime a paris par
Michiel thoulloze demourant
au mont saint hylaire*

French 1

Anonym

L'art et science d'arithmétique
Paris: Michel Thoulouze ≤ 1496

Translation of the first page
and of the colophon

S: [Waters, E G R only on French
arithmetic manuscripts]

*This is the art and science
of arithmetic with
examples and practice, very
useful and profitable for all
people and easy to
learn, with the subtle counter, recently
translated from Latin into French
and extracted from several volumes,
by means of which
everyone can teach himself and train
by himself*

*Here finishes the treatise
on the art and science of arithmetic with
examples and practice, easy to learn,
with the subtle counter, translated from
Latin into French, containing several
results as becomes apparent above,
recently printed in Paris by
Michel Toulouse dwelling
at Mont Saint Hilaire*

French 1

Anonym

L'art et science d'arithmétique Paris: Michel Thoulouze ≤ 1496

Content overview

(according to introduction and text)

tique selon les gectz. Et contiet ce present liure six liures particuliers au p̄mier est mōstre pour scauoir escrire & entendre lart et practiq̄ dez chiffres Et cy est cōte nu darithmetiq̄ selon six especes de nōbres entiers par gectz avec quatre figures de gectz bien notables pour ceulx qui ne scauent escrire. ¶ Au secōd est cōtenue et moustree arithmetique en nōbres etiers p̄ chiffres pour ceulx qui scauent escrire et ausi la figure du petit liure des marchās ¶ Au tiers est contenu de nōbre rōuptz et fractions par six especes. ¶ Au quart est contenu et

- 1 Digits (*chiffres*), six species (*espèces*) with counters (*gects*) for integers (*nombres entiers*): numeration, addition (*adiouster*), reductio a/desc., subtraction (*sustraction*), multiplication, division
- 2 Six species with the pen (*par chiffres*) for integers; multiplication table (*petit liure des marchans*)
- 3 Six species for fractions (*fractions, nombres rōuptz*): **contains mistakes for multiplication and division, continued until the 1599 edition**
- 4 Regula de tri (*règle de trois*) for integers and fractions, measures (long measures, capacity (wine), loaf of penny), weights
- 5 Regula societatis (*compagnies sans temps*), regula societatis temporum (*à temps*); companies with subcontractors (*de facteurs*)
Rule of bartering (*règle de changes pour éviter fraud, baratte*)
- 6 Further rules
 - 1 Collects and tallage (*talhes*): company
 - 2 Three mills (*troys moulins*): shared work
 - 3 Shepherd (*bergier*): company, pasture lease
 - 4 Vessel (*vaisseau*) with three fountains: shared work
 - 5 To throw Sarracens in the sea (*pour les mettre dedans la mer*)
 - 6 Testament, son daughter twins: twin inheritance
 - 7 Building: place (*lieu*), 8 wall (*murs*), 9 covering (*couverture*)
 - 10 Gatekeepers in the apple garden (*iardin*): nesting
 - 11 Motion in the same direction (*le larron qui s'enfuit*): pursuit
 - 12 Three saints (*troys saintz*): nesting
 - 13 Three women, apples for the market (*troys fammes*): equal proceeds
 - 14 Batch of three metals (*tasse de troys methalz*): alloy

French 1

Anonym

L'art et science d'arithmétique Paris: Michel Thoulouze ≤ 1496

Content overview

(according to introduction and text)

ces. ¶ Au quart est contenu et
monstree la notable regle de trois
par plusieurs regles & questions
tant en faict de mesures longues
et rondes cōme en faict de poys.
¶ Au cinquiesme sont cōtenues
et monstrees plusieurs regles de
compainies / de marchans / et de
facteurs / sans commentions / &
avec commētions pour gaigner
en semble / et aussi la regle de ba
rattes & chāges de marchandise.
¶ Au siepiesme sont contenues
et monstrees plusieurs regles en
maniere de questions grādemēt
delectables & prouffitables pour
auoir plus grande notice de ceste
notable science darithmetique.

- 15 Bell (*cloche*): alloy
- 16 Motion in the same direction with margin and constant distances per day (*un prêtre va de Paris à Rome*): pursuit
- 17 Gold coins to silver coins (*changer or en argent*): reg. equalitatis
- 18 Cloth of divers colours (*drap de diverses couleurs*): find length
- 19 Spices (*spiceries*): regula equalitatis
- 20 Egg woman and broken eggs (*oeufz*): remainder
- 21 Money forgotten with a changer (*oublie au changeur*): nesting
- 22 Age (*temps*): find the age, sum of fractions
- 23 Divide a distribution (*une distribution en une eglise*): company
- 24 Spear in the water (*lance dans l eaue*): find length
- 25 Motion in opposite directions (*lung contre lautre*): encounter
- 26 Cat on a tree (*la chat et larbre*): motion to and fro
- 27 Ship with two sails (*la navire qui a deux voiles*): shared work
- 28 Scholars and hoste (*les escoliers et leur hoste*): equal add. partition
- 29 The pilgrims' (*pellerins*) drink (*boyre*) bill: regula caecis
- 30 The chanter's rent (*chantre et rente*): regula caecis
- 31 Guess the number of pieces of silver in a purse (*pieces d argent*)
- 32 Guess a number (*diuiner un nombre*): number guessing
- 33 Three men find a purse (*une bourse*): the found purse
- 34 Guess the number of pieces of silver in your fellow's right hand

A later edition (*L'art et science*, Trepperel 1512/19) widely coincides with the 1st part (pen) until [4.3] of the earliest English arithmetic books (1526; 1537, 1539).

French 1, Part 3 (pdf 22–29)

blables: Il ne fault que multiplier vng nōbrant pour lautre
Exēple si tu veulx multiplier $\frac{2}{3}$ par $\frac{2}{3}$ tu auras $1\frac{2}{3}$ car 2 fois 2 sont 4: et si les denoia

tiplier 2 par 2 Il te fault multiplier vng nōbrant pour lautre en disant 2 fois 2 sont 4. et l'ung denoiateur pour lautre: en disant 3 fois 4 sont 12

me yci 2 entiers pour 2 Il te fault reduire les 2 tiers en $\frac{2}{3}$ en disant 3 fois 2 sont 6: cest ascavoir $\frac{6}{3}$ et puy multiplier l'ung nōbrant pour lautre en disant 3 fois 6 sont 18: et sont $1\frac{2}{3}$ Et aisi faictes des autres

Six species for fractions (*fractions, nombres rouptz, minuces*) (cf. Latin 2)

Terminology

numerator (*nombrant*)

denominator (*dénominateur, dénominateur*)

fraction bar (*virgule*)

common denominator (*dénominateur commun, dénomination commune*)

expand to common divisor (*réduire*)

Cases of multiplication (pdf 26):

1 Denominators equal: multiply numerators

$$\frac{6}{3} \cdot \frac{2}{3} = \frac{12}{3}$$

2 Denominators different: multiply numerators and denominators

3 Integer by fraction: find common denominator, multiply numerators

$$2 \cdot \frac{3}{3} = \frac{6}{3} \cdot \frac{3}{3} = \frac{18}{3}$$

French 1, Part 3 (pdf 22–29)

Exemple diuise $\frac{6}{3}$ par $\frac{2}{3}$ lieue
2 de 6: et en vien $\frac{3}{3}$ pour chascū
tiers mais si les minuces (fra

1

tiers mais si les minuces (fra
ctions sont de diuerses denoia
teur 6. Exemple diuise $\frac{6}{4}$ par $\frac{2}{3}$
Il te fault p̄mieremēt reduire
les deux nōbres en vne denoia
tion cōme est dit dessus en la se
conde spece: cest a scauoir en mt

2 sont $\frac{9}{12}$ diuise maitenāt vng
nōbrāt par lautre cest a scauoir
18 par 8 et auras $\frac{2}{12}$ pour chaf
cun tiers et demourēt $\frac{2}{12}$ adiui
ser par 8. Et sil ya aucun enti

2

ser par 8. Et sil ya aucun enti
er il le fault reduire en minu
ces. Exemple si tu veulx diui
13 sont $\frac{39}{12}$. Et p̄ys diuise 8
par 39 et auras 1 pour ce chacū
 $\frac{2}{4}$ aura $\frac{1}{12}$: et demourēt $\frac{29}{39}$ Et

3

Fractions – Cases of division (pdf 26):

1 Denominators equal: divide numerators

$$\frac{6}{3} : \frac{2}{3} = \frac{3}{3} \quad \left[\frac{4}{3} (1551, 1556) \right]$$

lève 2 de 6 et en vient 3, pour chacun tiers

[for each third, for every fraction in thirds]

2 Denominators different: find common denominator,
divide numerators

(explicit reference to the second species, the subtraction)

$$\frac{6}{4} : \frac{2}{3} = \frac{18}{12} : \frac{8}{12} = \frac{18-8}{12} = \frac{2}{12} + \frac{2}{12}$$

auras 2/12, pour chacun tiers [?], et demourent [demeurent]

2/12 a diviser par 8

3 Two mixed fractions: transform to common fractions,
find common denominator, divide numerators

$$5\frac{2}{3} : 3\frac{1}{4} = \frac{68}{12} : \frac{39}{12} = \frac{1}{12} + \frac{29}{39}$$

et auras 1, pour<ce> chacun 3/4 (3 quarts) [each in twelfths],

aura(s) 1/12 (une douzaine) et demourent [demeurent] 29/39

French 1

Anonym

L'art et science d'arithmétique

Paris: Michel Thoulouze \leq 1496

Influence of the book

→ Later French arithmetic books

(1501, 1512/19, ca. 1535, ca. 1545, 1548, 1585, 1551 = 1556 = 1566 = 1599)

→ Earliest English arithmetic book

(1526)

→ Later English arithmetic books – 1st part
(1537, 1539)

→ Earliest Dutch arithmetic books

(1508, ca. 1510, 1529 [French])

→ Later English arithmetic books – 2nd part
(1537, 1539)

French 1

Anonym

L'art et science. Paris ≤ 1496

Later editions until 1545

Liure de Chiffres et de getz nouvellement imprime

(L art d arimetisque tant de nombres entiers que de rouptz et fractions avec plusieurs reigles et questions)

Lyon: Pierre Mareschal,
Barnabe Chaussard 1501-02-27

127 p.

C: Hooock missing

D: digitale-sammlungen.de

L: München BSB, München LMU,
Augsburg SSB (Math 531)

L'art et science de arismetique:

*moult vtille et proffitable a toutes gens et facile a entendre
par la plume et par le gect subtil
pour ceulx qui ne scauent lyre ne escripre
nouvellement imprime a Paris*

Paris: veuve feu [deceased] Jean Trepperel, Jean Jehannot [Janot] 1512/19
192 p.

L: New York Columbia U Plimpton L
(OCLC 2927 5736)

La vraye manière (colophon: art et science)

Lyon: Claude Veycellier ca. 1535

168 p.

C: Hooock I/–20.5

D: Google books

L: London BL

Art et science de arismetique

*moult vtille et proffitable a toutes gens et facile a entendre
par la plume et par le gect subtil
pour ceulx qui ne scauent lyre ne escripre
nouvellement imprime a Paris*

Paris: Pierre Sergent ca. 1545

168 p.

C: Hooock I/–6

L: Paris BNF (Rés. p.V. 337) [key word *arismetique* (sic!)]

French 1

Anonym

L'art et science. Paris ≤ 1496

Selected editions after 1546

L'arithmétique et manière de apprendre à chiffrer et compter par la plume et par les gectz en nombre entier et rompu

Lyon: Thibault Payen 1548

C: Hooock I/–5.1

D: –

L'arithmétique et manière [...]

Paris: Jehan Ruelle (rue Saint Jacques, à l'enseigne de la queue de regnard) 1551

D: Google books, München BSB

L: München BSB

L'arithmétique et manière [...]

Paris: Jean Ruelle 1556

C: Hooock I/–5.2

D: Kraków Jagiellonian Digital L

Anthoine Cathalan (maistre Anthoine Catalan és Artz et Mathématiques professeur):

L'arithmétique et manière [...]

Lyon: Thibault Payan 1566 [also 1561]

C: Hooock I/–5.3

D: hist-math.fr

L'arithmétique et manière [...]

Paris: Pierre Ménier 1585

C: Hooock I/–5.4

D: –

Anthoine Cathalan:

L'arithmétique et manière [...]

Lyon (en rue mercière, à l'enseigne de la sphère) 1599

D: Google books

L: Praha Národní knihovna

French 2

Anonym

Arismétique corrigée et imprimée

Paris: Guillaume Nyverd

ca. 1512/15

127 p.

C: Hooek I/-3.1

D/L: Cambridge Harvard U Houghton L

(FC5 A100 515a; OCLC 7914 4721)



Et vo⁹ suffise quāt a pnt de lart da;
rithmetiq̄ tāt desnōbres ētiers q̄ rouptz
avec plu^s questids tāt p les getz q̄ p
la plume cōe pouez veoir cy deuāt. Im
prime a paris p Guillaume nyverd de
mourāt en la rue d la iuyfrie a la Rose
ou au Palais a la premiere porte.

French 2

Anonym

Arismétique corrigée et imprimée

Paris: Guillaume Nyverd

ca. 1512/15

Transcription of the first page
and of the colophon

*ARismetique Corrige &
Imprime a Paris.*

*Et vous suffise quant a point de l art d a-
rithmetique tant des nombres entiers que rouptz
avec plusieurs questions tant par les getz que par
la plume comme pouez veoir cy deuant. Im-
prime a paris par Guillaume nyuerd de-
mourant en la rue de la iuyfcie [Justice] a la Rose
ou au Palays [de Justice] a la premiere porte.*

French 2

Anonym

Arismétique corrigée et imprimée

Paris: Guillaume Nyverd

ca. 1512/15

Translation of the first page
and of the colophon

*Arithmetic corrected and
printed in Paris.*

*That should be sufficient for you
with regard to the art of arithmetic
both for integers and for fractions,
with several questions,
both with the counters and with the pen
as you can see above.*

*Printed in Paris by Guillaume Nyverd
dwelling in the Street of Justice at the rose
or at the Palace [of Justice] at the first gate.*

French 2

Anonym

Arismétique corrigée et imprimée

Paris: Guillaume Nyverd

ca. 1512/15

Content overview

(according to headlines and text)

Calculations with the counters (pdf 6)

Species with the counters: 1 numeration, 2 addition, 3 subtraction (*sustraction*), 4 multiplication, 5 division (*partir*)

Regula de tri, quantity-price relations (*raisons communes*) (pdf 13)

Calculations with the pen (pdf 17)

Multiplication table

Species with the pen: 1 numeration, 2 addition, 3 subtraction, 4 halving (*mediation*), 5 duplication (*duplation*), 6 multiplication, 7 division, 8 progression, 9 square and cube root extraction (*extraire la racine*)

Fractions (*nombre raupt*) (pdf 32): identify common denominator (*réduire*), addition (*aiouster*), subtraction, multiplication, division (*partir*)

Regula de tri (pdf 40)

Currency exchange (pdf 42)

Application of the regula de tri to textiles (*mesure de drapperie*) (pdf 44)

French 2

Anonym

Arismétique corrigée et imprimée

Paris: Guillaume Nyverd

ca. 1512/15

Content overview

(according to headlines and text)

Application of reg. de tri to weights (*poids*) (pdf 51)

Regula societatis simplex (*compagnies sans temps*),
reg. soc. temporum (*compagnies à temps*) (pdf 55)

Factors (*facteurs*) (pdf 60)

Batch (*mescle, tasse*) of three metals: alloy (pdf 61)

Broken bell (*cloche rompue*): alloy (pdf 62)

Three mills (*troys moulins*): shared work (pdf 62)

Company with unknown investments (pdf 63)

Profit, testament: company (sum of the parts > 1)
(pdf 63);

Horse (*cheval*) purchase: company (sum of the parts < 1)
(pdf 65)

Testament, son daughter twins: twin inheritance
(pdf 65)

Textiles (*draps*), profit (*gagner*): problems with several
unknowns (pdf 65)

Five men find a purse (*bourse*) (pdf 66)

Purchase and sale of pears (*poirs*): too much – too little
(pdf 67)

French 3

Juan de Ortega (author)

Biographic data see Spanish 2

Claude Platin (translator)

Active ca. 1515 – ca. 1540

Friar of the Order of Saint Antoine

Adaptor, translator:

Le débat de l'homme et de l'argent (1529)

Histoire de Giglan (1530) [Wigalois]

*Oeuvre très subtile et profitable
de l'art et science de
arismetique et géometrie*

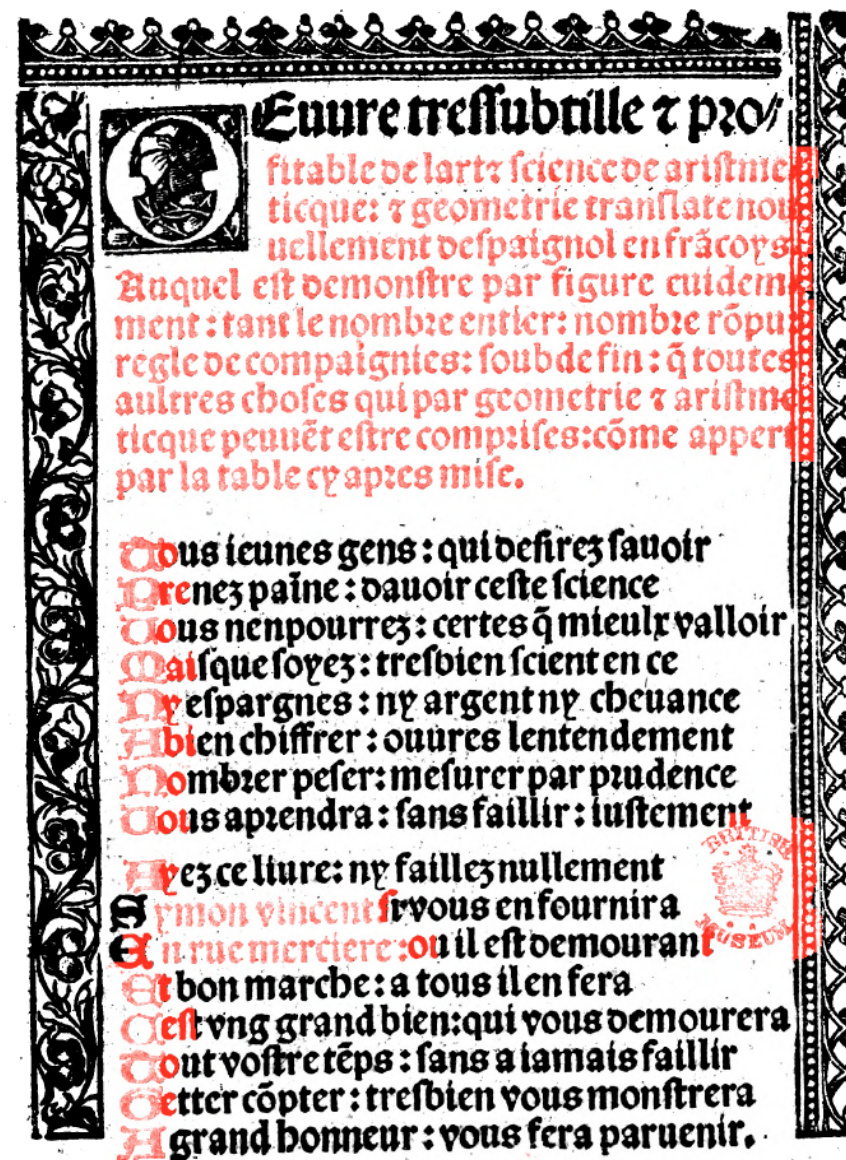
Lyon: Étienne Baland (for
Simon Vincent) 1515-10-23

French adaptation of Spanish 2

Arte de la arismetica, Lyon 1512

332 p.

C: Hooek I/O6.3



Avec preuilege
la page suyuante

Royal en
descript,

French 3

Juan de Ortega, Claude Platin

*Oeuvre très subtile et profitable
de l'art et science de
arismetique et géometrie*
Lyon: Étienne Baland 1515

Transcription of the title page
with the advertisement of the
book-seller

D: London Brit Museum, Google

L: Paris BNF (Rés. p.V. 369;

OCLC 10645 24428)

S: see Spanish 2

*Oeuure tres subtile & pro-
fitable de l art & science de aristme-
ticque: & geometrie translate nou-
uellemnt d espagnol en francoys.*

*Auquel est demonstre par figure euidem-
ment: tant le nombre entier: nombre rompu:
regle de compaignies: soub de fin: que toutes
aultres choses qui par geometrie & aristme-
ticque peuuent estre comprises: comme appert
par la table cy apres mise.*

*Vous ieunes gens: qui desirez sauoir
Prenez paine: d auoir ceste science
Vous n en pourrez: certes que mieulx valloir
Mais que soyez: tres bien scient en ce
Ny espargnes: ny argent ny cheuance
A bien chiffrer: ouures l entendement
Nombrer peser: mesurer par prudence
Vous aprendra: sans faillir: iustement
Ayez ce liure: ny faillez nullement
Symon Vincent: vous en fournira
En rue merciere: ou il est demourant
Et bon marche: a tous il en fera
C est vng grand bien: qui vous demourera
Tout votre temps: sans a iamais faillir
Getter compter: tres bien vous monstrera
A grand honneur: vous fera paruenir.*

*Auec preuilege Royal en
la page suyuate descript.*

French 3

Juan de Ortega, Claude Platin

*Oeuvre très subtile et profitable
de l'art et science de
arismetique et géometrie*
Lyon: Étienne Baland 1515

Translation of the title page
with a part of the advertisement

*Very subtle and profitable book
on the art and science of arithmetic and geometry
recently translated from Spanish into French.
In this book, it is explained – with digits, of course –
the integer, fraction, rule of companies,
precious metal content
as well as all the other things which can be formulated
and solved with geometry and arithmetic
as results from the table (placed here) below.*

*[...] Simon Vincent: he will deliver it [the book]
in Rue Mercière, where he dwells [...]*

*With royal privilege
described on the following page.*

French 3

Juan de Ortega, Claude Platin

*Oeuvre très subtile et profitable
de l'art et science de
arismeticque et géometrie*
Lyon: Étienne Baland 1515

Transcription and translation
of parts of the prologs
with the names of the translator
and the author

Vienne (Southern France, Département
Isère)

Prologue du translateur

**table de tāt ce doibt il plus cōmunicquer Parquoy moy frere glaude
Platin bñble religieux de lordre de saint Anthoine en vienoys pour**

[...] moy frer glaude

Platin humble religieux de l'ordre de saint Anthoine en viennoys [...]

[...] me, friar Claude

Platin, humble cleric of the Order of Saint Antoine en Viennois [...]

Prologue de l'acteur

**¶ S'ensuit le prologue de frere Jehan de l'ortie de lordre de
saint dominique acteur de ce liure.**

*S'ensuit le prologue de frere Jehan de l'ortie de l'ordre de
saint Dominique acteur de ce liure.*

*It follows the prolog of friar Juan de Ortega of the Order of
Saint Dominic, author of this book.*

French 3

Juan de Ortega, Claude Platin

*Oeuvre très subtile et profitable
de l'art et science de
arismetique et géometrie*
Lyon: Étienne Baland 1515

Transcription and translation
of the colophon

¶ Si fine le liure tressubtil & subtil. de lart darismetique: & geometrie translate nouvellemēt de spaingnol en frācoys. Imprime a lyon par maistre Estienne baland. Lan mil. cinq cens & quinze. Le .xxij. iour de Octobre.

Si fine le liure tres subtil & subtil de l art d arismetique: & geometrie translate nouvellement d espaignol en francoys. Imprime a lyon par maistre Estienne baland. L an mil cinq cens & quinze. Le .xxij. iour de Octobre.

*Here ends the very subtle and subtle book of the art of arithmetic and geometry, recently translated from Spanish into French,
Printed in Lyon by master Étienne Baland
in the year 1515 on the 23rd day of October.*

French 3

Juan de Ortega, Claude Platin

*Oeuvre très subtile et profitable
de l'art et science de
arismetique et géometrie*
Lyon: Étienne Baland 1515

Content overview

(according to the table of contents)

**Le sixiesme chapitre qui traicte de plusieurs regles de compaignie sans temps
et avecques temps qui contient plusieurs beaux exemples.** fo. lxxij.
**Le septiesme chapitre qui faict mention des testamens qui aussi contiennent
plusieurs exemples.** fo. xdx.
**Le huitiesme chapitre qui traicte du faict de troques et change de mar
chandise qui contient plusieurs exemples.** fo. cxj.
**Le neuuesiesme chapitre qui decadre pour fauoir cognoistre la loy de
loz et de larger: et aussi de liurer billon a la monnoye.** fo. cxv.
**Le dixiesme chapitre qui traicte des voyages qui se font en marchan
dise tant par terre que par mer.** fo. cxv.
**Le onzieme chapitre traicte des raisons qui se font par la regle de vne
faulxe position.** fo. cxvij.
**Le douzieme chapitre traicte de la regle de deux faulxes positions qui
contient plusieurs beaux exemples.** fo. cxij.
**Le treziesme chapitre faict mention des quantites et proportions des
nombres avecques les figures.** fo. cxij.
**Le quatorzieme chapitre decadre: de aucuns chapitres touchant l'art
geometrie.** folio. clxij.

La table.

Censuit la table de ce present liure intitule le liure de arismetique
qui contient quatorze chapitres ainsi q lon pourra veoir cy apres.

D e premier chapitre fait mentio des nombres entiers en font contenus. 7. espesses	folio .j.
D e la premiere espesse du nombre entier qui traicte de nu meration.	folio .j.
D e la seconde espesse qui est de addition.	folio. iij.
D e la tierce espesse qui est de subtraction.	folio. vj.
D e la quarte qui fait mention de multiplication.	folio. x.
D e la quinte espesse qui est diuision.	folio. xvj.
D e la sixiesme qui est dicte progressio.	fo. xvij.
D e la septiesme espesse qui est de l'extraction des radnes quarrees et cubes	folio. xxiij.
Les preuues des espesses dessusdictes.	folio. xxvij.
Le second chapitre fait mention des nombres rontz. Et premieremēt de rednyre.	folio. xxxij.
De adiouster en nobres rontz.	folio. xxxv.
De soustraire en nombres rontz.	folio. xxxij.
De multiplier en nombres rontz	folio. xliij.
De partir en nombres rontz	folio. xliij.
Le tiers chapitre qui demōstre cōment lon doibt appliquer nombres entiers et rontz par regles extraordinares.	folio. xlvj.
Adiouster par regle extraordinaire.	folio. xlvj.
Substraire par regle extraordinaire	folio. l.
Multiplier par regle extraordinaire.	folio. l.
Partir par regle extraordinaire.	folio. liij.
Des nombres qui tiennent regle de ceulx qui ne tiennent point de re gle.	folio. liij.
Le quatriesme chapitre qui fait mention de la regle de troys par nom bre entier qui cōtient plusieurs exemples.	folio. liij.
De la regle de troys par nombres rontz qui aussi contient plusieurs exemples.	fol. lv.
De la regle de troys cōpose en nombres entiers qui contiēt plusieurs exemples.	folio. lvj.
De la regle de troys composee en nombres rontz qui ptiēt plusieurs exemples.	folio. lvij.
Autre regle de emprunter en gaing et interest.	folio. lxxj.
Le cinquesme chapitre q traicte des regles qrees.	folio. lxxv.

French 3

Juan de Ortega, Claude Platin

*Oeuvre très subtile et profitable
de l'art et science de
arismetique et géometrie*
Lyon: Étienne Baland 1515

Content overview

(according to the table of contents)

- 1 Six species for integers (*nombres entiers*) : numeration, addition, subtraction, multiplication, division, progression, extraction of square and cube roots (*racine*), checks (*preuve*)
- 2 Four species for fractions (*nombres routz*): addition (*adiouster*), subtraction, multiplication, division (*partir*)
- 3 Difficult arithmetic operations (*regle extraordinaire*); numbers with integer factors (*qui tiennent regle*)
- 4 Regula de tri and regula de tri composita for integers and fractions; lending and gaining (*emprunter*) with interest
- 5 Capacity, weight and price (*regles quarries*)
- 6 Regula societatis simplex and temporum (*regles de compaignie sans temps et avecques temps*)
- 7 Testaments: twin testament, unknown inheritance etc.
- 8 Barters (*troques, change de merchandise*)
- 9 Gold and silver (*loy de l or et de l argent*); *billon*: ‘silver copper alloy with less than a half of silver’, ‘Scheidemünze’ [German: the legal / nominal value is bigger than the intrinsic / metal value])
- 10 Business trips (*voyages en marchandise*): nesting
- 11 Regula falsi simplicis positionis (*vne faulse position*)
- 12 Regula falsi duplicis positionis (*deulx faulses positions*)
- 13 Quantities and proportions
- 14 Geometry

French – Supplement

Later than 1515

La manière pour apprendre a cyfrer

Antwerpen: Martin Lempereur (De Keyser)
(for Guillaume (Willem) Vorsterman) 1529

Col.: Imprime an Anuers par moy Martin
Lempereur/ pour Guillaume Vorsterman
L an M.ccccc.et.xxix

[French adaptation of the 2nd edition of the
Dutch *Die Maniere*, Antwerpen ca. 1510]
ca. 105 p.

C: Hooek I/–20.4

L: Paris BNF (Rés. p.V. 338, defective),
Cambridge Harvard U Houghton L
(FC5 A100 529m)

[different edition according to Williams
2012, see English]

Estienne de La Roche (Villefranche)

L'arismétique nouvellement composée ... divisée en deux parties

Lyon: Guillaume Huyon, Constantin Fradin 1520-06-02

(based upon the unpublished manuscript

La triparty by Nicolas Chuquet, Lyon 1484, Paris BNF (Fr. 1346),
ed. Marre, Aristide. *Bullettino di bibliografia e di storia delle scienze
matematiche e fisiche* [Roma] 13 (1880) 555–659, 693–814)
460 p.

C: Hooek I/L5.1

L: Paris BNF (Rés. V. 899)

S: Ulff-Møller, Jens: *Ries-Kolloquium* 2017
Karpinski, Louis Charles: *History of Arithmetic* 1925

Romansh (Sursilvan)

Christian Jodocus Steinhauser

1786–1863

Officer from Sagogn (Graubünden) near
Ilanz on the Anterior Rhine

(Societad Retorumantscha, Annalas 1974)

*Fundamentala instructiun
en la Aridmetica*

Chur: B. Otto 1808

218 p. in 2 vol.

D: Google

L: Chur Cantonal L

C/V: Sarton, George: Scientific Literature
in Romansh. In: Osiris 9 (1950) 602–623
(www.jstor.org/stable/301861)

Fundamentala
I n s t r u c t i u n
en la
A r i d m e t i c a .

Dau alla glisch puplica
per
I t e l e C o m o d i t a d
della Guiventeigna Grischuna.

Dedicau de
C. J. Steinhauser,
Amatur della Aritmetica, de Sagoign.

Empremà Part.



Squitschau à Cuera gl'onn 1808. tras B. Otto

Romansh

Christian Jodocus Steinhauser

*Fundamentala instructiun
en la Aridmetica*

Chur: B. Otto 1808

Transcription of the title page

*Fundamentala
Instructiun
en la
Aridmetica.*

*Dau alla glisch puplica
per
Itel [cf. etel] e Comoditad
della Giuventeigna Grischuna.*

*Dedicau de
C. J. Steinhauser,
Amatur della Aritmetica, de Sagoign.*

Emprema Part.

Squitschau à Cuera gl'onn 1808, tras B. Otto

Romansh

Christian Jodocus Steinhauser

*Fundamentala instructiun
en la Aridmetica*

Chur: B. Otto 1808

Translation of the title page

Translated using Niev vocabulari sursilvan
online (vocabularysursilvan.ch)

*Fundamental
instruction
in
arithmetic*

*Handed to the light of the public
for
the advantage and convenience
of the Romansh youth*

*Dedicated by
C[hristian] J[odocus] Steinhauser,
amateur of arithmetic from Sagogn*

First part

Printed in Chur in the year 1808 by B. Otto

Romansh

C. J. Steinhauser *Aridmetica* 1808

Content overview 1

Empremma Parr.	
Empremma Entschatta Fundamentalà della Arithmetica	Pag.
Opservatiun	7
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Aditio	12
Subtractio	16
Multiplicatio	18
Divisio Engeneral	29
Pliccuorta via de divider cura ch'igl Divisor consista mo en inna Figura	29
Davart la veglia Usitada Maniera de Divisiun —	35
Davart la secunda Generala Maniera de Divisiun	39
Davart la nova abbreviada Maniera de Divisiun	52
La Proba sur las 4 Tractatiuns della Arithmetica, ad era sur la Numero	54
Davart ils Bruchs engeneral	57
Aditio en Bruchs	60
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Multiplicatio	71
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La Proba sur las Specias en Bruchs	76
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Resolvirung	78
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Reductiun descendenta ed ascendenta	83
Subtractiun	84
Multiplicatiun cun ils avantaigs d'abbreviatiun	86
Divisiun era cun ils avantaigs d'abbreviatiun	90

First fundamental start of arithmetic

Remarks to be observed

Numeration

Addition

Subtraction

Multiplication

Division in general

Shorter way to divide if the divisor consists of only one digit (*figura*)

Old usual way of division

Second general way of division

New abbreviated way of division

Check (*proba*) of the four species (*tractatiun*) [by inverse operation]

Fractions (*fractiun, rut, bruch*) in general

Addition of fractions

The algorithm or *reductio descendens* (*resolutiun*), *reductio ascendens* (*reductiun*) and the reduction (*reductiun*) of fractions

Subtraction of fractions

Multiplication of fractions

Division of fractions

The check of the species (*specia*) for fractions [by inverse operation]

Numerical values with different units or denominate numbers (*nummer numnao*)

Resolutio (to smaller units of currency, measure, weight, time)

Addition of denominate numbers

Reduction (*reductiun descendenta* and *reductiun ascendenta*)

Subtraction (of denominate numbers)

Multiplication (of denom. numbers) with the advantages of abbreviation

Division (of denom. numbers) with the advantages of abbreviation

Romansh

C. J. Steinhauser *Aridmetica* 1808

Content overview 2

Secunda Part.

	Pag.
Observatiun	94
Regula Detri	96
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Davart la ensemmen tschentada Regla Detri	112
Regula Quinque	112
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Appendix davart la Regla Multiplex	217
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Remarks to be observed

Regula de tri

Regula de tri for fractions

Check of the regula de tri

Regula de tri inversa

Compound (*ensemmen tschentada*) regula de tri [i.e. regula quinque]

Regula quinque

Regula quinque inversa

Regula societatis

Double regula societatis [including time]

Rule of the interest (*tscheins*)

Double rule of the interest or the rule of the compound interest

Discount (*interessurium, rabatt*)

Regula alligationis

Regula caecis or virginum; motion in opposite directions (encounter;
regula ambulationis)

Regula falsi

Rule of the hay (*fein*) in general

Big cubic fathom [= 27 *bratscha* (cubic cubits); ca. 8 m³; see p. 183–184]

Quarters [1/4 big cubic fathom; ca. 2 m³]

Small cubic fathom [= 21 *bratscha*; ca. 6.25 m³)

Decimal measure units for hay

Determining the third [dimension] measure (*masira/mesira*) of hay

Check of the calculations (*quen*) of hay

Short but profitable instruction on measuring and calculating (*quintar*) land

Appendix on multiple applications of the regula de tri

Rule of the hay

Romansh – Supplement

Later than Steinhauser 1808

Beat (Franz Josef) Ludescher

b. 1777 Feldkirch (Vorarlberg)

d. 1847 Disentis (Graubünden)

Priest (OSB) and teacher in Disentis

(Österreichisches Biographisches Lexikon)

Arithmetica u Cudisch de Quin

[Book of calculation (*quen*)]

Sankt Peter or Feldkirch:

Giosep Graff 1809

The following secondary literature is not reliable regarding arithmetic books:

Marti, Roland: Probleme europäischer Kleinsprachen. München 1990

Bonorand, Conradin: Die Entwicklung des reformierten Bildungswesens in Graubünden. Diss. Zürich, Thuisis 1949

ARITHMETICA U CUDISCH DE QUIN

*NUA CH' EI DENTER AUTERS
QUINS ED INSCHINS CÛRT E
CLAR VENG MUSSAU PRIN-
CIPALMEING IL INTER-
ESSANT*

QUIN DE PROPOR TIUN.

D E

BEAT LUDESCHER CAPITULAR
ELLA VENERAB. ED EXEMPTA CLAUSTRA
DE MUSTER U DISENTIS.

A S. PIEDER U FELDKIRCH,
STAMPAU DE GIOSEP GRAFF.
ILG ON 1809.

Ladin

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

Information: There is no arithmetic book in Ladin as, in Ladin schools, this subject is taught either in Italian or in German.

Reference: University Bolzano, Faculty of Education, Prof. Dr. Paul Videsott

Date: November 2020

Italian 1 (Venetian)

Anonym

'Treviso Arithmetic' –
Arte dell'abbaco

Treviso: [Gerardo de Lisa]
1478-12-10

124 p.

C/V: Hoock I/-27.1; UCatInc 2674

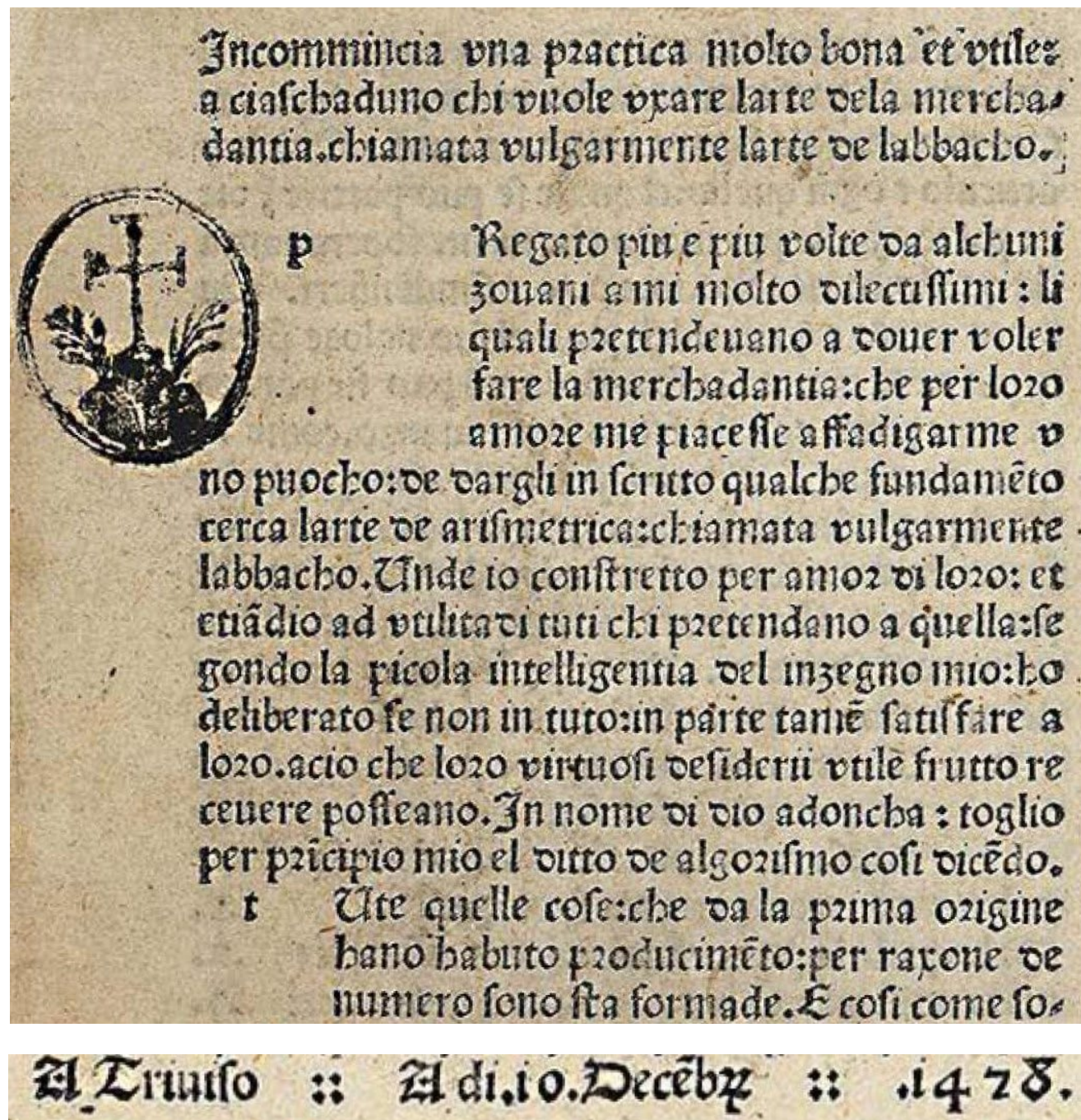
D: BEIC.it

L: Bologna U, Milano BN Braid

E: Boncompagni, Baldassare: *Intorno ad un trattato d'aritmetica stampato nel 1478*, Rom 1862/66, 741 p. (Göttingen SUB dig.)

S: Smith, David Eugene. In: *Isis* 6 (1924) 311–331 [with English translations]

Swetz, F J: *Capitalism and arithmetic*. Including the full text of the Treviso Arithmetic. Translated by D E Smith. La Salle, Ill.: Open Court 1987



Italian 1

Anonym

‘Treviso Arithmetic’ –
Arte dell’abbaco

Treviso: [Gerardo de Lisa] 1478

Transcription of the title
information (first page) and
of the colophon

*Incommincia vna practica molto bona et vtile:
a ciaschaduno chi vuole vxare l arte de la mercha-
dantia chiamata vulgarmente l arte de l abbacho.*

... [prefazione]

*In nome di dio adoncha: toglio
per principio mio el ditto de algorismo cosi dicendo.*

*Tutte quelle cose: che da la prima origine
hano habuto producimento: per raxone de
numero sono sta[te] formade.*

A Triuiso – A di .10. Decembris – .1478.

Italian 1

Anonym

‘Treviso Arithmetic’ –
Arte dell’abbaco

Treviso: [Gerardo de Lisa] 1478

Translation of the title
information (first page) and
of the colophon

*A very good and useful practical treatise begins:
for everyone who wants to use
the art of commercial arithmetic
commonly called the art of the abacus.*

... [preface]

*So in the name of god: As my principle,
I take the dictum on the algorism that runs like this:
All things that have been created
since the beginning of time
are coined by the rule of number.*

In Treviso in 1478 on the 10th day of December

Italian 1

Anonym

‘Treviso Arithmetic’ –
Arte dell’abbaco

Treviso: [Gerardo de Lisa] 1478

Content overview

(according to the text)

messengeria:

brokerage tax in the Republic of Venice
(messeto, misseto ‘mediator’)

[1] Five species (*atti*)
Numeration, addition (*iongere*) with
reduction for the Venetian currency
(1 lira = 20 soldi = 240 grossi),
subtraction (*cavare*),
multiplication (*moltiplicare*), division (*partire*)
detailed presentation of various methods
check by 9 or by inverse operation

[2] Regula de tri (*regula de le tre cose*)
fractions [introduced without species]
distinction between integers (*cose sane*) and fractions
(*cose rotte*)
detailed presentation of various methods using regula de tri

[3] Five other problem types (*cinque altre maniere*)
1 Loaf of penny: purchase and sales, regula de tri inversa
2 Discount tare and brokerage tax
(*battere tara e messengeria*)
3 Regula societatis (*raxone di compagnia*)
4 Barter (*raxone de barati*)
5 Regula alligationis for silver (*raxone de liga d arzenti*)

Italian 1

Anonym

‘Treviso Arithmetic’ –
Arte dell’abbaco

Treviso: [Gerardo de Lisa] 1478

Content overview
(according to the text)

Piero della Francesca *Trattato d’abaco* 1475
was not printed

E: Arrighi, G: *Trattato d’abaco* dal Codice
Ashburnhamiano 280 (359–291) della
Biblioteca Medicea Laurenziana di Firenze
(= Testimonianze di storia della scienza 6).
Pisa: Domus Galileana 1970

[4] Accomplishments (*alcune gentilezze*)

Motion in opposite directions: encounter

Hare and greyhound: pursuit

The found purse

Carpenters build a house (*regula dupla*): work and service

Golden number calendar [year 1478 mentioned]

Calculation of the new moon [December 1478 mentioned]

[5] List of conversion rules

Conversion of weights (*conversione de pesi*)

Price-weight relations in integers

Price-weight relations in fractions

Italian 2

Anonym

‘Venezia Arithmetic’ –
Algurisimo

[Venezia: Adamo di Rottweil
1476–1480] or [Reggio
d’Emilia: Ugo Rugerius 1478]

70 p. (500 copies printed)

C: Hooek missing; UCatInc 1280

D: BEIC.it

L: Genova U, Wien ÖNB

S: Karpinski, Louis Charles: An early
printed Italian arithmetical treatise.

In: Archeion 11 (1929) 331–335

Di apresso e in aci col nome di dio intēdo di tractare e scriuere alquāti mo
di e regole sopra larte del numero altrimēti chiamato algurisimo: e piu trac
tare de la agibra mochabile altrimēti chiamato regola de la cosa: e piu trac
tare alquāto di geometria altrimēti chiamato misura: e di tractare di ciascu
no altro modo e regola de molte altre ragione ordinarie z extraordinarie lequale posson
essere fructo a tutti coloro liquali uoleffono iparare p lo preiente libro hauēdo da se i pri
mamēte i primi quatro modi del numero iquali sono questi multiplicare agregare sotto
trahere e partire .
In primamente comincio z dico che la pria regola de larte del numero sie quādo ti fos
se domādato alchuna ragione ne laquale si pponesse tre cose che prima tu debbi uedere se
de le dette tre cose ne sono due simigliate cioe sieno duna medesima ragione essēdoui qste
due cose simigliante dico che la ragione si puo fare e per questo modo che tu debbi mul
tiplicare la cosa che domādada cū quella cosa che nō e simigliate e quello che risulta q̄llo
multiplicamēto debbi partire p la terza cosa e quello che ne uiene sara lo effecto di quello
che lera domādato e se la ragione ti fosse domandata ne laquale nō fosse due cose simigli
ante dico che la detta ragione nō si puo fare e q̄sto si uole dare p risposta achi domādasse.

Italian 2

Anonym

‘Venezia Arithmetic’ –
Algurisimo

[Venezia: Adamo di Rottweil
1476–1480] or [Reggio
d’Emilia: Ugo Rugerius 1478]

Transcription of the title
information (first paragraph)

*QVi appresso e inanci col nome di dio intendo di tractare e
scriuere alquanti mo-
di e regole sopra l arte del numero altrimenti chiamato
algurisimo: e piu trac-
tare de la agibra mochabile altrimenti chiamato regola de la
cosa: e piu trac-
tare alquanto di geometria altrimenti chiamato misura: e di
tractare di ciascu-
no altro modo e regola de molte altre ragione ordinarie e
extraordinarie le quale posson
essere fructo a tutti coloro li quali uolessono imparare per lo
presente libro hauendo da se in pri-
ma mente i primi quatro modi del numero i quali sono questi
multiplicare agregare sotto-
trahere e partire.*

Italian 2

Anonym

‘Venezia Arithmetic’ –
Algurisimo

[Venezia: Adamo di Rottweil
1476–1480] or [Reggio
d’Emilia: Ugo Rugerius 1478]

Translation of the title
information (first paragraph)

*Subsequently and above all in the name of god, I intend to
treat and to describe some methods
and rules about the art of the number, otherwise called
algorithm; and to furthermore deal
with the algebra, otherwise called rule of the unknown; and to
furthermore treat
something about geometry, otherwise called measuring; and
to deal with every
other method and rule of many other ordinary and extra-
ordinary problem solutions which can
be fruitful for all who want to learn with the present book and
already know by heart
the first four arithmetic operations which are the following:
multiply, add, subtract
and divide.*

Italian 2

Anonym

‘Venezia Arithmetic’ –
Algurisimo

[Venezia: Adamo di Rottweil
1476–1480] or [Reggio
d’Emilia: Ugo Rugerius 1478]

Content overview

(according to the text; cf. Karpinski 1929)

Judged as unusual by Karpinski:

“differs from the known arithmetical works
in not giving systematic exposition of the
fundamental operations with integers;
gives applications of the rule of three and
discussion of the fundamental operations
with fractions”

Applications of the regula de tri

Pursuit (sum of integers)

Daily and yearly wages

Circles and squares

100 birds (cattle): additive partition

Cat on a tower: motion to and fro

Weight

Multiplication of fractions

(*moltiplicare rotti*, 4 types (*modi*)) (pdf 34)

Division of fractions

(*partire rotti* (7 types)) (pdf 36)

Discussion of the falsity of the check by 7 and by 9

Time

Interest

Payments with different deadlines

(referring to the year 1396)

[No problems solved by algebraic methods]

Italian 3

Piero Borghi / Pietro Borgo

b. ca. 1414 Venezia

d. ca. 1484/91 Venezia (CERL Thesaurus)

Aritmetica mercantile

(Libro de abaco)

Venezia: Erhard Ratdolt

1484-08-02

232 p.

C: Hooek I/B18.2; UCatInc 4936

D: München BSB

R: Elfering Kurt (ed.). (Deutsches Museum Reihe C, Nr. 2) München: Graphos 1964

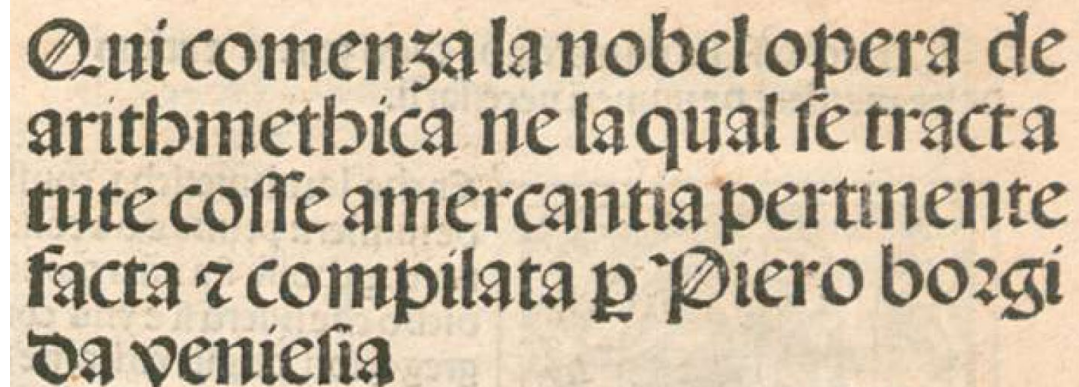
L: Paris BNF

S: Smith, David E. In: Isis 8 (1926) 41–49

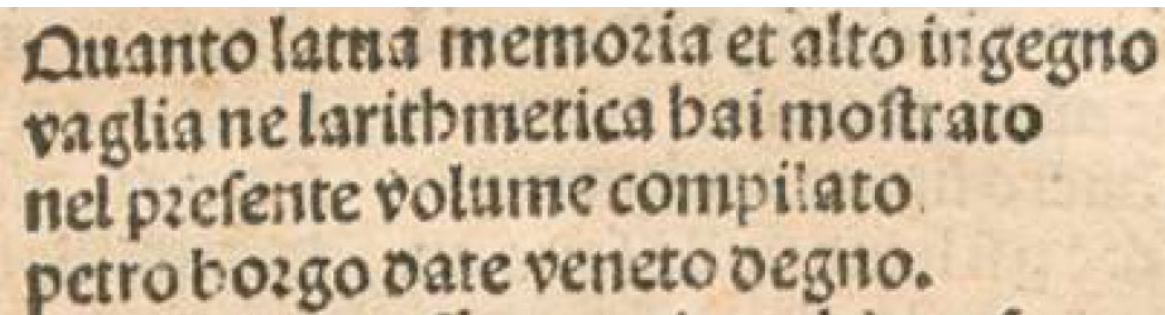
1st edition < 1484, Venezia: Erhard Ratdolt

C: Hooek I/B18.1; UCatInc 4 Sp. 568a

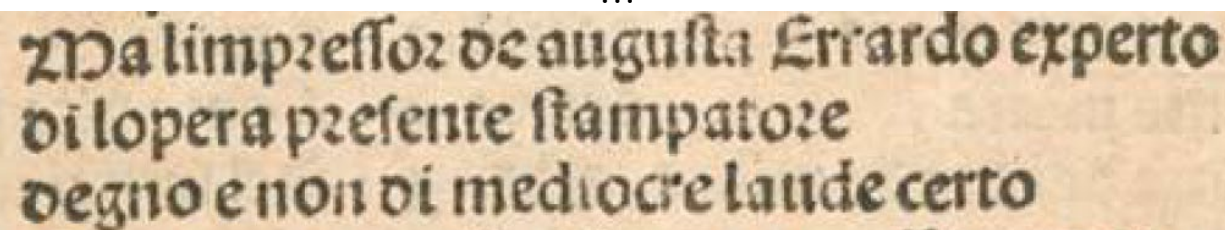
L: not found



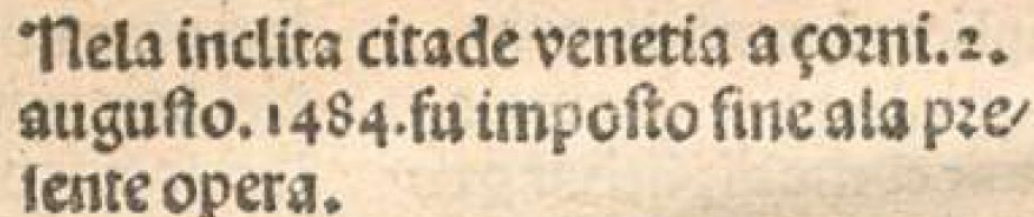
Qui comenza la nobel opera de
arithmethica ne la qual se tracta
tute cosse amercantia pertinente
facta z compilata p Piero borghi
da veniesia



Quanto latina memoria et alto ingegno
vaglia ne larithmetica hai mostrato
nel presente volume compilato
petro borgo date veneto degno.



Ma l'impressoꝝ de augusta Erardo esperto
di lopera presente stampatoꝝ
degno e non di mediocre laude certo



Nela inclita citade venetia a çorni. 2.
augusto. 1484. fu imposto fine ala pre
sente opera.

Italian 3

Piero Borghi / Pietro Borgo

Aritmetica mercantile
(*Libro de abaco*)

Venezia: Erhard Ratdolt 1484

Transcription of the title
information (first page) and
of the colophon (poem)

Later incunabulum editions:

Venezia: Zouane de Hall (Johann
Leoviller) 1488, 192 p.

C: Hoock I/B18.3: UCatInc 4937

Venezia: Nicolo de li Serrari (Ferrari)
1491, 200 p.

C: Hoock I/B18.4; UCatInc 4938

Later editions Venezia 1501, Venezia 1505,
Venezia: Giacomo Penzio 1509 until 1577
(16 editions totally, cf. Hoock I/B18)

*Qui comenza la nobel opera de
arithmethica ne la qual se tracta
tute cosse a mercantia pertinente
facta e compilata per Piero borgi
da veniesia*

—
*Quanto la tua memoria et alto ingegno
vaglia ne l arithmetica hai mostrato
nel presente volume compilato
petro borgo da te Veneto degno.*

...

*Ma l impressor de augusta Errardo esperto
di l opera presente stampatore
degno e non di mediocre laude certo*

...

*Ne la inclita cita de venetia a çorni .2.
augusto .1484. fu imposto fine a la pre-
sente opera.*

Italian 3

Piero Borghi / Pietro Borgo

Aritmetica mercantile

(Libro de abaco)

Venezia: Erhard Ratdolt 1484

Translation of the title
information (first page) and
of the colophon (poem)

Comment on later editions:

Only “few changes made from edition to
edition” (Smith 1926, p. 41)

*Here begins the noble treatise on
arithmetic, in which it is dealt with
all things belonging to commerce affairs,
written and compiled by Piero Borghi
from Venezia*

*How much your memory and high intellect
are worth in arithmetic, you have shown
in the present volume compiled
by you, Petro Borgo, honorable Venetian.*

...

*The experienced Erhard, typographer from Augsburg,
printer of the present work,
honorable and sure of not mediocre renown*

...

*In the outstanding city of Venezia on the 2nd day
of August 1484, the end was set to the
present work.*

Italian 3

Piero Borghi / Pietro Borgo

Aritmetica mercantile 1484

Content overview (according to the table of contents; cf. Smith 1926)

Tauola de li capitoli dtegnudi i q̄sta opa	
De cosa sia nūero ede che si çeneta 7 etiã de. 3. maniere de nūeri necesarij	acarte 2
De diere lettere ouero figure arithmatica- le e come q̄lla che p̄ si lieua nulla fano au- gumētā ciatcbuna de le altre e fano nu- mero articolo	acarte 2
Onde edito nūero composito e como el si forma	acarte 3
Lomo si forma centenara	acarte 3
Lomo si forma miara	acarte 4
Lomo si forma dexena de miara	acar. 4
Lomo si forma cētenara de miara	acar 5
Lomo si forma el million	acarte 6
La figura de tuto el numerar	acarte 6
La dichiaraçion de dita figura	acarte 7
De cosa sia multiplichar	acarte 7
De la proua del. 7.	acarte 8
De la proua del. 9.	acarte 9
De lato del multiplicar i. 3. modi	acar. 9
Del multiplichar p̄ colona	acarte 9
Lomo se die prouar el multiplichar p̄ co- lona p̄ la proua del. 7.	acarte 11
Lomo el se die p̄uar p̄ la pua del. 9.	acar. 12
Del multiplichar p̄ ch̄roreta	acarte 13
Lomo le ch̄rorete se die prouar p̄ la prou- ua del. 7.	acarte 13
Lomo le se die p̄uar p̄ la pua del. 9.	acar. 14
Lomo se die far le croxete p. 3. fig.	acar. 14
Lomo se die far le croxete p. 4. fig.	acar. 14
Lomo se die p̄uar le dite croxete	acar. 15
Del multiplichar p̄ scachier	acarte 15
Lomo se die prouar iscacheri	acarte 16
De lato del partir in. 3. modi	acarte 17
Lomo se die partir p̄ colona	acarte 17
Lomo se die partir p̄ batelo ch̄o le suo proue	acarte 20
Lomo se die ptir p̄ el terço modo	acar. 22
De lato del sumar	acarte 24
Lomo se puol p̄uar el sumar	acar. 25
De lato del sotrar	acarte 25
Lomo se die p̄uar el sotrar	acarte 25
Del multiplichar in monede e p̄xi menudi e grossi	acarte 26
Lomo dite multiplichaçion si pro- ua	acarte 27
Del partir in monede e p̄xi menudi e grossi	acarte 30
Lomo dito ptir si proua	acarte 31
Del sumar monede e p̄xi menudi e grossi	acarte 32
Del sotrar de monede e p̄xi menudi e grossi	acarte 34
De li rotti e ch̄ cosa e rotto	acarte 36
Lomo li rotti si formano	acarte 36
Lomo li rotti se schirano	acarte 36
Del multiplichar di rotti	acarte 37
Del partir di rotti	acarte 39
Del sumar di rotti	acar. 41
Del sotrar di rotti	acarte 41
De la riegola del. 3.	acarte 42
Lomo le. 3. cosse contegnude i dita rie- gola sono ordinate equal die esser pri- ma e q̄l segonda e q̄l terça	acarte 42
Lomo se procede in tute raxon mar- cadātesche p̄ la dita riegola	acar. 43
Lomo se proua le raxon compide p̄ dita riegola	acarte 64
De le chompagnie ch̄o le suo pro- ue	acarte 69
De li barati	acarte 82
Lomo si prouano li barati	acarte 90
De lo ligar de metali	acarte 94
De molti e diuersi modi de ra- xon	acarte 103
De le posiçion false	acarte 112

Italian 3

Piero Borghi / Pietro Borgo

Aritmetica mercantile 1484

Content overview (according to the table of contents; cf. Smith 1926)

[1] Five species (*atti*) for integers

Numeration

Multiplication with check by 7 and by 9

Division (*partir*)

Addition, subtraction (with check *proua*)

Multiplication, division with money and weight (with check)

[2] Fractions (*rotti*) with four species

[3] Regula de tri (*regola del 3*) (with check)

[4] Companies (*chompagnie*) (with check)

[5] Barter (*barati*) (with check)

[6] Metal alloys (*ligar de metali*)

[7] Many and diverse rules (*modi de raxon*)

Profit and loss, percentage (101^v)

Weight, measure, currency conversions (102^v)

Business trips (profit/loss chains): nesting (105^v)

Mills, horses: work and service (regula quinque) (107^r)

Interest (regula quinque) (107^r)

Profit and loss, with loaf of penny (regula de tri inversa) (107^v)

Three different mills, sails: shared work (108^v)

Motion in opposite directions (ships): encounter (109^r)

Motion in the same direction (ships): pursuit (109^v)

Two brothers earn and spend money: motion to and fro (110^r)

Sparrowhawk on a tower: motion to and fro

(combined with encounter: dove simultaneously working from the top downward) (110^r)

Fish in three parts: find weight (110^v)

Two fishes, eggs: profit and loss (111^r)

Lazy worker: temporal part (111^v)

Earnings of craftsmen: too much – too little (112^r)

[8] Regula falsi (*posizion false*):

Lazy worker: temporal part (112^r)

Price of apples: profit and loss (113^r)

Amounts of money of different persons: give and take (113^v)

Italian 4 (Florentine)

Filippo [Maria] Calandri

b. 1468 Firenze [dedication 1491:
in questa mia giouenile eta (juvenile age)]

d. 1518 Roma

Father Calandro di Piero C. (1419–1468),
mathematician, teacher of Benedetto da
Firenze (1429–1479), mathem., *Trattato*
(Siena B degl'Intronati (Cod. L. IV. 21))

Brother Pier Maria (1457–1508), mathem.,
miniaturist; *Tractato* (Firenze B Medicea
Laurenziana (Cod. Acquisti e doni 154),
ed. Arrighi. Pisa: Domus Galilaeana 1974)

De arimethrica opusculum

[*Trattato di aritmetica*]

Firenze: Lorenzo de Morgiani,

Giovanni Thedesco [Johann

Petri] da Magonza [Mainz]

1491-01-01 [Florentine style]

[1492 modern style (Arrighi 1969, p. XXIII)]



Philippi Calandri ad nobilem et studiosum Julia
num Laurentii Medicę de arimethrica opusculū.

Impresso nella excelsa cipta di Firenze per
Lorenzo de Morgiani et Giovanni
Thedesco da Magonza fi
nito a di primo di
Genatio 1491

Italian 4

Filippo [Maria] Calandri

De arimethrica opusculum

Firenze: Lorenzo de Morgiani,
Giovanni Thedesco da Magonza
[Mainz] 1491-01-01

Transcription of the title
information (first page) and
of the colophon

210 p.

C: Hooek I/C2; UCatInc 05884

D: BEIC.it

L: Firenze BN

S: Ulivi, E: Gli abacisti fiorentini. Firenze:
Olschki 2013

Pictagoras arithmetrice introductor

*Philippi Calandri ad nobilem et studiosum Julia-
num Laurentii Medicem de arimethrica opusculum.*

*Impresso nella excelsa cipta di Firenze per
Lorenzo de Morgiani et Giouanni
Thedesco da Maganza fi-
nito a di primo di
Gennaio 1491*

Italian 4

Filippo [Maria] Calandri

De arimethrica opusculum

Firenze: Lorenzo de Morgiani,
Giovanni Thedesco da Magonza
[Mainz] 1491-01-01

Transcription of the title
information (first page) and
of the colophon

Nearly identic 2nd ed.:

Firenze: Bernardo Zucchetta 1518-07-20

D/L: München BSB

Pythagoras introducer into arithmetic

*A small treatise on arithmetic by Filippo Calandri
for the noble and assiduous Guiliano de' Medici,
son of Lorenzo de' Medici*

Giuliano di Lorenzo de' Medici (Firenze 1479–1516 Fiesole):
son of Lorenzo (di Piero) il Magnifico (1449–1492) and Clarice
Orsini;

brother of Giovanni, later pope Leo X, and Piero;
at first intended dedication addressee of *Il principe* by Niccolò
Macchiavelli – finally dedicated to his nephew Lorenzo di Piero)

*Printed in the outstanding city of Firenze by
Lorenzo de Morgiani and Giovanni
Tedesco da Maganza [from Mainz]
finished on the 1st day of
January 1491*

Italian 4

Filippo [Maria] Calandri

De arimethrica opusculum

Firenze: Lorenzo de Morgiani,
Giovanni Thedesco da Magonza
[Mainz] 1491-01-01

Content overview

(according to the text;
hardly any section headings)

There is a similar **manuscript** with colored illustrations: Firenze B Riccardiana (Codice 2669), ed. Arrighi, G. Firenze: Cassa di Risparmio 1969; Egmond, W v: Ries-Kolloquium 2005; the incunabulum is said to contain a reference to the manuscript

[1] Species for integers

Numeration: finger numbers, digits (pdf 13)

Species (pdf 17): multiplication table, addition (*raccorre*), multiplication, a long row of multiplication tables (including currencies on the basis of 1 lira = 20 soldi = 240 denari), divisions by 100 (pdf 39), multiplication examples

Division (*partire*) (pdf 49)

[2] Price calculations (pdf 52) starting from or identifying the price per unit, further calculations with denominate numbers (currency, measure, time) including fractions and the *regula de tri* without any introduction

[3] Fractions (*rotti*) (pdf 71): multiplication, division (*partire*), addition (*raggiungere*), subtraction (*trarre*)

[4] Conversions of different units (pdf 84)

[5] Gold and silver (pdf 97)

[6] Interest, with *regula quinque* (pdf 105)

Italian 4

Filippo [Maria] Calandri

De arimethrica opusculum

Firenze: Lorenzo de Morgiani,
Giovanni Thedesco da Magonza
[Mainz] 1491-01-01

Content overview

(according to the text;
hardly any section headings)

Further manuscripts by Filippo Calandri:
*Trattato d'abaco nel quale si contiene tutto
quello che s'appartiene alla mercantia.*
1507, Firenze BN (Cod. Magliabechiano
Cl. XI, 82) (Arrighi 1969, p. XXVII)
Una raccolta di ragioni. Siena B Comunale
(Codice L. VI. 45), ed. Santini, D. Siena
1982

[7] Discount (pdf 113)

[8] Payments with deadlines (pdf 116)

[9] Price calculations with regula de tri (pdf 122)

[10] Profit and loss (pdf 125)

[11] Miscellaneous problems (pdf 128), mixed with
price and profit calculations:

128/137 Interest (regula quinque)

133 Compound interest

134 Too much – too little

134 Subcontractor

135 Interrupted contract

135 Three persons have a meal: company

136 Conversions

138 Unknown inheritance: nesting

138 Pursuit

139 Found purse

139 Digging a well: work, arithmetic progression

140 Motion to and fro

140 Hare and greyhound: pursuit

140 Amounts of money of diff. persons: give and take

Italian 4

Filippo [Maria] Calandri

De arimethrica opusculum

Firenze: Lorenzo de Morgiani,
Giovanni Thedesco da Magonza
[Mainz] 1491-01-01

Content overview

(according to the text;
hardly any section headings)

- 141 One alone cannot buy: joint purchase
- 141/156 Nesting
- 142/156 Regula equalitatis
- 143-145 Spear in the water: find length
- 145/148 Ship with two/three sails: shared work
- 146 Encounter
- 146/148/151 Vessel with two/three fountains: shared work
- 147 Lazy worker: temporal part
- 149 Three carpenters build a house (shared work)
- 150 Cup and lid
- 150 Fish in parts: find weight
- 151-155 Motion to and fro
- 153 Wild animals eat a sheep: shared work
- [12] Barthers (pdf 157)
- [13] Companies (pdf 171)
- [14] Alloys, mixtures, coinage (*battere*), gold (pdf 178)
- [15] Geometry incl. Pythagoras' theorem (pdf 190)
- [16] Guessing numbers (pdf 210)

Italian 5

Luca Pacioli = Lucas de Burgo
sancti sepulcri [Sansepolcro]

b. ca. 1445 Sansepolcro

d. 1514/17 Roma

Franciscan friar (Order of Friars Minor)
Professor (maths, theol.) at Italian univ.s

*Summa de arithmetica,
geometria, proportioni e
proportionalità*

Venezia: Paganino de Paganini
(from Brescia) 1494-11-10/20

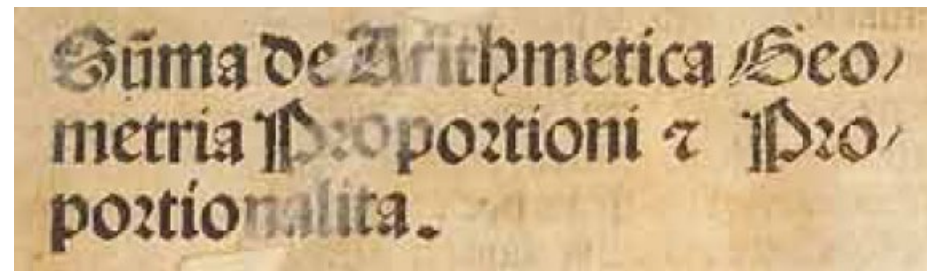
615 p.

C: Hooek I/P1; UCatInc M18913

D: Wolfenbüttel HAB

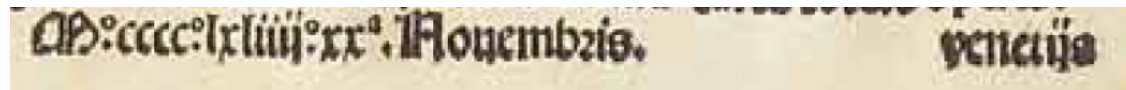
L: London BL

S: Main authors: Cantor, Moritz; Ciocchi,
Argante; Giusti, Enrico



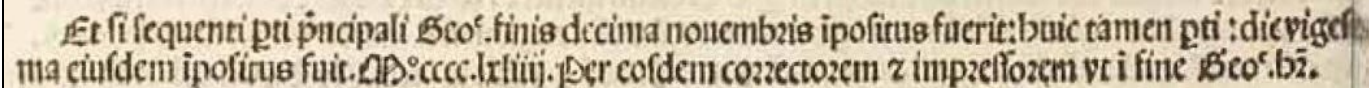
Sūma de Arithmetica Geo-
metria P:portioni z P:ro-
portionalita.

[at the bottom of page 2, pdf 6]

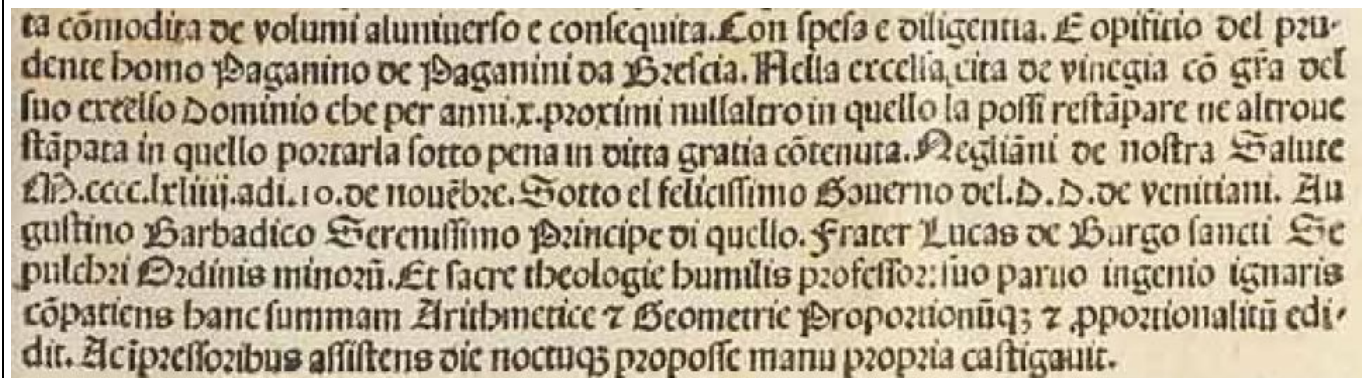


M^o.cccc^o.lxxiiij^o.xx^o. N^ovemb^oris. venetijs

[224^v, pdf 468]



Et si sequenti pti pncipali Geo^o. finis decima nouemb^oris ipositus fuerit: huic tamen pti : die viges-
ma eiusdem ipositus fuit. M^o.cccc^o.lxxiiij^o. Per eisdem correctorem z impressorem vt i fine Geo^o. b^o.



ta cōmodita de volumi aluniuerso e consequita. Con spesa e diligentia. E opificio del pru-
dente homo Paganino de Paganini da Brescia. Nella ecclesia, cita de vinegia cō grā del
suo excelso Dominio che per anni. x. proximi nullaloro in quello la possi restāpare ne altrouc
stāpata in quello portarla sotto pena in ditta gratia cōtenuta. Regliāni de nostra Salute
M^o.cccc^o.lxxiiij^o. adi. 10. de nouēbre. Sotto el felicissimo Gouerno del. D. D. de venetiani. Au-
gustino Barbado Serenissimo Principe di quello. Frater Lucas de Burgo sancti Se-
pulchri Ordinis minorū. Et sacre theologie humilis professor: suo paruo ingenio ignaris
cōpatiens hanc summam Arithmetice z Geometrie P:portionūq; z p:portionalitū edi-
dit. Ac impressoribus assistens die noctuq; proposse manu propria castigauit.

Italian 5

Luca Pacioli

*Summa de arithmetica,
geometria, proportioni e
proportionalità*

Venezia: Paganini 1494-11-10/20

Transcription of the title
information (first page) and
of the colophon

S: Cantor, Moritz (Geschichte der
Mathematik II, 1900) discusses several
details (p. 308–344) following their
sequence in the *Summa*.

Penndorf, Balduin (Stuttgart 1933)
focuses on Pacioli's accounting.

Haller/Barth (Berlin 2017) discuss two
combinatorial problems (43^v, 197^v)

*Summa de Arithmetica Geo-
metria Proportioni e Pro-
portionalita.*

M^o.cccc^o.lxluiij^o.xx^o. Nouembris. Venetijs

*Et si sequenti parti principali Geometriae finis decima nouembris
impositus fuerit: huic tamen parti: die vigesi-
ma eiusdem impositus fuit. M^o.cccc.lxluiij.*

[...] conseguita [...] E opificio del pru-
dente homo Paganino de Paganini da Brescia. Nella excelsa cita de
vinegia con gratia del
suo excelso Dominio che per anni .x. proximi null altro in quello la possi
restampare ne altrove
stampata in quello portarla sotto pena in ditta gratia contenuta. Negli
anni de nostra Salute
M.cccc.lxluiij. adi .10. de novembre. Sotto el felicissimo Governo del
D. D. de venitiani. Au-
gustino Barbadico Serenissimo Principe di quello. Frater Lucas de
Burgo sancti Se-
pulchri Ordinis minorum. Et sacre theologie humilis professor: suo
paruo ingenio ignaris
compatiens hanc summam Arithmetice et Geometrie Proportionumque et
proportionali[ta]tum edi-
dit. Ac impressoribus assistens die noctuque proposse [propositas] manu
propria castigauit.

Italian 5

Luca Pacioli

*Summa de arithmetica,
geometria, proportioni e
proportionalità*

Venezia: Paganini 1494-11-10/20

Translation of the title
information (first page) and
of the colophon
(Penndorf, B 1933, p. 58)

*Textbook on arithmetic, geometry,
relationships between two positive integers and
sets of such relationships in ordered sets of at least three integers.*

1494, 20th of November, in Venezia

*And if the following main part on geometry was finished on November 10th,
this [preceding] part was finished on the 20th day of the same month. 1494*

*[...] finished [...] in the printing house of the intelligent
man Paganino de Paganini da Brescia;
in the outstanding city of Venezia – with the privilege of
its excellent government that, in the next ten years,
no one else in this republic is allowed to reprint it [the Summa] and, if
somewhere else printed, to import it into this republic
on the penalty described in the mentioned privilege. In the year of grace
1494 on November 10th, under
the prosperous government of the doge of the Venetians, Augustino
Barbadico, the most serene sovereign of this republic, friar Lucas from
Borgo Sansepolcro,
of the Order of Friars Minor and humble professor
of the holy theology, with his small mind compassionate
with the ignorant, edited this textbook on arithmetic, geometry,
relationships between two positive integers and sets of such relationships
in ordered sets of at least three positive integers,
and, assisting the printers day and night,
he corrected what was shown to him with his own hand.*

Italian 5

Luca Pacioli

Summa de arithmetica, geometria, proportioni e proportionalità

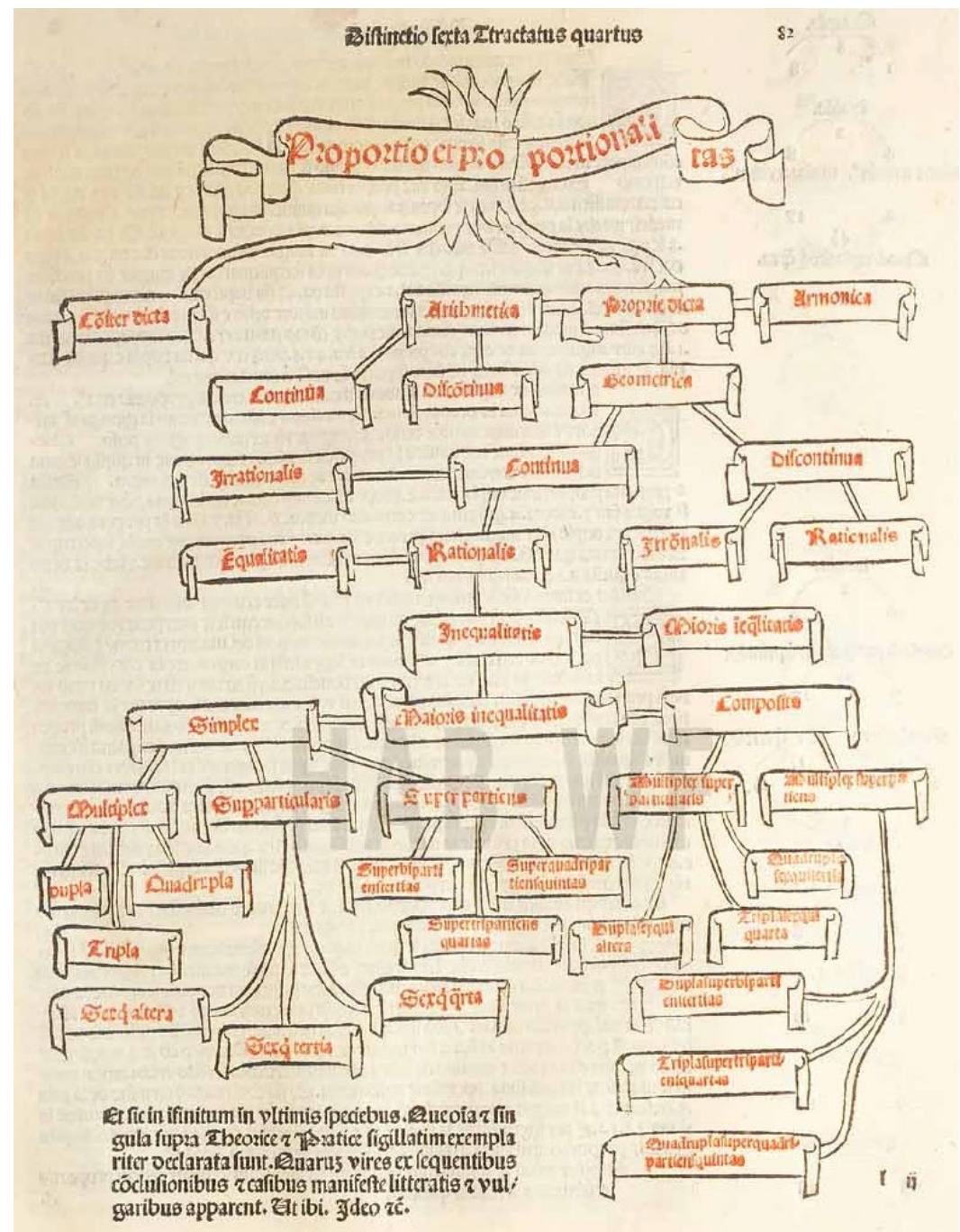
Venezia: Paganini 1494-11-10/20

Comment on the title

proportioni between two positive integers (or the size of two geometric objects) comprise what we nowadays call proportions (incl. the Pythagorean ones of multiplex, superparticularis and superpartiens), but also “arithmetic proportions” (additive differences!), e.g. 3 in the case of 4 and 7. *proportionalità* deal with sets of *proportioni* (relationships) regarding pairs of positive integers in ordered sets of at least three positive integers.

Readable explanations: 72^v–73^r

Taxonomic tree: 82^r (page on the right ►)



Italian 5

Luca Pacioli

*Summa de arithmetica,
geometria, proportioni e
proportionalità*

Venezia: Paganini 1494-11-10/20

Content overview

(according to the table of contents (pdf 14–20), partly in combination with the title page and the summaries of the five main parts (pdf 12–13))

The *Summa* uses three structure levels for the main parts (*parti principali*) 1–4: *distinctioni*, *tractate* and *articoli* [the latter not mentioned in this content overview]. Main part 5 (extra pagination) is considered an independent treatise (*trattato*) structured in *distinctioni* and *capitoli* (pdf 13).

1 Numbers and operations on numbers

1.1 Number types incl. perfect numbers, *numeri congrui* etc.

(1.2) 1.2.1–1.2.4 Species for integers (*sani*): Numeration, add (*sumare*), subtract (*sotrare*), multiplicare, divide (*partire*) with all the checks (*prove*) (by 9, by 7)

1.2.5 Arithm., geom. progressions (plus various topics)

1.2.6 Extraction of square and cube roots (*radici*)

(1.3) 1.3.1 Fractions (*rotti*)

1.3.2 Species for fractions

(1.4) 1.4.1 Discussions about fractions

1.4.2 Applications of fractions

(1.5) 1.5.1 Regula de tri (*regola mercantesca*); profits (*guadagni*), losses (*perdite*), transports, investments (*investite*); abbreviations (67^r); autobiographic remarks (67^v)

1.6 Relations (*proportioni*) and sets of such relations (*proportionalità*) (Euclid, *Elements*, Book V)

1.6.1 *Proportioni*

1.6.2 *Proportionalità*: six types

1.6.3 Designation and comparison of *proportioni*

1.6.4 Four species for *proportioni*

Italian 5

Luca Pacioli

*Summa de arithmetica,
geometria, proportioni e
proportionalità*

Venezia: Paganini 1494-11-10/20

Content overview

(according to the table of contents (pdf 14–20), partly in combination with the title page and the summaries of the five main parts (pdf 12–13))

Cantor, Moritz (Geschichte der Mathematik II, 1900) states that the contents of the five main parts is not clearly structured (p. 309).

1.6.5 Conclusions

1.6.6 Particularities (*maraveglie*)

(1.7) 1.7.1 Regula falsi (*de catayn, positione*; 3 special rules)

1.7.2 Geometric demonstration

(1.8) 1.8.1 Rules of algebra (*de la cosa*)

1.8.2 Four species for roots

1.8.3 Six Euclidean binomials (*Elementa*, Book X)

1.8.4 Multiplication of powers of the unknown

1.8.5 *cosa* [x], *census* [x^2], *numerus* [*const*]; equation types

1.8.6 Remarks

2 Application to commerce affairs (150^r)

2.9.1 Regula societatis (*compagnie*)

2.9.2 Tending cattle (*soccida de bestiami*), rent (*fitto*), rent (*pescione* [pigione]), wages (*cottimo*), lease (*livello*), hiring out (*logagione* [locazione]), usufruct (*godimento*)

2.9.3 Barthers (*baratti*): simple, compound and with time

2.9.4 Currency exchange (*cambio*)

2.9.5 Simple and compound interest (*merito*), surplus (*resto, avanço*), balance (*saldo*), discount (*sconto*)

Italian 5

Luca Pacioli

*Summa de arithmetica,
geometria, proportioni e
proportionalità*

Venezia: Paganini 1494-11-10/20

Content overview

(according to the table of contents (pdf 14–20), partly in combination with the title page and the summaries of the five main parts (pdf 12–13))

- 2.9.6 Gold and silver (*oro, argento*), alloys
- 2.9.7 Business trips (*viaggi*): nesting
- 2.9.8 Two persons (*doi homini*): give and take, joint purchase, found purse
- 2.9.9 Three persons (*tre homini*): the same categories
- 2.9.10 Various nice cases (*casi belli*)

- 3 Accounting (197^v)
 - 3.9.11 Keeping accounts (*conti*), documents (*scripture*) and the account-book (*quaderno*) in Venetia (*vinegia*)

- 4 Weights, measures, currencies (210^v) [until 224^v; the main parts 1–4 finished on 1494-11-20 (224^v, pdf 468)]
 - 4.9.12 Comparison tables (*tariffa*) for all usual commerce affairs (*usançe e costumi mercanteschi*)

- 5 Practice and theory of geometry incl. the five Platonic solids (*corpi regolari*) [new pagination, until 76^r, this main part 5 finished on 1494-11-10 (224^v, pdf 468)]
(8 distinctioni, table of contents (75^{rv}, pdf 617–618))

Italian 5

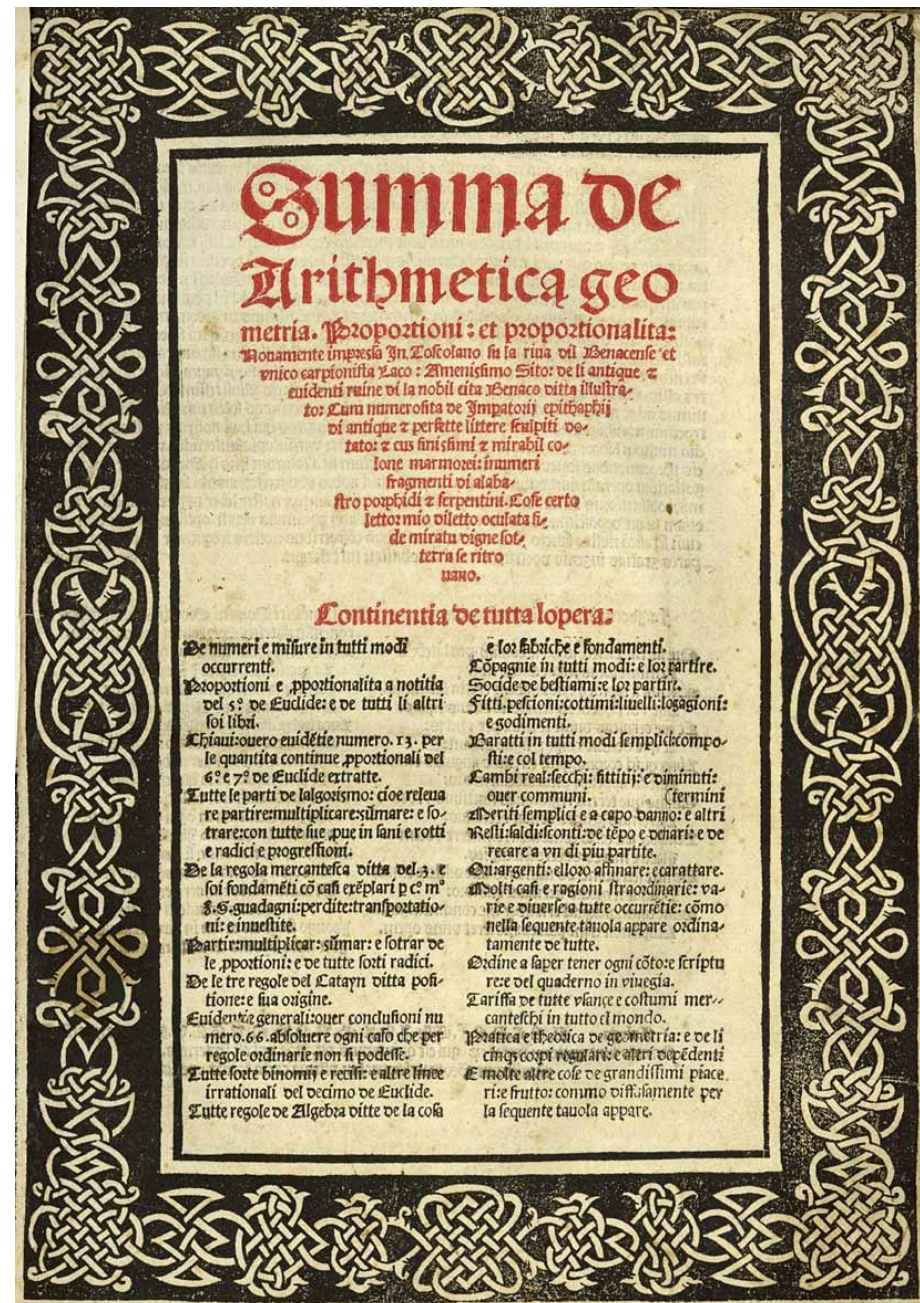
Luca Pacioli

*Summa de arithmetica,
geometria, proportioni e
proportionalita*

Venezia: Paganini 1494-11-10/20



(Neapel, Museo Nazionale Pinacoteca)



2nd edition Toscolano (Lago di Garda): Paganino de Paganini 1523

Italian 6

Juan de Ortega

Biographic data see Spanish 2

*Summa de arithmetica,
geometria pratica*

Roma: Stephano Guilleri de
Lorena 1515-11-10

Italian adaptation of Spanish 2
Arte de la arismetica, Lyon 1512

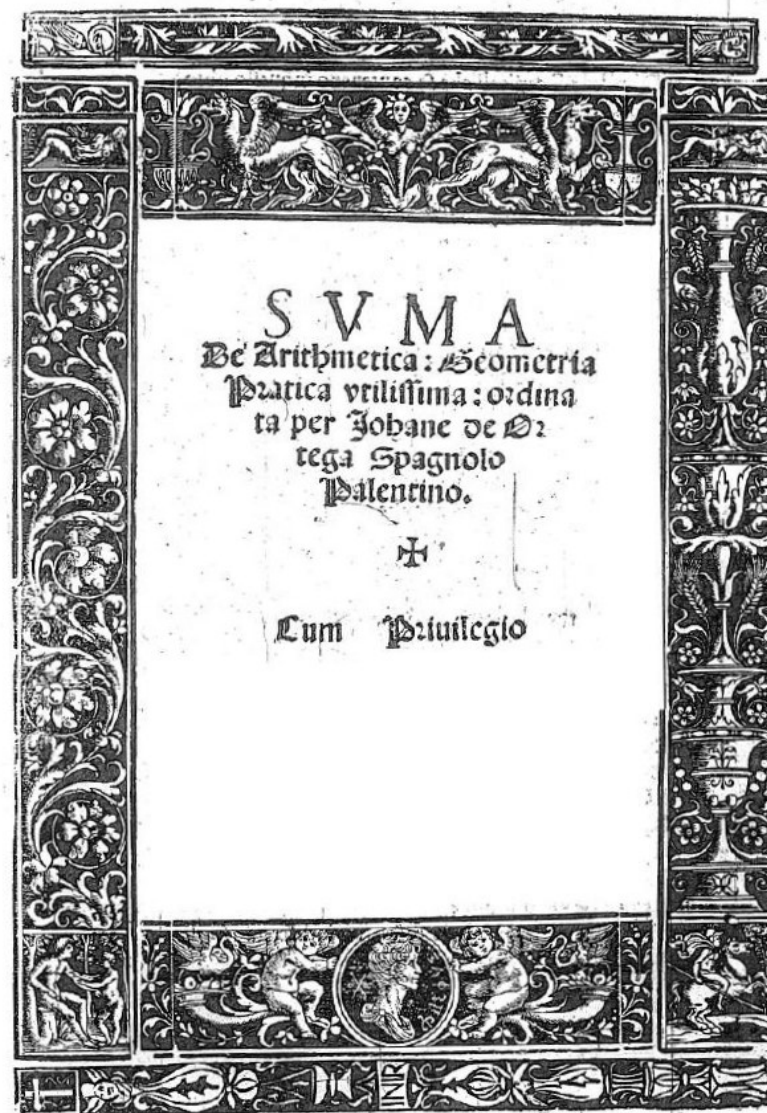
232 p.

C: Hooock I/O6.2; Edit16 CNCE 47162

D: beic.it

L: Paris BNF

S: see Spanish 2



Impresso in Roma per Mastro Stephano Guilleri de Lorena
anno del nostro Signore 1515 adi 10 de Nouëbre Regnante Leo
ne Papa decimo in suo Anno tertio.

Italian 6

Juan de Ortega

*Summa de arithmetica,
geometria pratica*

Roma: Stephano Guilleri 1515

Transcription of the title page
and of the colophon

fol. 97^v: *la geometria practica è
necessaria & molto vtile*

SVMA

*De Arithmetica: Geometria
Pratica vtilissima: ordina-
ta per Johane de Or-
tega Spagnolo
Palentino.*

Cum Priuilegio

*Impresso in Roma per Mastro Stephano Guilleri de Lorena
anno del nostro Signore 1515 adi 10 de Nouembre Regnante Leo-
ne Papa decimo in suo Anno tertio.*

Italian 6

Juan de Ortega

*Summa de arithmetica,
geometria pratica*

Roma: Stephano Guilleri 1515

Translation of the title page
and of the colophon

Pope Leo X, Giovanni di Lorenzo de'
Medici (1475–1521), ruled 1513–1521

*Textbook
of arithmetic and
practical geometry,
which is very useful,
arranged by Juan de Ortega,
Spaniard from Palencia*

With privilege

*Printed in Rome by Master Stephano Guilleri from Lorraine
in the year of our Lord 1515 on the 10 day of November,
under the reign of pope Leo X in his third year.*

Italian 6

Juan de Ortega

*Summa de arithmetica,
geometria pratica*

Roma: Stephano Guilleri 1515

Content overview
(table of contents)

TABVLA	
¶ Tabula de li capituli che se contengono in questo libro.	1
¶ Sumare per integro a foglie	5
¶ La proua del sumare a foglie	9
¶ Subtrahere per integro a foglie	10
¶ La proua de subtrahere a foglie	15
¶ La tabula del multiplicare a foglie	17
¶ Multiplicare per integro a foglie	17
¶ Partire per integro a foglie	21
¶ La proua de multiplicare & partire a foglie	25
¶ Como se a de diminuire ogni numero a foglie	28
¶ Regula generale per sapere che vale ogni rocto a foglie	29
¶ Summare del rocto a foglie	30
¶ Subtrahere del rocto a foglie	33
¶ Multiplicare del rocto a foglie	36
¶ Partire del rocto a foglie	39
¶ La proua de lo multiplicare & partire de rocto a foglie	41
¶ Reduotione de moneta a foglie	42
¶ Regule de fodrare a foglie	44
¶ Regule de tre per integro a foglie	46
¶ Regule de tre per rocto a foglie	48
¶ Regula generale de tre per rocto a foglie	51
¶ Regule de centenare a foglie	51
¶ Regule de tara a foglie	53
¶ Regule de cambio a foglie	54
¶ Regule de lucrò semplice & doppio a foglie	55
¶ Regule de quattro parte a foglie	59
¶ Regule de cinque parte a foglie	61
¶ Regule de compagnie senza tempo a foglie	69
¶ Regule de compagnie con tempo a foglie	73
¶ Regule de baracto a foglie	79
¶ Regule de la fineza de lo argento & auro a foglie	80
¶ Regule de viaggi a foglie	93
¶ Regule de radice quadrata discretara o indiscretara a foglie	97
¶ Regule de geometria e a foglie	100

Italian 6

Juan de Ortega

*Summa de arithmetica,
geometria pratica*

Roma: Stephano Guilleri 1515

Content overview

(according to the table of contents)

Addition (*sumare*) of integers (*integro*)

Check (*prova*) of addition (by nine/seven)

Subtraction (*subtrahere*) of integers

Check of subtraction

Multiplication table

Multiplication of integers

Division (*partire*) of integers

Check of multiplication and division

Reduction of fractions (*diminutione*)

Comparison of fractions (*rocto*)

Addition of fractions

Subtraction of fractions

Multiplication of fractions

Division of fractions

Check of multiplication and division of fractions

Conversions within one currency system (*reductione de moneta*)

Textile and lining (*inforro, foderare*) with the same area

Regula de tri for integers

Regula de tri for fractions

General regula de tri for fractions

Percentage (*regule de centenare*)

Rules of tare (*tara*)

Currency exchange (*cambio*)

Simple and compound interest (*lucro semplice e doppio*)

Regula de tri plus a constant (*regule de quatro parte*),
partly regula de tri inversa

Regula quinque (*regule de cinque parte*)

Regula societatis simplex (*compagnie senza tempo*)

Regula societatis temporum (*compagnie con tempo*)

Barters (*regule de baracto*)

Silver and gold (*fineza de lo argento e auro*)

Business trips (*regule de viagi*): nesting

Square root of a square number (*radice quadrata discreta*),
square root of a non-square number (*radice quadrata indiscreta*)

Geometry

Italian 7

Girolamo Tagliente

b. ca. 1490 Venezia

(*mia verde e iuuenil etade* (preface))

Citizen of Venezia (preface)

He was instructed by his relative (uncle?)

Giovanni Antonio Tagliente (*consanguineo & preceptore* (preface); ca. 1460 – ca. 1528 (CERL cnp01329244; Treccani Diz Biogr))

Libro d'abaco

Venezia Feb. 1515

2nd edition: **Venezia Sep. 1520**

158 p.

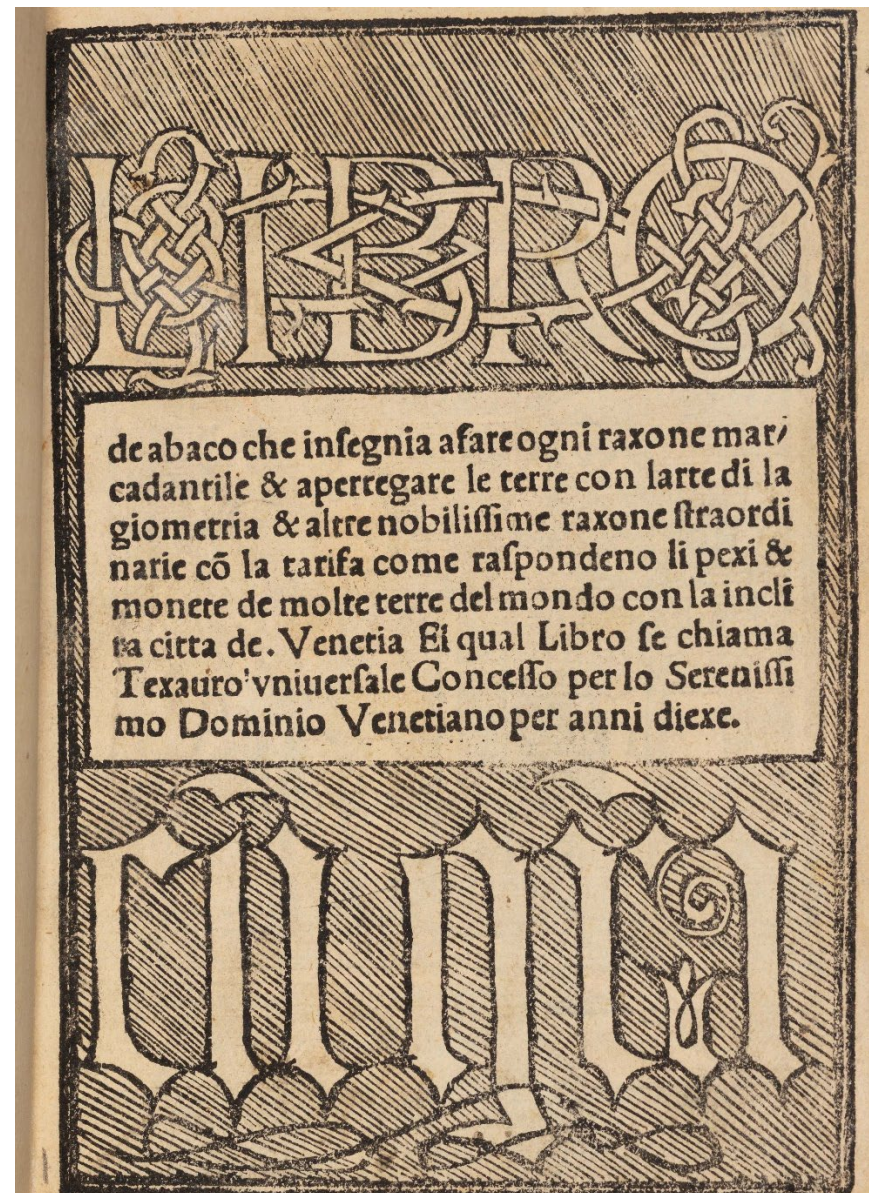
C: Hooock I/T2.1 (1515) – T2.31 (1586)

Edit16 CNCE 67544, 64644

D: [1520] museogalileo.it;

[s. a.] catalog.lindahall.org

L: [1515] Venezia Fondazione Giorgio Cini (photos with friendly permission); [1520] Firenze BN Centrale



restampata nouamente del. 1520. Et agiōtoli
altre bellissime & vtile ragione fabricate p lo
autor de la presente opra.

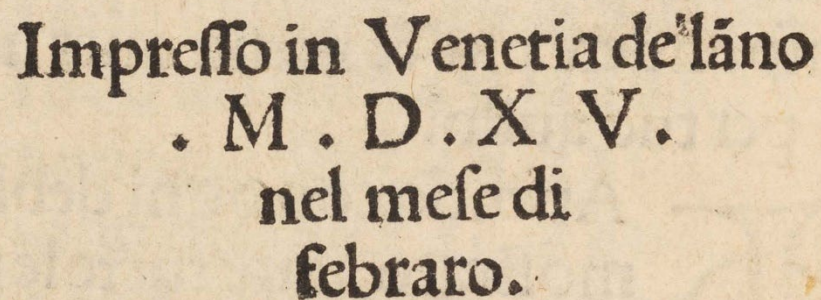
Italian 7

Girolamo Tagliente

Libro d'abaco
Venezia 1515

Transcription of the title page
and of the colophon

S: Swetz, Frank J. In: Convergence 2018
maa.org/press/periodicals/convergence
Petrella, Giancarlo. In: «Charta» 2007, 94,
26–31



Impresso in Venetia de l'ano
. M . D . X V .
nel mese di
febraro.

LIBRO

*de abaco che insegna a fare ogni raxone mar-
cadantile & a pertegare le terre con l arte di la
giometria & altre nobilissime raxone straordi-
narie con la tarifa come raspondeno li pexi &
monete de molte terre del mondo con la incli-
ta citta de Venetia. El qual Libro se chiama
Texauro vniuersale. Concesso per lo Serenissi-
mo Dominio Venetiano per anni diexe.*

cum gratia

*restampata nouamente del 1520. Et agiontoli
altre bellissime & vtile ragione fabricate per lo
autor de la presente opra.*

*Impresso in Venetia de l'ano
.M.D.XV.
nel mese di
febraro.*

Italian 7

Girolamo Tagliente

Libro d'abaco
Venezia 1515

Translation of the title page
and of the colophon

Book

of arithmetic that teaches to handle every commerce calculation and to measure [pertica 'bar', 'rod' (unit of length)] the lands with the art of geometry and other excellent extraordinary rules with the table how the weights and currencies of many countries of the world correspond to [those of] the outstanding city of Venezia. This book is called universal treasure. Approved by the most serene government of Venezia for ten years.

With privilege

Reprinted in 1520. And added to it other wonderful and useful rules invented by the author of the present work.

*Printed in Venezia in the year 1515
in the month of February.*

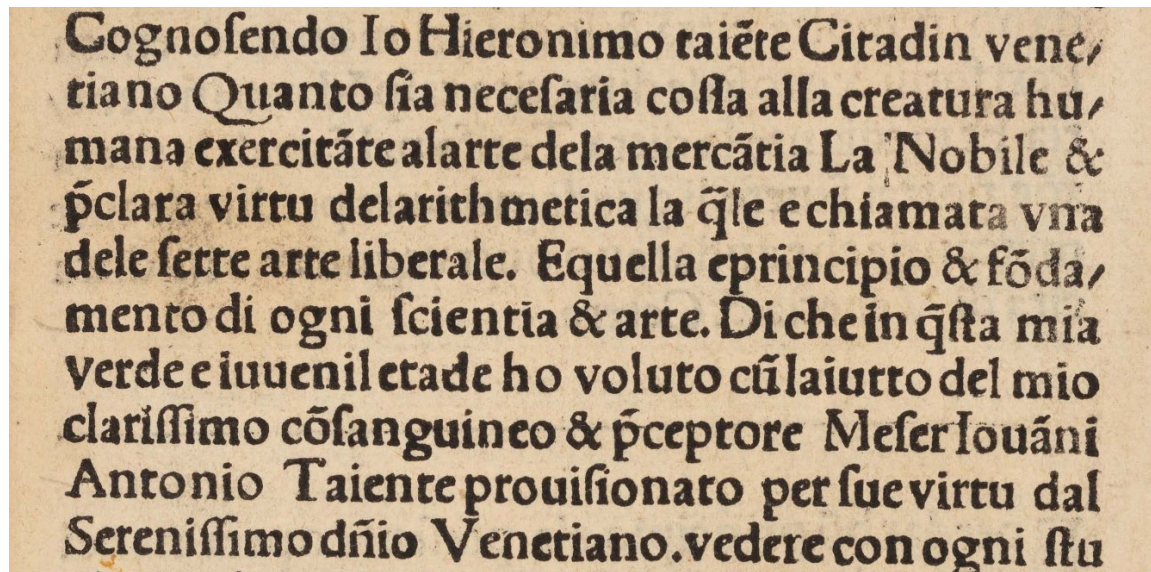
Italian 7

Girolamo Tagliente

Libro d'abaco

Venezia 1515

Transcription and translation of
the beginning of the preface
with the names of author and
co-author



Cognosfendo Io Hieronimo taiēte Citadin vene-
tiano Quanto sia necesaria cofsa alla creatura hu-
mana exercitāte alarte dela mercātia La Nobile &
p̄clara virtu delarithmetica la q̄le e chiamata vna
dele sette arte liberale. Equella e principio & fōda-
mento di ogni scientia & arte. Di che in q̄sta mia
verde e iuuenil etade ho voluto cū laiutto del mio
clariffimo cōfanguineo & p̄ceptore Meser Iouāni
Antonio Taiente prouifionato per fue virtu dal
Sereniffimo dñio Venetiano. vedere con ogni ftu

*Cognoscendo Io Hieronimo taiente Citadin vene-
tiano, Quanto sia necessaria cossa [...]*

*Di che [sc. arithmetica] in questa mia
verde e iuuenil etade ho voluto cum l'aiutto del mio
clariffimo consanguineo & preceptore Meser Iouanni
Antonio Taiente prouifionato per sue virtu dal
Sereniffimo dominio Venetiano, vedere [...]*

*As I, Girolamo Tagliente, Venetian citizen,
know, how much is a necessary thing [...]*

*About arithmetic, I – in my “green” and juvenile age – wanted to see
with the help of my highly renowned relative and teacher,
Monsieur Giovanni Antonio Tagliente, who is remunerated
for his qualifications by the most serene government of Venezia, [...]*

Italian 7

Girolamo Tagliente

Libro d'abaco
Venezia 1515

Content overview

(according to pdf 12, pdf 158 and the text)

Nr. 56: Description of the practice of the Venetian *officio de la messetaria*, in other cities called *officio di la gabella*

- 1 Arithmetic
 - 1.1 Numeration (incl. finger numbers)
 - 1.2 Multiplication, multipl. table, check by seven (*proua del sette*)
 - 1.3 Division (*diuisione o partire*)
 - 1.4 Addition (*sumare o ricogliere*)
 - 1.5 Subtraction (*sottrare o tragere*)
- 2 Various rules (*ragioni*) and affairs (*occurrentie*):
 - Nr. 36 Regula de tri
 - Nr. 42 Currency conversions
 - Nr. 50 Venetian currency (*monede di Venezia*)
 - Nr. 54 Tare (*abater di tara*)
 - Nr. 56 Tax, toll (*abater messetaria o gabella*) –
 - Nr. 78 Gold and silver
 - Nr. 81 Alloys
 - Nr. 88 Tret (*fusti*)
 - Nr. 90 Check of the regula de tri
 - Nr. 91 Percentage
 - Nr. 93 Regula societatis simplex (*compagnia*)
 - Nr. 96 Regula societatis temporum
 - Nr. 100 Testament, son daughter twins: twin inheritance
 - Nr. 101 Barters (*barati*)
 - Nr. 104 Loan and interest
 - Nr. 105 Ship with oars (*remi*): Regula de tri inversa

Italian 7

Girolamo Tagliente

Libro d'abaco
Venezia 1515

Content overview

(according to pdf 12, pdf 158 and the text)

- Nr. 106 Loaf of penny (*pan al soldo*): Sales, regula de tri inversa
- Nr. 108 Tree (*alboro*): find length
- Nr. 110 Digging a well (*cavar uno pozo*): work, arithmetic progr.
- Nr. 111 Couriers (*curieri*): encounter
- Nr. 112 Debts with different due dates
- Nr. 113 Strokes of a clock (*botte di una campana*) per day:
arithmetic progression
- Nr. 114 Motion in the same direction with constant vs increasing
distances per day: pursuit
- Nr. 115 Three women and eggs (*houe*): equal proceeds
- Nr. 116 Woman and broken eggs: remainder
- Nr. 117 Ship (*naue*) with two sails (*velle*): shared work
- Nr. 118 Ships: encounter
- Nr. 119 Vessel with two fountains (*botte a doi canelle*): shared w.
- Nr. 120 Fish in parts (*pesce*): find weight
- Nr. 121 Cat (*gatta*) and mouse (*sorze*) on a tree: motion to and fro
- Nr. 122 Dog and roebuck (*cane e cauriolo*): pursuit
- Nr. 123–137 Problems without solutions
- Nr. 138–142 Guessing numbers (ring, money, pips on a die etc.)
- 2 Geometry (pdf 133)
- 3 Conversion tables (pdf 142)
- 4 Quantity-price tables (pdf 150)
- 5 The shape of various goods of good quality (pdf 158)

Sardinian

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

Information: Sardinia in the Savoy period represented an example of an “underdeveloped” region in which mathematical knowledge was spread with great difficulty. The low level of scientific knowledge inherited from the Spanish domination, the geographical isolation of an island in the middle of the Mediterranean and at that time several days’ navigation from the mainland, Savoy policies built on absolutism and not geared to the needs of the island, all contributed in creating this “underdeveloped” status of the region.

Reference: Scoth, Roberto (University Cagliari): Higher education, dissemination and spread of the mathematical sciences in Sardinia (1720–1848). In: *Historia Mathematica* 43 (2016) 172–193; p. 173 (<https://doi.org/10.1016/j.hm.2015.11.001>)

Romanian

Anonym

*Ducere de mâna cătră
Arithmetica sau socoteala –
Anleitung zur Rechenkunst*

Vienna: Joseph Kurzboeck 1777

Vienna: Joseph Kurzboeck 1782, 1785, 1788

Sibiu: Petru Bart 1789

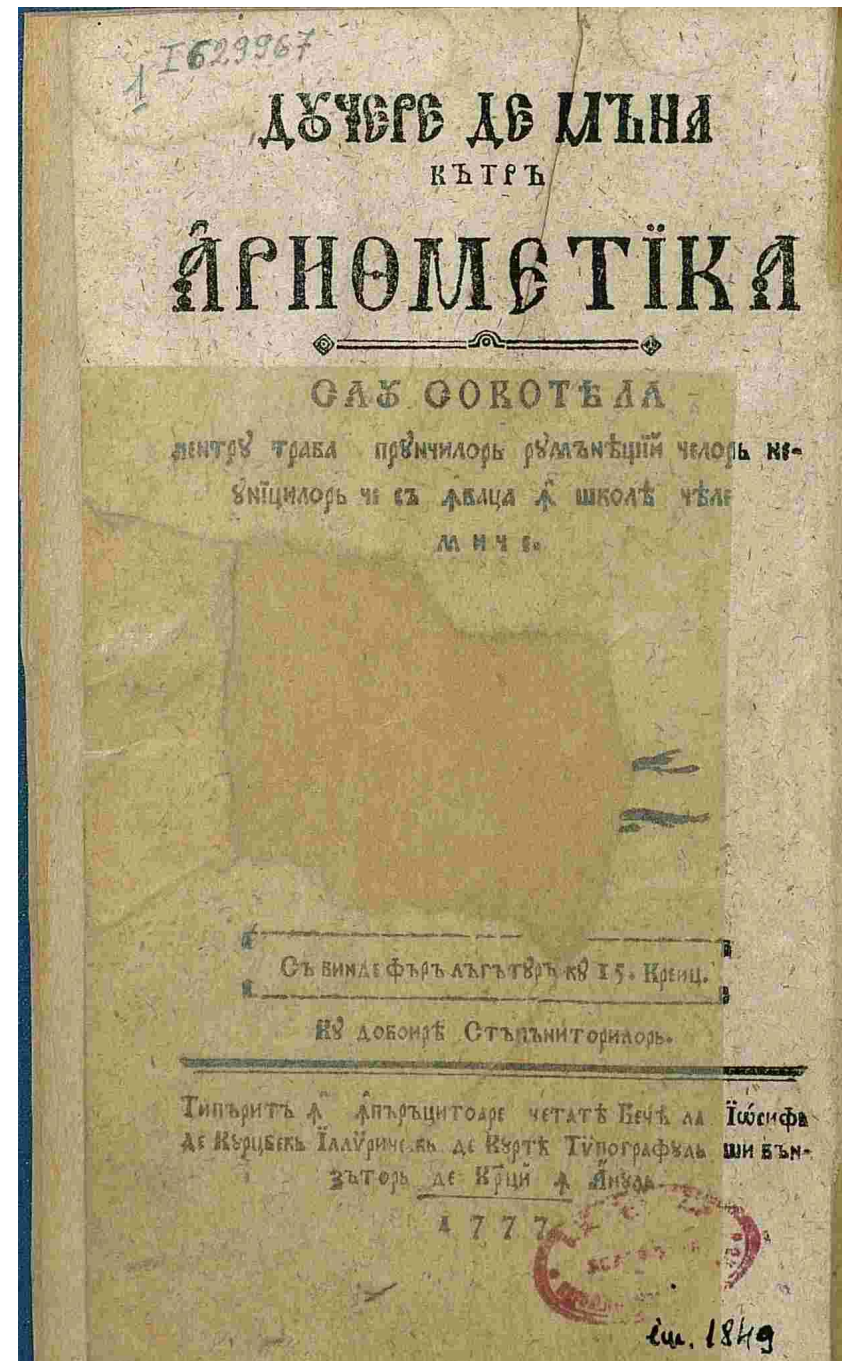
Romanian German bilingual

151 p.

D/L/V: Biblioteca Academiei Române
(Romanian Academy L) biblacad.ro

C/S/V: on separate page

Published three years after the introduction
of compulsory schooling by empress Maria
Theresa in 1774



Romanian

Anonym

*Ducere de mâna cătră
Arithmetica
Vienna: Kurzböck 1777*

Transcription
of the Romanian title page

Joseph Ritter von Kurzböck (1736–1792),
court typographer in Vienna especially for
Illyrian and Oriental scripts, university
bookstore Vienna
(Wurzbach, Constantin von: Biograph.
Lexikon des Kaiserthums Oesterreich)

*Ducere de mâna
cătră
Arithmetica
sau socoteala*

*Pentru traba pruncilor rumânești celor ne-
uniților ce să învața în școle cele
mice.*

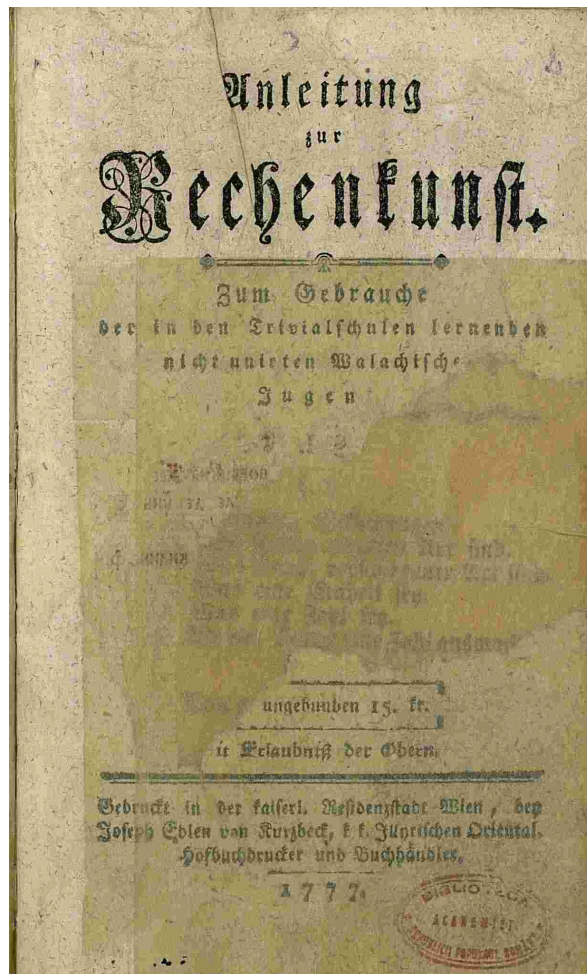
*Să vinde fără lăgătură cu 15. Creiș.
Cu dovoire Stăpănitorilor.*

*Tipărită în împărățitoare cetate Bece la İosifa
de Curțbek İllÿricesc de Curte Tÿpografuș și vãn-
zător de Cărți în Anul
1777*

Romanian

*Ducere de mâna cătră
Arithmetica. Vienna 1777*

Transcription of the German title page



*Anleitung
zur
Rechenkunst.*

*Zum Gebrauche
der in den Trivialschulen lernenden
nicht unirten Walachischen
Jugend*

*[Wird verkauft] ungebunden 15. kr.
Mit Erlaubniß der Obern.*

*Gedruckt in der kaiserl. Residenzstadt Wien, bey
Joseph Edlen von Kurzbeck, k. k. Illyrischen Oriental.
Hofbuchdrucker und Buchhändler.
1777.*

Romanian

Anonym

*Ducere de mâna cătră
Arithmetica*

Vienna: Kurzböck 1777

Translation of the Romanian
and German title pages

*Guide
to
the art of arithmetic.
For the use
of the non-Uniate Walachian youth
who learn in elementary schools*

*[Sold] in sheets for 15 kreutzer.
With the permission of the authorities.*

*Printed in the imperial residence city of Vienna,
by Joseph Edler von Kurzbeck,
imperial and royal court typographer
for Illyrian and Oriental scripts and bookseller
in the year 1777.*

Romanian

Anonym

*Ducere de mâna cătră
Arithmetica*
Vienna: Kurzböck 1777

Editions and references

Ducere de mâna cătră Arithmetica sau socoteala (Romanian/Germ.).
Beci (Vienna): Joseph Kurzböck 1777 (Roman, Eliza 2008, p. 134)
Ducere de mîna cătră aritmetică (Romanian/Germ.). Vienna 1782
Ducere ... (Roman./Germ.). Vienna: Joseph Kurzböck 1785, 302 p.
Șincai, Gheorghe: *Îndreptare către Aritmetică. Întâia parte.*
Blaj/Blasendorf: Tipariul Seminariului 1785/86, 6+162 p.
(Cyrillic; digital: Biblioteca Centrală Universitară “Lucian Blaga”
Cluj-Napoca (OCLC 7761 08695); Roman, Eliza 2008, p. 134)
Ducere ... Vienna: Joseph Kurzböck 1788, 302 p.
Ducere ... (Roman./Germ.?). Sibiu: Petru Bart 1789, 304 p.
Hotiniul, Amfilohie: *Elemente aritmetice arătate firești ...* Iași 1795
Hotiniul, Amfilohie: *Elemente matematicești firești.* Iași 1798
(Roman, Eliza 2008, p. 134)
Povățuire cătră aritmetică sau învățătura numerelor ...
Buda 1806, 1822 (Cyrillic; digital: biblacad.ro)
(editions above available via www.tipariturivechi.ro or biblacad.ro)

C/S/V: Philippide, Alexandru: Introducere in istoria limbei și
literaturei romîne. Iași 1888, p. 149

Mureșianu, Ion B: Tiparnițele [typography] și bucoavnele [Cyrillic
books] de Viena și Buda. In: Foaia Diecezană, Caransebeș (Banat)
February 1942, p. 6

Roman, Eliza: Arina în țara numerelor. București 2008, p. 134

Roman, E: Bibliografia matematicii românești. Ed. Academiei 1972

Romanian

Anonym

*Ducere de mâna cătră
Arithmetica*

Vienna: Kurzböck 1777

Content overview

(according to the Romanian and
German tables of contents)

Introduction: Numeration

1 Four species (*șpețies arithmetiki*) for integers (*numerile întreg*)

1.1 Addition

1.2 Subtraction

1.3 Multiplication

1.4 Division

1.5 Checks (*probe*) by inverse operation

2 Denominate numbers (*numerile numite*)

2.1 Coins (*monete*), measures (*măsur*), weights (*măsur*)

2.2 Reductio descendens (*rezolvire*)

2.3 Reductio ascendens (*reducție*)

2.4 Addition

2.5 Subtraction

2.6 Multiplication

2.7 Division

3 Symbols (*sămnele*) and regula de tri

3.1 Signs (arithmetic operators)

3.2 Regula de tri directa

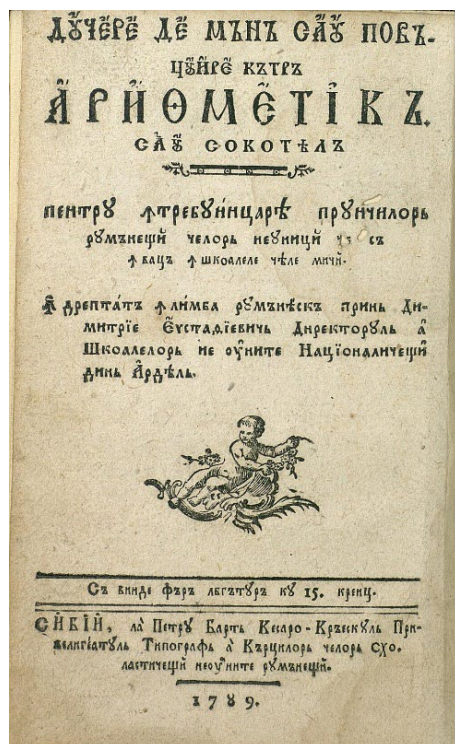
3.3 Regula de tri inversa

Romanian – Supplement 1

Dimitrie Eustatievici

*Ducere de mână sau povățuire
cătră aritmetică sau socoteală
Sibiu: Petru Bart 1789*

Transcription and translation of parts of the
title page (the rest coincides with 1777)



*Ducere de mână sau povățuire
cătră Arithmetică sau socoteală*

*Îndreptată în limba rumânească
prin Dimitrie Eustathievici Direktorul a
Școalelor ne unite Naționalicești din Ardeal.*

*Sibii, la Petru Bart Chezaro-Crăiescul
Priveligiatul Tipograf a Cărților
celor scolasticești ne unite rumânești.*

*Guide or instructions
to arithmetic or to calculation*

*Arranged for the Romanian language
by Dimitri Eustatievici, director
of the non-Uniate national schools in Transylvania.*

*In Sibiu, with Peter Bart,
imperial and royal privileged typographer
for non-Uniate-Romanian school books*

(D: Catalogul tipăriturilor românești vechi: www.tipariturivechi.ro)

Romanian – Supplement 2

Earliest arithmetic book in Latin script

Dimitrie Pavel

1795–1883 (biblacad.ro)

Aritmetică elementară

București: Tipografia

Collegiului Naționalu² 1858

1st edition perhaps

Elemente de aritmetică rațională

București 1855

86 p.; with transition alphabet

D/L/V: Bibiloteca Națională a României

(NL of Romania) bibnat.ro



German 1

Anonym

'Trento *Algorism*'

[Trento: Albrecht Kunne
ca. 1475]

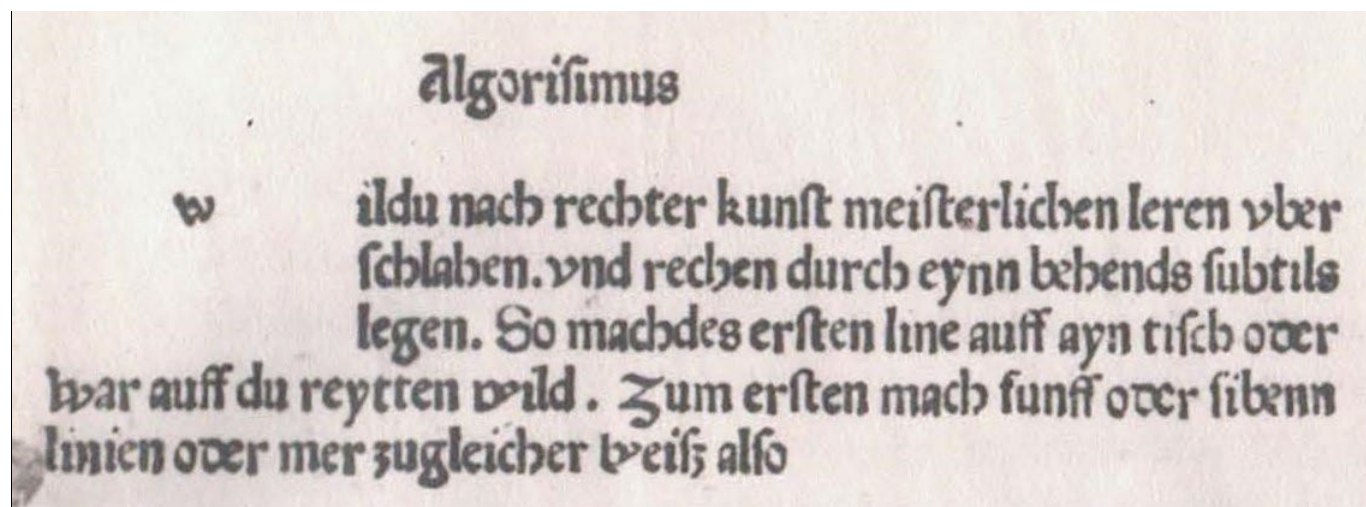
12 p.

C/V: Hooek I/-2; UCatInc 1279

D: –

L: Dessau LandesB

Transcription and translation of
the beginning of the first page



Algorisimus

*w ildu nach rechter kunst meisterlichen leren vber
schlahen. vnd rechen durch eyynn behends subtils
legen. So mach des ersten line auff eyn tisch oder
war auff du reyten wild [etc.]*

The text starts with instructions for how to prepare
for calculations with the counters:

*If you want to perfectly learn to convert and to calculate
according to the correct art by smartly and subtly
laying [counters], at first draw lines on a table or
where you want to calculate [etc.]*

German 1

Anonym

‘Trento *Algorism*’

[Trento: Kunne ca. 1475]

Content overview

(according to the section headings and the text)

E: Vogel, Kurt. In: *Nova Acta Leopoldina*, 167 = N. F. 27 (1963) 183–200

(= Beiträge zur Geschichte der Medizin und der Naturwissenschaften, Festschrift Rudolf Zaunick)

S: Saemann, Willi. In: *Mathematik in der Schule* 10 (1972) 626–635;

11 (1973) 15–22, 265–268

Calculation with the counters (‘Linienalgorithmus’): addition, subtraction, halving (*mediatio*), duplication, multiplication, division, progression

- 1 Regula de tri (calculation of prices)
- 2 Regula societatis simplex
- 3 Regula societatis temporum
- 4 Testament, son daughter twins: twin inheritance
- 5 Arithmetic progressions
- 6 Motion in opposite directions (from and to Rome): encounter
- 7 Partition of an amount for several people according to a given proportion: company
- 8 Hare and greyhound: pursuit
- 9 Tower (soil, water, air): find length
- 10, 11 Partition of an amount for several people according to a given proportion: company

German – Supplement

Anonym

Bamberg block book
ca. 1470–1482

28 p.

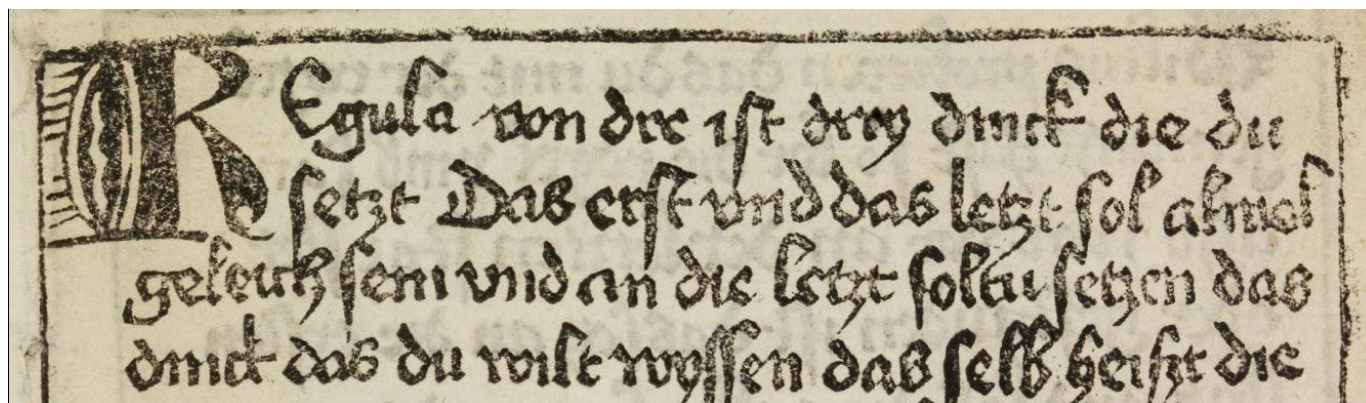
D/L: Bamberg SB (Inc. typ. Ic. I.44)

E: Vogel, Kurt. München 1980

252 p. handwritten appendix: a great deal
copied from *Algorithmus Ratisbonensis*

The book is only described
briefly as it is not printed with
moveable types.

It is not an incunabulum, but a
xylograph (woodblock printing).



*REgula von dre ist drey dinck die du
setzt Das erst vnd das letzt sol almol
gleich sein vnd an die letzt soltu setzen das
dinck das du wilt wyssen [etc.]*

The text starts with instructions for the *regula de tri*:

*Regula de tri means three things you place.
The first and the last [third] one shall always be
equal [regarding the unit], and at the last [fourth] position
you shall place the thing you want to know [etc.]*

Content overview: quantity-price relations with
regula de tri, tare, *regula fusti*, gold, conversions,
reductio a/descendens tables, *regula societatis*

German 2

Ulrich Wagner

b. ca. 1450

d. ca. 1490

1468 University Leipzig, 1472-09-16 BA

Master arithmetician in Nürnberg

Rechnung in mancherley weys –

‘Bamberg arithmetic book’

(‘Bamberger Rechenbuch’)

Bamberg: Heinrich

*Petzensteiner*¹ 1482-05-17

Fragments: 9 p. and snippets

C/V: Hooch I/W2.1; UCatInc M3720810

D/L: Bamberg SB (Inc. typ. H.IV.31)

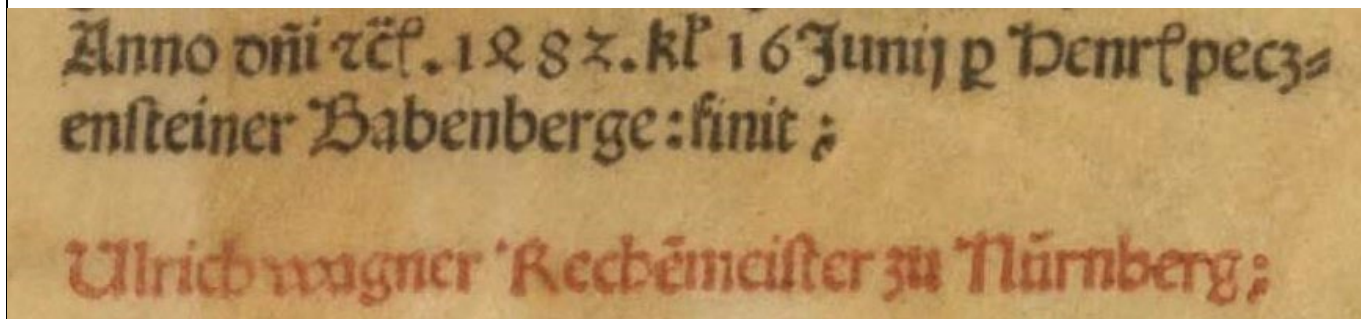
S: Rüdiger, Bernd: Ries-Kolloquium 2020

Vogel, Kurt. In: *Gymnasium und*

Wissenschaft. München 1949, 231–277

Brunner, Heinrich. *MVGN* 35 (1937) 1–16

Title page and table of contents are not extant,
only the colophon with printer and author:



*Anno domini etc. 1482. kl 16 Junij per Henr̄ pecz-
ensteiner Babenberge[nsem] finit[um]*

Ulrich wagner Rechenmeister zu Nürnberg;

In the year of our lord etc. 1482

on the 16th day before the calends of June [1482-05-17]

finished by Heinrich Petzensteiner in Bamberg

Ulrich Wagner, master arithmetician in Nürnberg

German 2

Ulrich Wagner

Rechnung in mancherley weys –

‘Bamberg arithmetic book’

(‘Bamberger Rechenbuch’)

Bamberg: Heinrich

Petzensteiner² 1483-04-15

154 p.

C/V: Hooek I/W2.2; UCatInc M37209

D: Zürich ZentralB

R: Zürich 1966

München 1966 (Burckhardt, J J)

L: Zürich ZentralB, Zwickau RatsschulB

E: Schröder, Eberhard. Weinheim 1988

S: Rüdiger, Bernd: Ries-Kolloquium 2020

Günther, Wolfram. In: Sächsische

Heimatblätter 1960, 355–364

Unger, Friedrich: Das älteste deutsche

Rechenbuch. In: Zeitschr. für Mathematik

und Physik 33 (1888) 125–145

Das Register.

Hie nach volget d̄s Register dises Rechenpuch-
leins nach seynen Capiteln vnd was in eynem ycz-
lichem begriffen. Hierumb den fleysig mercken
das mit gantzen fleys ersucht mit seinen Canonen
vnd Exempeln nachuolgende vnd ob yndert eyn
ciffre ader mer verkert were. wil ich entschuldigt
sein ader zu vil ader zewenig wer. wã du gar leicht-
lich durch dy obgemelten Canon vnd ir regel vnd
den magst alle rechnug in disem puchlein. Auch ein-
iglicher in teutschē lesen vnd in ciffren erfahren mag
an alie vnter weysug von im selbs solichs gelernē

**Inzale Xpi. 1483. kl. 17. des Adeyen Rechnung
in mancherley weys in Babenberg durch henrt
petzensteiner begriffen. volendet.**

German 2

Ulrich Wagner

*Rechnung in mancherley weys –
'Bamberg arithmetic book'
Bamberg: Petzensteiner ²1483*

Transcription of the first page
and of the colophon

S: Jaeger, Adolf: Der Nürnberger Rechenmeister Ulrich Wagner. In: Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften 26 (1927) 1–5

Heinrich Petzensteiner himself had basic university studies (1462 University Leipzig; his supposed father Johannes 1441 University Wien) so that he could have co-authored the arithmetic book.

Das Register.

Hie nach volget dz Register dises Rechenpuchleins nach seynen Capiteln vnd was in eynem yczlichem begriffen. Hier umb den fleys sigf merckern das mit gantzen fleys ersucht mit seinen Ca<c>[n]onen vnd Exempeln nachuolgende vnd ob yndert eyn ciffrf ader mer verkert were. wil ich entschuldigt sein ader zu vil ader zewenig wer. wan du gar leichtlich durch dy obgemelten Canonen vnd ir regel vinden magst alle rechnung in disem puchlein. Auch ein iglicher in teutschen lesen vnd in ciffren erfahren mag an alle vnter weysung von im selbs solichs gelernen

In <zale> [jare] Christi .1483. kl .17. des Meyen Rechnung in mancherley weys in Babenberg durch henrf petzensteiner begriffen volendet.

German 2

Ulrich Wagner

Rechnung in mancherley weys –
'Bamberg arithmetic book'
Bamberg: Petzensteiner ²1483

Translation of the first page
and of the colophon

The Register

Hereafter follows the register of this arithmetic booklet according to its chapters and their contents: With that deals what was compiled here for the diligent learners with all care and what follows with its principles and examples. And if 1 digit each or more were wrong, I want to be excused, or if there were too much or too little; as you – with the principles and rules above – can very easily find all the calculations in this booklet. Also every one who is experienced in reading German and in digits can learn that autodidactically without any instruction.

In the year of Christ 1483 on the 17th day before the calends of May [1483-04-15], this “Calculation in several ways” was started and finished in Bamberg by Heinrich Petzensteiner. [Free translation: This “Calculation in several ways” was printed in Bamberg from the beginning to the end by Heinrich Petzensteiner and finished on 1483-04-15.]

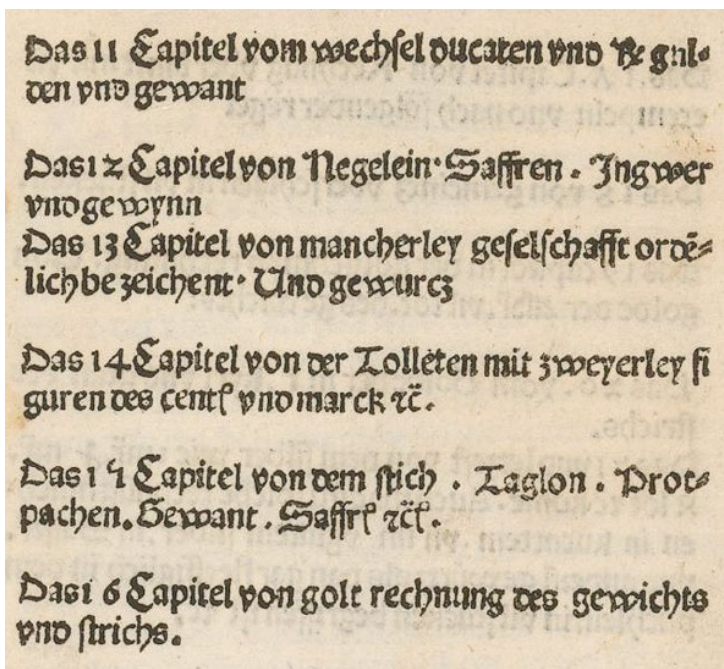
German 2

Ulrich Wagner

Rechnung in mancherley weys – 'Bamberg arithmetic book' Bamberg: Petzensteiner ²1483

Content overview

(according to the *Register*)



- 1 Numeration (*zal*)
- 2 Addition with check by seven [also for other species]
- 3 Subtraction (*abziehen*) with check (*prob*)
- 4 Multiplication
- 5 Division (*partiren, teylen*); arithm., geom. progressions
- 6 Multiplication of fractions (*gebrochen*)
- 7 Addition of fractions
- 8 Subtraction and halving of fractions (*minucien*)
- 9 Division of fractions
- 10 Regula de tri (*gulden regel*) with check; pepper, cloves
- 11 Currency exchange (*wechsel*); clothing
- 12 Regula fusti (cloves), saffron, ginger; profit (*gewinn*); regula quinque (interest)
- 13 Regula societatis (*gesellschaft*); regula equalitatis (spices)
- 14 Calculations with compound denominate numbers (*tollet*)
- 15 Barters (*stich, borati*); lazy worker (temporal part), loaf of penny, areas (sales/geometry, regula de tri inversa)
- 16 Gold calculation; tower in water (find length), motion, vessel (shared work)
- 17 International commerce (*vber lantt*)
- 18 Reductio a/descendens (*vberschlagen*)
- 19 Gold: purity-weight-value tables
- 20 Gold: purity-weight-value tables
- 21 Silver: weight-value tables

German 3

Johannes Widmann

b. ca. 1460/65 Eger/Cheb

d. between 1505 and 1515 Annaberg

1480/81 Univ. Leipzig, 1485 MA

1486 Lecture on algebra

ca. 1490 Six anonymous Latin treatises
(Gärtner 2000, p. 37–45)

ca. 1500 Moved to Annaberg

*Behende und hübsche Rechnung
auf allen Kaufmannschaft*

Leipzig: Konrad Kachelofen
1489

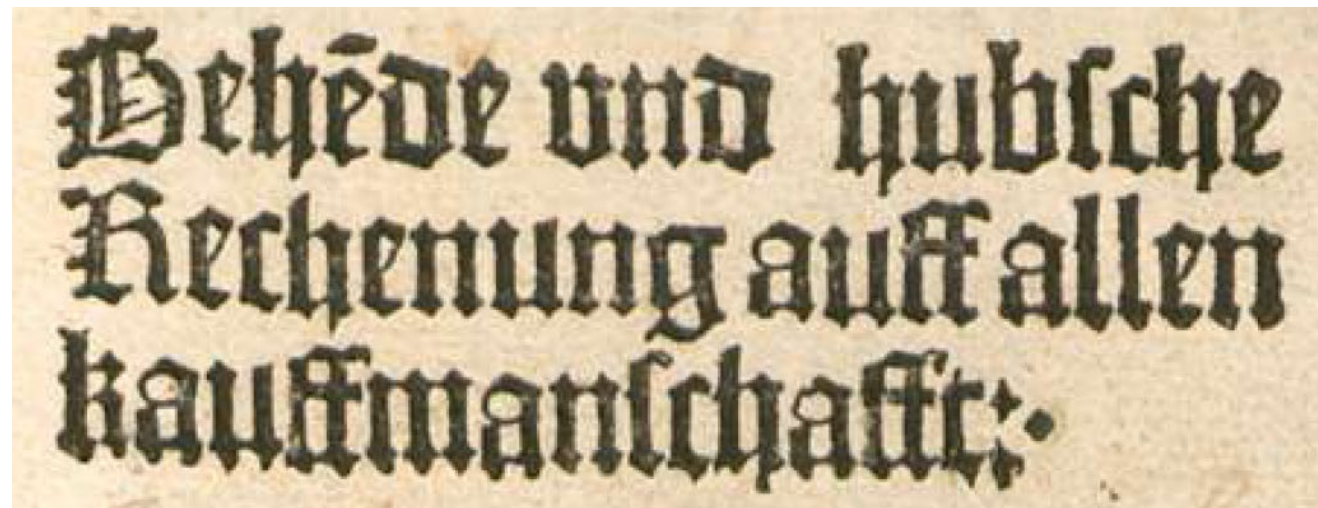
[Dedication New Year 1489]

472 p.

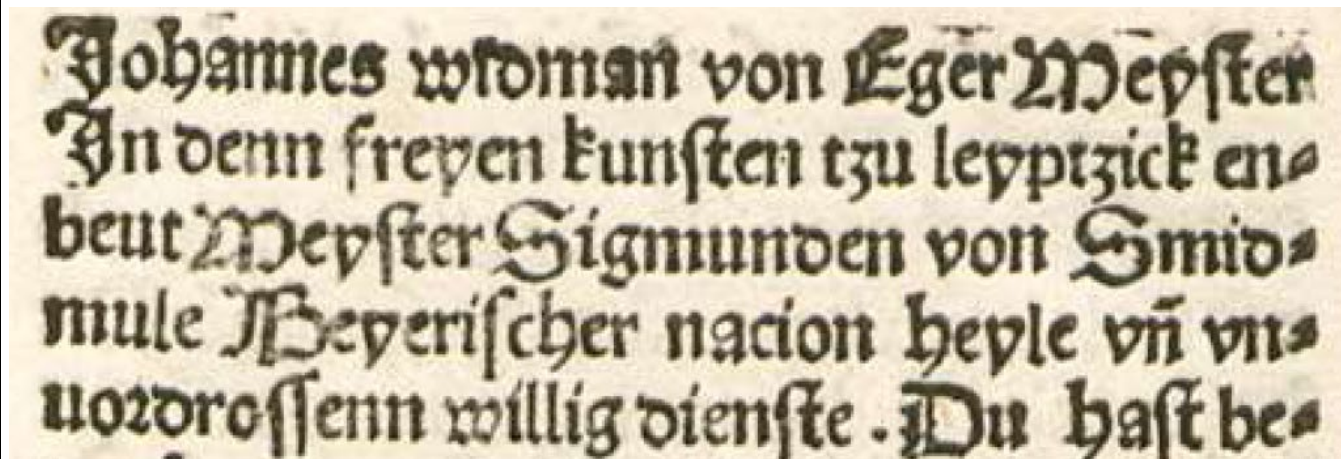
C: Hooock I/W7; UCatInc M51536, 38, 39

D/L: München BSB, Nürnberg GNM,
Stuttgart LB


E: Gärtner, Barbara. Tübingen 2000



Behēde und hübsche
Rechenung auff allen
kauffmannschaft.



Johannes widman von Eger Meyster
In denn freyen kunsten tzu leyptzick er-
beut Meyster Sigmunden von Smid-
mule Beyerischer nacion heyle vñ vns
uordrossenn willig dienste. Du hast be-



Bedruckt In der furstlichen Stath
Leipzick durch Conradū Kacheloffen
Im 1489 Jare

German 3

Johannes Widmann

*Behende und hübsche Rechnung
auf allen Kaufmannschaft
Leipzig: Kachelofen 1489*

Transcription of the title,
of the beginning of the dedication
and of the colophon

S: Rüdiger B in Jahrbuch des Adam-Ries-
Bundes 2017

Later editions:

Pforzheim: Thomas Anshelm 1500, 1508

Hagenau: Thomas Anshelm 1519

Augsburg: Heinrich Steiner 1526

C: VD16 W 2478, 2479, 2480

*Behende vnd hubsche
Rechenung auff allen
kauffmanschafft*

*Johannes widman von Eger Meyster
In denn freyen kunsten tzu leyptzick en-
beut Meyster Sigmunden von Smid-
mule Beyerischer nacion heyle vnd vn-
uordrossen willig dienste.*

*Gedruckt In der Furstlichen Stath
Leipczick durch Conradum Kacheloffen
Im 1489 Jare*

German 3

Johannes Widmann

*Behende und hübsche Rechnung
auf allen Kaufmannschaft
Leipzig: Kachelofen 1489*

Translation of the title,
of the beginning of the dedication
and of the colophon

Sigmund Altmann von Schmidmühlen
[near Amberg], since 1480 student at
University Leipzig, then university career
in Leipzig, perhaps professor
(Gärtner 2000, p. 4)

*Easily usable and smart
calculation for all
commerce affairs*

*Johannes Widman from Eger, master
in the liberal arts at Leipzig,
assures Master Sigmund von Schmidmühlen,
[member] of the Bavarian [university] nation,
of [his wish for] welfare and
his permanent friendly benevolence.*

*Printed in the princely city
of Leipzig by Conrad Kacheloffen
In the year 1489*

German 3

Johannes Widmann

*Behende und hübsche Rechnung
auf allen Kaufmannschaft
Leipzig: Kachelofen 1489*

Content overview

(according to the *Register*, pdf 10–17;
cf. Gärtner 2000, p. 128–138, 578–579)

1 Numbers (*zal*)

1.1 Calculations with integers (*gancze zal*)

1.1.1 Increasing (*Mehrung*): 1 Addition, 2 Duplication,
3 Multiplication

1.1.2 Decreasing (*Minderung*): 1 Subtraction, 2 Halving
(*Medieren*), 3 Division

1.1.3 Intermediate (*Mittelmaß*): 1 Numeration (*zelen*),
2 Progression, 3 Root extraction (*wurzel außziehen*)

1.1.n.m.1: 1 Rules, 2 Exceptions, 3 Checks (*prob*)

1.1.n.m.2: An example for each of the three checks

1.1.n.m.3: Three checks (general, by nine, by seven)

1.2 Calculations with fractions (*gebrochen zal*)

1.2.1 General rules

1.2.2 Parts of fractions

1.2.3 Parts and integers

1.3 Calculations with compound denominate numbers (*Tollet*)

1.3.1 Designation of the lines: multiples of the quantity units

1.3.2 Assignment of prices (*werde*) to the lines

1.3.3 Notation of the sold quantity in multiples of the quantity
units; multiplication with the corresponding price

German 3

Johannes Widmann

*Behende und hübsche Rechnung
auf allen Kaufmannschaft
Leipzig: Kachelofen 1489*

Content overview

(according to the *Register*, pdf 10–17;
cf. Gärtner 2000, p. 128–138, 578–579)

- 2 Order (*ordnung*) of the numbers
 - 2.1 Problems regarding the species mentioned above
 - 2.2 Proportions
 - 2.2.1 Types of proportions: multiplex, superparticularis, superpartiens, compound proportions
 - 2.2.2 Value, addition and subtraction of proportions
 - 2.2.3 Problems regarding rules (*anweysung*) for proportions
 - 2.3 Calculations for commerce affairs (*kauffmannschafft*), according to number, weight and measure
 - 2.3.1 Simple commerce affairs (*schlecht kauffschlahunge*)
 - 2.3.1.1 Regula de tri (*gulden regel*); conversions
 - 2.3.1.2 *Regula inventionis*
 - 2.3.1.3 *Regula fusti*
 - 2.3.1.4 *Regula pulchra*
 - 2.3.1.5 *Regula de tri conversa*
 - 2.3.1.6 *Regula transversa*
 - 2.3.1.7 Regula alligationis (*Regula ligar*)
 - 2.3.1.8 *Regula positionis*
 - 2.3.1.9 *Regula pulchra*
 - 2.3.1.10 *Regula equalitatis*
 - 2.3.1.11 *Regula legis*
 - 2.3.1.12 *Regula augmenti*

German 3

Johannes Widmann

*Behende und hübsche Rechnung
auf allen Kaufmannschaft
Leipzig: Kachelofen 1489*

Content overview

(according to the *Register*, pdf 10–17;
cf. Gärtner 2000, p. 128–138, 578–579)

- 2.3.1.13 *Regula augmenti et decrementi*
- 2.3.1.14 *Regula plurima*
- 2.3.1.15 *Regula pulchra*
- 2.3.1.16 *Regula sententiarum*
- 2.3.1.17 *Regula suppositionis* [linear functions]
- 2.3.1.18 *Regula residui*
- 2.3.1.19 *Regula excessus*
- 2.3.1.20 *Regula collectionis*
- 2.3.1.21, 22 *Regula pulchra*
- 2.3.1.23 *Regula quadrata*
- 2.3.1.24 *Regula cubica*
- 2.3.1.25 *Regula reciprocationis*
- 2.3.1.26 *Regula bona*
- 2.3.1.27 *Regula lucri* [profit and loss]
- 2.3.1.28 *Regula pagamenti* [payment]
- 2.3.1.29 *Regula alligationis*
- 2.3.2 Barthers (*stich*)
- 2.3.3 Companies (*geselschafften*); *regula falsi*
- 3 Geometry (*art deß messen*)
- 3.1 Basics: point, line, angle, surface, solid
- 3.2 Areas and volumes
- 3.3 Special calculations from recreational maths

German 4

Johannes Böschenstein

b. 1472 Esslingen/Neckar

d. 1540 Nördlingen

Augsburg, Ingolstadt, Nürnberg,
Wittenberg, Zürich, Heidelberg,
Antwerpen, Nördlingen

Prot. pastor, Hebrew language teacher

Ain new geordnet

Rechenbiechlin mit den zyffern

Augsburg: Erhart Oeglin 1514

47 p.

C: Hooek I/B13.1 (lists later editions);

VD16 B 6379, 6380, 6381

D/L: München BSB

R: Meretz W (Berlin 1983) with comm.

S: Martin, Paul C: Ries-Kolloquium 2002

**Ain New geordnet Rech
en biechlin mit den zyffern
den angenden schülern zu nutz In
haltet die Siben species Algorith=
mi mit sampt der Regel de Try/vnd sechs regeln d
prüch/vñ der regel Justii mit vil andern guten fras
gen den kñndern zum anfang nützlich durch
Joann Böschensteyn von Esslingen priester
neulich auß gangen vnd geordnet.**



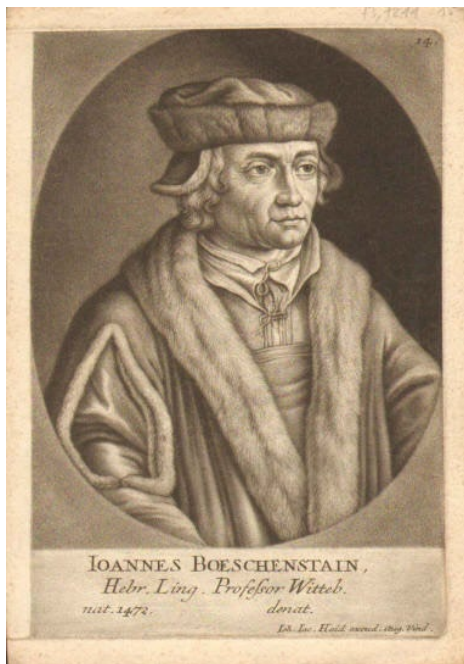
**Getruckt in der Kayserlichen stat Augspurg durch
Erhart oeglin Anno 1514 Jar.**

German 4

Johannes Böschenstein

*Ain new geordnet
Rechenbiechlin mit den zyffern
Augsburg: Erhart Oeglin 1514*

Transcription of the title page
and of the colophon



*Ain New geordnet Rech-
enbiechlin mit den zyffern
den ange[e]nden schülern zů nutz In-
haltent die Siben species Algorith-
mi mit sampt der Regel der Try/ vnd sechs regeln der
prüch/ vnd der regel Fusti mit vil andern güten fra-
gen den kündern zum anfang nützlich durch
Joann Böschensteyn von Esslingen priester
neulich auß gangen vnd geordnet.*

*Getruckt in der Kayserlichen stat Augspurg durch
Erhart öglin Anno 1514 Jar.*

German 4

Johannes Böschenstein

Ain new geordnet

Rechenbiechlin mit den zyffern

Augsburg: Erhart Oeglin 1514

Translation of the title page and
of the colophon

*A new systematic[ally arranged] arithmetic booklet
with the digits [calculation with the pen]
for the benefit of the novice pupils
comprising the seven species of algorithm
together with the regula de tri and six rules for
fractions*

*and the rule of tret with many other good questions
useful for the children for the basics [of arithmetic]
by Johann Böschenstein from Esslingen, pastor,
recently published and arranged.*

*Printed in the imperial city of Augsburg by
Erhart Oeglin in the year 1514.*

German 4

Johannes Böschenstein

Ain new geordnet

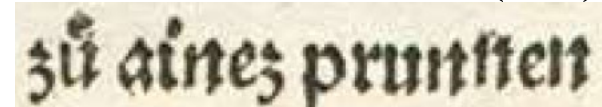
Rechenbiechlin mit den zyffern

Augsburg: Erhart Oeglin 1514

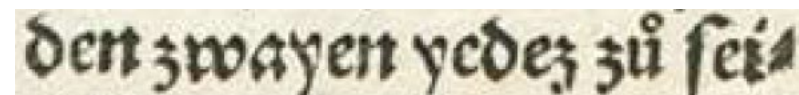
Content overview

(according to the section headings)

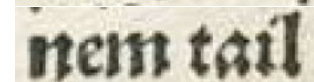
Vertical *m* occurs (Ei^v)



zu ainez prunsten



den zwayen yedez zu seia



nem tail

Seven species (*figuren*) with the pen for integers: numeration (*zelung*), addition (*summirung*), subtraction (*abtzyehung*), duplication (*duplatio*, *zwyspilung*), halving (*mediatio*, *halbyrung*), multiplication (*merung*), division (*taylung*)

Four species for fractions (*gebrochen*, *zerbrochen*): addition, subtraction, multiplication, division

Regula de tri for integers with check (*prob*): anterior number (*forder*), middle number (*mittel*), posterior number (*hinden*)
incl. regula quinque (work), regula de tri inversa (work)

Regula societatis simplex (*regel der geselschafften*); check

Regula fusti

Regula de tri for fractions (*prüche*)

First type (*erste regel*): anterior number is a fraction;

Second type (*ander*): middle number is a fraction;

Third type (*trit*): anterior and middle number are fractions;

Fourth type (*vierd*): all of the three numbers are fractions;

Fifth type (*fünfft*): middle and posterior number are fractions;

Sixth type (*sechst*): posterior number is a fraction

Miscellaneous problems: broken bell (alloy), fox and dog (pursuit), business trip (nesting), common meal (company), testament (company (sum of the parts > 1)), soldiers, toll (regula equalitatis, special), loaf of penny (sales, regula de tri inversa), coins (regula equalitatis), different quantities (give and take)

Conversions: currency, weight, capacity, time

German 5

Jacob Köbel

b. 1462 Heidelberg

d. 1533-01-31 Oppenheim

Univ. Heidelberg and Krakau

1494 “Stadtschreiber” of Oppenheim

Publisher with printing house of his own

Ain New geordnet

Rechenbiechlin auf den linien

Augsburg: Erhart Oeglin 1514

*Eynn Newe geordent Rechenbuechlein uf
den linien*

Oppenheim: Jacob Köbel 1514

59 p.

C: Hooch I/K8.1 (lists later editions);

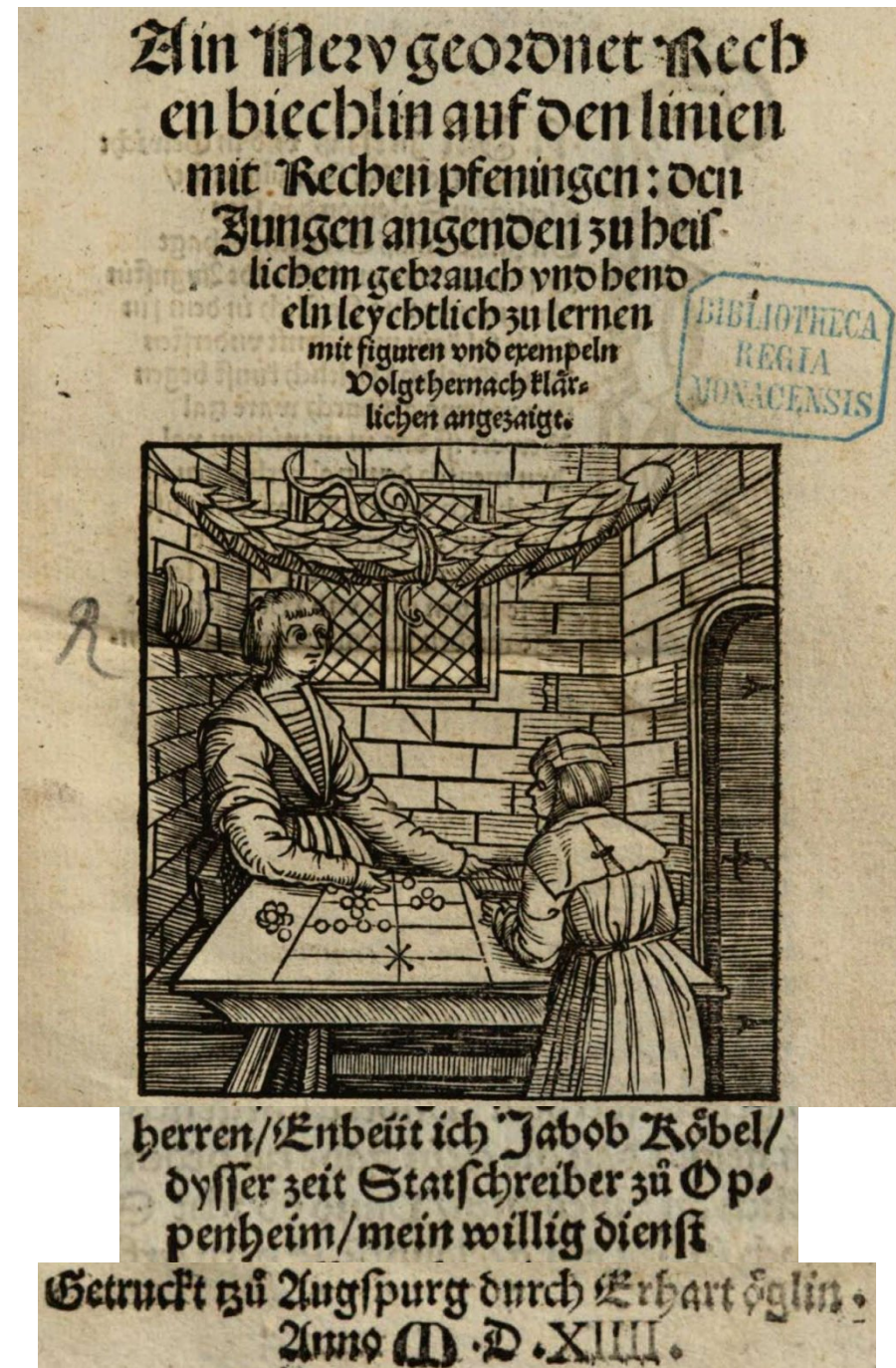
VD16 K 1643, 1644, 1645, 1646, 1647

D/L: München BSB

S: Hergenhahn, R: Ries-Kolloquium 1996;

In: Oppenheimer Hefte 11, 1995; 15, 1997;

In: Schatzkammer. Annaberg 2008



German 5

Jacob Köbel

*Ain New geordnet
Rechenbiechlin auf den linien
Augsburg: Erhart Oeglin 1514*

Transcription of the title page,
of a part of the dedication and
of the colophon

*Ain New geordnet Rech-
enbiechlin auf den linien
mit Rechenpfeningen: den
Jungen ange[e]nden [rechnern (fol. XX)] zu heis-
lichem gebrauch vnd hend-
eln leychtlich zu lernen
mit figuren vnd exempeln
Volgt hernach klär-
lichen angezaigt.*

*[...] ich Jakob Köbel/
dysser zeit Statschreiber zů Op-
penheim/ [...]*

*Getruckt tzů Augspurg durch Erhart öglin.
Anno M.D.XIIII.*

German 5

Jacob Köbel

*Ain New geordnet
Rechenbiechlin auf den linien
Augsburg: Erhart Oeglin 1514*

Translation of the title page,
of a part of the dedication and
of the colophon

*A new systematic[ally arranged] arithmetic
booklet “on the lines”*

*[for the calculation] with the counters,
for the young novices [novice arithmeticians]
for the use at home and for trading,
easy to learn,
with figures and examples,
follows below
in an understandable presentation.*

*[...] me, Jakob Köbel,
at present head of the municipal administration
at Oppenheim/ [...]*

*Printed in Augsburg by Erhart Oeglin.
In the year 1514.*

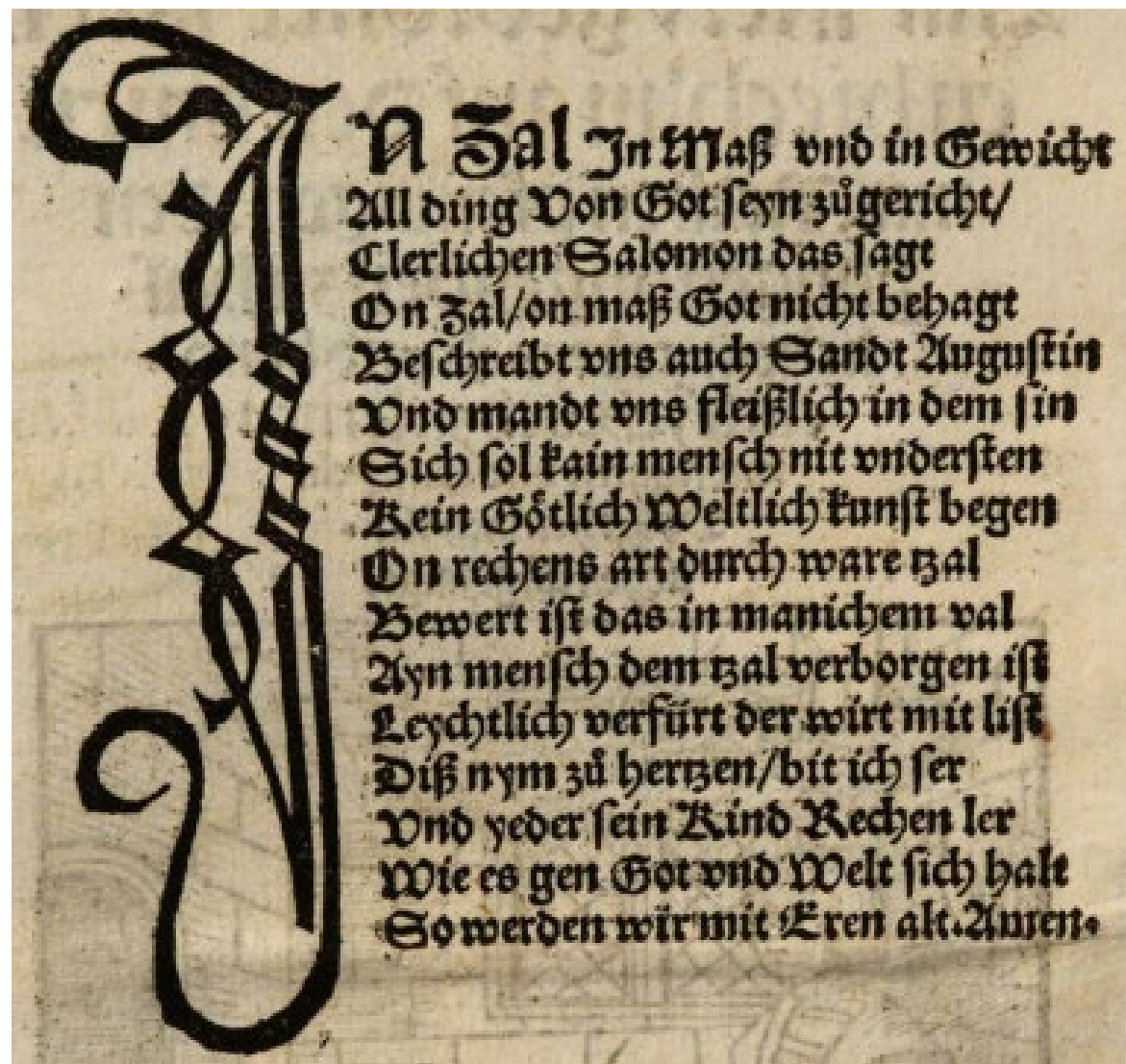
German 5

Jacob Köbel

Ain New geordnet

Rechenbiechlin auf den linien

Augsburg: Erhart Oeglin 1514



Augsburg 1514, Ai^v: Justification of arithmetic
Quotation of Solomon from the Book of Wisdom
(Sap. 11,21: „sed omnia mensura et numero et pondere disposuisti“)
Initial letters of the lines Refer to Köbel: JACOBVS KOBALDUWS

German 5

Jacob Köbel

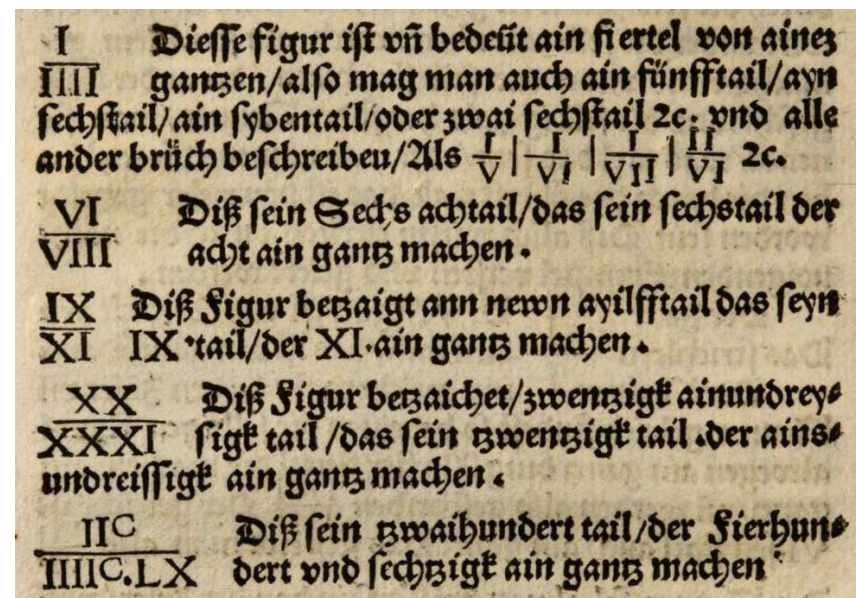
Ain New geordnet

Rechenbuechlin auf den linien

Augsburg: Erhart Oeglin 1514

Content overview

(according to the table of contents
(*registerlein*) and the section headings)



The entire textbook only uses counters and Roman numbers.

- 0 Roman numbers (*gemaine zalen*) with seven letters, Indo-Arabian numbers (*zyffer zalen*), comparison table of both types; symbols for coins and weights, coins of the electoral princes on the Rhine, coins of Frankfurt and weights with conversions
- 1 Calculation board (*rechenbanck*) with currency columns (*banckir, cambien*) in eight parts (*vnderschaidt*)
- 2 Addition (*zusamenlegen*), subtraction (*abtziehenn*), duplication (*duplatio, zwyfachmachung*), halving (*mediatio, halbierenn*), multiplication (*manigfaltigen*), division (*tailen*), arithmetic progressions (*vil zal auf ain ander für vnd für zalen*)
- 3 Regula de tri (*gulden regel*), check (*bewerung, prob*)
- 4 Calculations (*rechenschafften*) with fractions (*gebrochne zalen*) with fraction bar and Roman numbers (fol. XVIII^v), application to the regula de tri in four types (*regel*): anterior number is a fraction; posterior number is a fraction; middle number is a fraction; anterior and posterior number are fractions
- 5 Regula societatis (*gesellschaften*) simplex and temporum (*mit zulegung der zeit*), partition of an inheritance (*taylung in erbschafften*): company (sum of the parts > 1); testament, twin inheritance), regula equalitatis for coins (*müntz wechseln*) and spices (*würtz kaufen*), remainder problem Ta-yen (number guessing, *wye vil gelts im seckel*; cf. Tropfke 1980, p. 636–640)

Yiddish (Judaeo-German) 1

Arieh ['lion'] Leyb/Layb/Löw
Segal Shats/Šaṣ

Arieh Layb Segal ben Zeev Wolf Shatz –
publisher 1716 (Ecartico U Amsterdam)

Sēfer Yedi'at ha-ḥešbon

Amsterdam: Ašer Anšel ben
Eli'ezer Ḥazan, Yiśaškar Ba'er
bar Abraham Eli'ezer 1699
(Hebrew [5]459)

65 p. arithmetic, 10 p. conversion tables

D: Google books

L: Amsterdam Bibl. Rosenthaliana (in U)
(OCLC 11546 49346);

Jewish Theological Seminary of America
(OCLC 1228 57043), Yale U,

L of Congress (OCLC 6306 2538),

Halle/Saale ULB (OCLC 9983 22159)

S: Holl/Segev: Ries-Kolloquium 2023



Yiddish 1

Arieh Leyb/Löw

Sēfer Yedi'at ha-ḥešbon

Amsterdam: Anšel, Ba'er 1699

Transcription
of the Hebrew title page

Further biographic data:

Arieh Leyb's son **Shemuel** was active with the publisher Salomon ben Joseph Proops in Amsterdam 1701–1715 (CERL Thes. cnp02160616)

Another son of Arieh Leyb, **Tsevi Hirsch**, was a printer and active with Samuel ben Yiśaśkar Ba'er Segal, the son of one of the two printers of this book (London BL, record for Yaakov Yosef of Pollonne (Ukraine) (1710–1784): *Ben porat Yosef*. Korez (Ukraine) 1782).

ספר

ידיעת החשבון

בו נכלל כל מיני **חשבונות** מקטן ועד גדול בדרך
מעשה ו**חשבון** חכמת המספר הנקרא **חשבון** **ציפערס**
וכזה ה**ספר** כבר היה לעולמים ומודפס ב**לשון**
הקודש • אך מפני שאין שוה לכל ללמוד בתוכו ולהבין
מעשה חק ומשפט יושר דברי אמת מפני קוצר ה**לשון**
המושג לעיני המשיג אשר על כן התעורר לעת
עתה אחד מבני עמינו לעשות ה**ספר** הלז ב**לשון**
אשכנז להבין בו כמה וכמה **חשבונות** מספריהם של
אומו'(ת) • וכמה שאלות וחידות • **חשבונות** תחבולות
בני אדם • ו**חשבון** מעשה **כסף וזהב** של צורפי **זהב**
ו**חשבון** (**שפעצי' טאביל**) הכל באר

Yiddish 1

Arieh Leyb/Löw

Sēfer Yedi'at ha-ḥešbon
Amsterdam: Anšel, Ba'er 1699

Transcription
of the Hebrew title page

The Hebrew year [5]459
(subtracting 3761/3760)
corresponds to 1698/99 CE.

היטב וקצורי **חשבונו' (ת)** בכל ענינים בקיצור יפה
כסולת מנופה הנקרא **וועלשי פראקטיקא** • ומלאה
הארץ דעה • בכל משא ומתן אשר אירע • השם ישלח
לנו נחמה וישועה אכי"ר [אמן פן יהי רצון]:

הובא לבית הדפוס על ידי האלוף התורני
כהר"ר [פבד קרב רבי] **אריה ליב סג"ל** [סגן לוויה] ש"ץ
[שליח ציבור] ונאמן דמתא
קהלה קדישא **אשכנזים** יצ"ו [ישמרהו צורו ויחיהו]

באמשטילרדם

בבית חמשותפים **אשר אנשיל בן הר"ר אליעזר חזן** שליט
[שיהיה לאורך ימים רבים]
שוחט דמתא [העיר] וכמר **יששכר בער בר אברהם אליעזר**
בשנת **תנט** לפ"ק [לפרט קטן (כי חסרות ספרות בתאריך)]

Yiddish 1

Arieh Leyb/Löw

Sēfer Yedi‘at ha-ḥešbon

Amsterdam: Anšel, Ba‘er 1699

Translation
of the Hebrew title page

For transcriptions and translations of the Hebrew parts, I am very indebted to Dr. Stela Segev, Herzog College, Jerusalem.

The book of (knowing the) arithmetic

It includes all kinds of calculations from small to large, how to perform them, and the Calculation Art which is called Calculation of Numbers (ציפערס Zifers [in Yiddish]).

And such a book has already been printed in the Holy language (בלשון הקודש bi-lešon ha-qodeš [i.e. in the Hebrew language]).

But because not everyone can learn and understand the rules and the truths written in the Holy language, one of our people has just woken up to make this book in the Ashkenazi language (בלשון אשכנז bi-lešon aškenaz), and to understand through it several calculations from books of other nations, and some questions and riddles, human tricks in calculations and silver (כסף kesef) and gold (זהב zahab) calculations of goldsmiths (special table) (spezie Tabell טאביל שפעצי [in Yiddish]).

Yiddish 1

Arieh Leyb/Löw

Sēfer Yedi‘at ha-ḥešbon

Amsterdam: Anšel, Ba‘er 1699

Translation

of the Hebrew title page

Welsh Practice: techniques to facilitate multiplications, especially with compound amounts consisting of higher and lower units in the context of the rule of three (cf. Ulf-Møller: Ries-Kolloquium 2011)

Ašer Anšel ben Eli‘ezer Ḥazan (active 1663–1713) was a printer in Amsterdam. Until 1703, he worked with his partner Yiśaškar Ba‘er/Bär bar Aḇraham Eli‘ezer from Minden (CERL Thesaurus, cni00043801).

*And all is well and shortly explained
as sifted semolina [reduced to the essential parts]
[using a method] which is called Welsh Practice
(פראקטיקא וועלשי Welsche Praktika [in Yiddish]).*

And the country was filled with knowledge.

In any negotiation that has occurred,

God will send us comfort and salvation, amen so be it.

*Brought to the printing house by the expert in the Torah,
the honored Rabbi Arieh Leib Segal [funeral assistant]*

Šaš [public messenger], the city trustee

*of the Ashkenazi Funeral Congregation – his creation
will preserve him and he will live.*

In Amsterdam

In the common house of Ašer Anšel son of Rabbi Eli‘ezer

Ḥazan – may he live for many days –,

the city butcher [Aramaic word], and Yiśaškar Ba‘er,

Aḇraham Eli‘ezer’s son

*in the year **t.n.t** [(5)459; 1699 CE]*

and some small detail [date not fully written]

Yiddish 1

Arieh Leyb/Löw

Sēfer Yedi‘at ha-ḥešbon

Amsterdam: Anšel, Ba‘er 1699

Content overview

(according to the section headings)

The Yiddish texts are transcribed in modernized German.

The text often quotes that the terms are Latin.

The pdf numbers of the digital reproduction by Google from the original held by Amsterdam U are used as reading and finding Hebrew page numbers in this book can be complicated.

- 10 Numeration – called so in Latin
(*Wird genannt auf Latein Nummerieren*)
- 12 Addition (*Addieren*)
- 14 Subtraction (*Subtrahieren*)
- 17 Multiplication (*Multiplizieren*)
- 21 Division (*Dividieren*)
- 32 Regula de tri (*Regula de tri*)
- 41 Italian practice (*Welsche practica*)
- 44 Silver calculation according to the practice
(*Fein Rechnung in כסף [kesef Hebrew ‘silver’]
(von Silber) nach der Practica nach*)
- 47 Numeration of fractions
(*Nummerieren in Gebrochnen*)
- 51 Addition of fractions (*Addieren in Gebrochnen*)
- 54 Subtraction of fractions
(*Subtrahieren in Gebrochnen*)
- 57 Multiplication of fractions
(*Multiplizieren in Gebrochnen*)
- 59 Division of fractions (*Dividieren in Gebrochnen*)

Yiddish 1

Arieh Leyb/Löw

Sēfer Yedi‘at ha-ḥešbon

Amsterdam: Anšel, Ba‘er 1699

Content overview

(according to the section headings)

- 63 Regula de tri for fractions
(*Regula de tri in Gebrochnen*)
- 65 Regula quinque (*Regula quinque*)
- 66 Regula quinque for fractions
(*Regula quinque in Gebrochnen*)
- 67 Information about various currencies and
about book-keeping in the most famous cities
(*Ein Nachricht von allerlei Geld, auch wie in den
vornehmsten Städten Buch gehalten wird*)
- 73 Information about weights
(*Nachricht der Gewichte*)

Yiddish 1

Arieh Leyb/Löw

Sēfer Yedi‘at ha-ḥešbon

Amsterdam: Anšel, Ba‘er 1699

Appendix (pdf 74)

[As the Appendix is not an arithmetic book but a mere collection of currency tables, only the beginning of the title page and the contents is transcribed in modernized German and translated]

*Špešye buk drinen begrifen
die oys rekenung
fon die fer minderte šiling
zu (5) šřiberś un’ (8) pfening*

*Spezielles Buch
darinnen inbegriffen die Ausrechnung
von den verminderten Schillingen
zu 5 Stüber und 8 Pfennig
ausgerechnet von fünf und vier Schilling
in einem Worf*

*Special book
comprising the conversion
of the reduced shillings
worth 5 stivers and 8 pennies
calculated for multiples of five and four shillings*

[The printer information is the same as on the title page]

Conversion (Dutch currency):

1 gulden/guilder = 20 stivers = 320 pennies

[stiver: Dutch *stuiver*, German *Stüber*]

Yiddish 2

Moses/Mōše/Moshe Haida/ Hayda ben Yōsēf

Roughly 1670–1750

German mathematician in Hamburg

Grandson of Samuel Haida (1626–1685
Praha) (jewishencyclopedia.com)

Sēfer Ma 'asē ḥôrēš we-ḥōšēb
Frankfurt/Main: Johann Kölner /
Kellner (for Šimon Wolf ben
Abraham from Aachen)
1711 (Hebrew [5]471)

320 p.

D: lbsopac.rz.uni-frankfurt.de

L: Frankfurt U (Jud. Germ. 1189, 907);

London BL (BLL0101 3836814);

NL of Israel (9900 2130 8560 205171);

Harvard U (9900 9520 6350 203941)

S: Holl/Segev: Ries-Kolloquium 2023



Yiddish 2

Moses/Moshe Haida/Hayda

Sēfer Ma 'asē ḥôrēš we-ḥōšēb
Frankfurt: Johann Kölner 1711

Transcription of the Hebrew title page

The Hebrew year [5]471
mentioned in the three approvals
(subtracting 3761/3760)
corresponds to 1710/11 CE:
1710-09-14 – 1711-09-30.

In connexion with the date mentioned on
the title page, 5 Shvat [5471] = 1711-01-25,
the year of publication can be identified
as 1711 CE.

ספר

מעשה חורש

וחושב

מיוסד על אדני חכמת המספר

והתשבורת והיא חבור נחמד אשר

אזן וחקר ותקן הבהור נחמד חריף

ובקי זך ונקי כש"ת [כבוד שם תפארתו]

כה"רר [כבוד הרבי רבי] משה בן

המנוח מוהר"ר [מורנו (ורבנו) הרב רבי]

יוסף היידא זצ"ל [זכר צדיק לברכה]

מהמבורג בהיותו בפראנקפורט

דמיין בשעת שיצאה גזרת השריפה

בע"וה [בעוונותינו הרבים] והמלאכה היתה דיה ונגמרת

ביום א"ה" שבט לסדר ולפרט

פקד יפקוד אלהים א

Yiddish 2

Moses/Moshe Haida/Hayda

Sēfer Ma 'asē ḥôrēš we-ḥôšēb
Frankfurt: Johann Kölner 1711

Transcription
of the Hebrew title page

After the title page, there are three
approvals by:

- 1 Rabbi Naphtali Catz (Cohen), Frankfurt
- 2 Moreno (and Rabbeinu) Shmuel Cohen Schotten, President of court and Rabbi of Klause in Frankfurt/Main and of the County of Hessen-Darmstadt
- 3 Rabbi Abraham Naphtali Hirsch Spitz Segal, President of court, community of Worms and its district

תכם נדפס

פה פראנקפורט דמיין

בבית האדון

יהאן קעלניר

ע"י הפועל זעציר

קרישטיאן פראש

מאויגשבורג

נמצאים ונמכרים במקח השוה אצל

האלוף כמוהר"ר [כבוד מורינו ורבנו הרב רבי] שמעון וואלף בן
אברהם מעכן שליט"א [שיזכה לימים טובים וארוכים] בפראנקפורט

דמיין:

Yiddish 2

Moses/Moshe Haida/Hayda

Sēfer Ma 'asē ḥôrēš we-ḥōšēb
Frankfurt: Johann Kölner 1711

Translation
of the Hebrew title page

The title is a game on words as *ḥōšēb* means ‘to calculate, to think, to plan’ (cf. Ersch/Gruber, Allg. Enzyklopädie der Wissenschaften. Leipzig 1818–1889).

A similar title was used by Levi ben Gershom (Gersonides; 1288–1344): *Sēfer Ma 'asē ḥōšēb* (1321).

This title in turn refers to Exodus 26,1.

The big fire (“Großer Judenbrand”) in Frankfurt on 1711-01-14/15, 24 Tevet 5471, destroyed the entire Jewish ghetto.

5 Shvat [5471] = 1711-01-25

Book (Work) of plowing [referring to practice] and thinking (calculation) [referring to theory] or: Book on practical and theoretical work

Based on masters of calculation and measurements (fractions) is a nice work which balanced and researched and adjusted a nice and sharp guy

and skilled pure and clean

– Honor the name of his glory –

Honorable Rebbe Rabbi Moše ben the deceased Moreno (and Rabbeinu) Rabbi Rabbi Yosef Hayda

– blessed be the memory of the righteous – from Hamburg,

when he was in Frankfurt am Main as the fire decree came out for our many sins, and the work was enough and ends on Sunday 5 on Shvat to arrange and to specify

God will command you

Yiddish 2

Moses/Moshe Haida/Hayda

Sēfer Ma 'asē ḥôrēš we-ḥôšēb
Frankfurt: Johann Kölner 1711

Translation
of the Hebrew title page

Johann Kellner/Kölner (1672–1726, active 1698–1726) was a Christian printer in Frankfurt/Main. His printing house was the most important for Hebrew book production in Frankfurt. Kölner is well known for the print of a Babylonian Talmud (CERL Thesaurus, cni00076505; Heuberger, R: Hebräische Drucke. Frankfurt 1994, pdf 4).

For transcriptions and translations of the Hebrew parts, I am very indebted to Dr. Stela Segev, Herzog College, Jerusalem.

*Printed
here in Frankfurt am Main
in the house of the lord*

Johann Kellner/Kölner

*by the worker Za'tzir
Christian Frasch
from Augsburg*

*Are sold for reasonable prices by
the champion our honorable teacher
and Rabbi Shimon Wolf ben
Abraham from Aachen –
may he have good and long days – in Frankfurt
am Main*

Yiddish 2

Moses/Moshe Haida/Hayda

Sēfer Ma 'asē ḥôrēš we-ḥôšēb
Frankfurt: Johann Kölner 1711

Content overview

(according to the section headings and the table of contents (*Register*))

The Yiddish texts are transcribed in modernized German.

The pdf numbers of the digital reproduction by Frankfurt U are used as reading and finding Hebrew page numbers in this book can be complicated, e.g. 115 is not written קיה (100+10+5) but קטו (100+9+6) etc.

- 312 Numeration of non-denominate integers
(*Nummerieren oder Aussprechung unbenamter ganzer Zahlen*)
- 315 Numeration of denominate integers
(*Nummerieren benamter ganzer Zahlen*)
- 316 Addition of non-denominate integers
(*Addieren oder Versammlung unbenamter ganzer Zahlen*)
- 319 Addition of denominate integers
(*Addieren benamter ganzer Zahlen*)
- 321 Subtraction of non-denominate integers
(*Subtrahieren oder Abziehung unbenamter ganzer Zahlen*)
- 324 Subtraction of denominate integers
(*Subtrahieren benamter ganzer Zahlen*)
- 326 Check (*Probe*): inverse operation; criticism of check by nine
- 327 Multiplication of non-denominate integers
(*Multiplizieren unbenamter ganzer Zahlen*)
- 328 Multiplication table (*Das Einmaleins*)
- 337 Division of non-denominate integers
(*Dividieren oder Teilen unbenamter ganzer Zahlen*)
- 345 Check (*Probe*): inverse operation
- 346 Fractions: Numeration of fractions
(*Von Brüchen: Nummerieren in gebrochnen Zahlen*)
- 347 List of denominate fractions
(*Auflistung benamter gebrochner Zahlen*)
- 349 Addition of denominate fractions
(*Addieren oder Versammlung benamter gebrochner Zahlen*)

Yiddish 2

Moses/Moshe Haida/Hayda

Sēfer Ma 'asē ḥôrēš we-ḥôšēb
Frankfurt: Johann Kölner 1711

Content overview

(according to the section headings and the table of contents (*Register*))

- 357 Subtraction of denominate fractions
(*Subtrahieren oder Abziehung benamter gebrochner Zahlen*)
- 361 Multiplication of fractions
(*Multiplizieren oder Vielfältigung gebrochner Zahlen*)
- 367 Division of fractions
(*Dividieren oder Abteilung gebrochner Zahlen*)
- 375 Regula de tri (*Regula de tri oder Lehrsatz von dreien*):
 - 378 First type (*Erste Art*): anterior number (*vordere Zahl*) = 1;
 - 380 Check or examination of regula de tri
(*Von der Prob oder Untersuchung des Lehrsatzes von dreien*);
 - 390 Second type (*Zweite Art*): posterior number (*hintere Zahl*) = 1;
 - 401 Third type (*Dritte Art*): middle number (*mittlere Zahl*) = 1;
 - 410 Fourth type (*Vierte Art*): all of the three numbers > 1
- 420 Regula de tri for fractions
(*Regula de tri in gebrochnen Zahlen*):
 - 421 First type (*Erste Art*); 431 Second type (*Zweite Art*);
 - 443 Third type (*Dritte Art*); 449 Fourth type (*Vierte Art*)
- 466 Regula de tri inversa
(*Regula de tri conversa oder verkehrter Lehrsatz von dreien*)
- 477 Regula quinque (*Regula quinque oder Lehrsatz von fünfen oder gedoppelter Lehrsatz*)
- 483 Regula quinque inversa
(*Regula quinque conversa oder verkehrter Lehrsatz von fünfen oder verkehrter gedoppelter Lehrsatz*)

Yiddish 2

Moses/Moshe Haida/Hayda

Sēfer Ma 'asē ḥôrēš we-ḥôšēb
Frankfurt: Johann Kölner 1711

Content overview

(according to the section headings and the table of contents (*Register*))

- 489 Time calculation (*Zeitrechnung*)
- 506 Interest calculation (*Zinsrechnung*);
 - 511 Interest tables (*Zinstabellen*)
- 524 Discount calculation (*Rabatt oder Abzug-Rechnung*)
- 530 Tare calculation (*Tara oder Abgang-Rechnung*);
 - 531 General tare (*Gemeine Tara oder Abgang*);
 - 534 Tare on top (*Tara auf*); 536 Tare within (*Tara in*)
- 538 Tret (portions of bad quality) calculation (*Fusti garbolir* [Old Italian *garbellare* ‘to garble, sift’] *oder Entscheid-Rechnung*)
- 541 Currency conversion calculation (*Wechsel-Rechnung*);
 - 548 Conversion tables
- 562 Regula societatis simplex (*Regula societatis oder Gesellschaftsrechnung*); 564 Check (*Probe*)
- 570 Regula societatis temporum
(*Zweifache Gesellschaftsrechnung*)
- 571 Barter calculation and balanced barter calculation
(*Stich- oder Tausch-Rechnung und gleiche Tausch-Rechnung*)
- 574 Unbalanced barter calculation (*Ungleiche Stich-Rechnung*)
- 576 Gold and silver calculation (*Fein Rechnung*)
- 581 Rules for calculating alloys and mixtures
(*Regula alligationis Zusammensetz- oder Vermeng-Rechnung*):
 - 582 First type (*Erste Art*): find alloy
 - 583 Second type (*Zweite Art*): find parts

Yiddish 2

Moses/Moshe Haida/Hayda

Sēfer Ma 'asē ḥôrēš we-ḥôšēb
Frankfurt: Johann Kölner 1711

Content overview

(according to the section headings and the table of contents (*Register*))

- 594 Regula caecis (*Regula caecis oder Blind-Rechnung*)
597 Check or examination of problems of this type
(*Von der Probe oder Untersuchung dergleichen Aufgaben*)
607 Regula falsi or “assumed test value” method
(*Regula falsi positionum oder Erdichtete-Satz-Rechnung*)
610 Check or examination of this and similar problems (*Von der Probe oder Untersuchung dieser und dergleichen Aufgaben*)
616 Additional problems (*Zugab-Rechnung*): Diophantine equations, division-with-remainder problems, magic squares
628 Conversion or value of the currency, measure, weight, number and time units which occur in this book
(*Von Wechsel (Resolvierung) oder Wert der in diesem Buch vorkommenden Münz-, Maß-, Gewicht-, Zahl- und Zeit-Arten*)

Low German

Caspar Hützler

b. ca. 1500 Nürnberg

1517–1519 University Leipzig

1521 University Wittenberg

1522–1539 ? (Gebhardt 2020)

1540 Civic privilege Freiberg

1543–1546 Schulpforta (Naumburg), Freib.

Eyn behende und künstrike

Rekensbock

Rostock: Brüder vom gemeinsamen Leben ca. 1527

Only signature L (8 fol.) with end of barter and begin of regula societatis survived.

Text is identical with Lübeck ²1547.

Does any other edition ca. 1545 exist?

C/V: Hooek I/–29.1; VD16 ZV 32786

Borchling/Claussen Nr. 933, 1436

L: Rostock UB (Lb-1093(2).42)

Facit 667 fl/23 fl/3 d.
Item twe wollen büthen/de eyne hefft
Saffran kostet 1 lb rede gelt 3 $\frac{1}{2}$ fl/den set
tet he in de büte vor 4 $\frac{1}{8}$ fl/de ander hefft
was/ setthet den 3 fl höget alze he den
vor rede gelt gyfft. Nu fraghe ick wo düre
he den 3 fl vor rede gelt gegeuen hebbe. Fa
cit 16 $\frac{1}{7}$ fl. Nym 3 $\frac{1}{2}$ vā 4 $\frac{1}{8}$ /so blift $\frac{5}{8}$ fl
auerfettelße. Nu spreck $\frac{5}{8}$ fl auerfettelße
gyfft 3 $\frac{1}{2}$ fl rede gelt/wat 3 fl auerfettelße
Reken idt so kumpt dat facit wo angetöge
Item twe wollen büthen/de eyne hefft
Kopper/kostet 1 fl rede gelt 7 $\frac{1}{2}$ fl to 8 lo d
dat settet he in der büte vor 8 $\frac{1}{3}$ fl/vn wyll
 $\frac{1}{4}$ rede gelt hebben. De ander hefft Tyn ke
stet 1 fl rede gelt 8 $\frac{1}{4}$ fl/wo hoch schall he
dat setten dat de büte ghelyke sy. Nu hefft
de erste 126 fl Koppers touorbütende/wo
L

Low German

Caspar Hützler

*Eyn behende und künstrike
Rekensbock*

1st edition Rostock ca. 1527

Other edition ca. 1545? (nothing survived)

Lübeck: Johann Balhorn ²1547

Preface 1547-01-28, epilogue 1547-04-27

208 p.

C/V: Hoock I/H14 (later edition 1554);

VD16 H 5797, 5798;

Borchling/Claussen Nr. 1436, 1484, 1623

D/L: Hamburg SUB

S: Reich, U: Ries-Kolloquium 1996

Gebhardt, R: Ries-Kolloquium 2020

[an earlier High German arithmetic of
Hützler mentioned several times

Crecelius, Wilhelm: Niederdt. Rechen-
bücher. In: Jahrbuch des Vereins für nddt.
Sprachforschung 23 (1988) 99–100



Low German

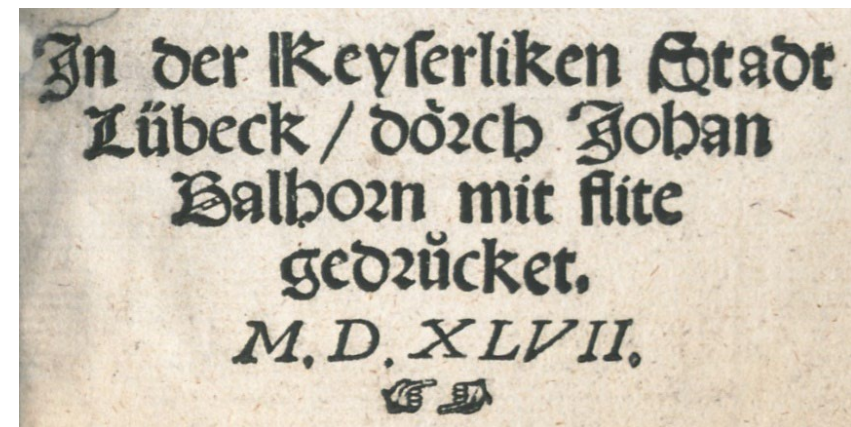
Caspar Hützler

*Eyn behende und künstrike
Rekensbock*

1st edition Rostock ca. 1527

Lübeck: Johann Balhorn ²1547

Transcription of the title page
and of the colophon



[coats of arms of the cities
SVNT, HBOR, LVEBECK, LVBO, ROSTOCH]

*Eyn be-
hende vnd künst-
rike Rekensbock/ vp
allerley koephandele/ ym
talle/ mate vnd gewichte/ vp
der Linien vnd tzy\{s\}[f]ern/ gantz
grüntlick gemaket vnd tosa-
mende gelesen/ dörch Casper
Hützler van Nörenberch/
Thom andern male auer-
seen/ vnd mit flyte dörch
Johan Balhorn gedrucket.*

*In der Keyserliken Stadt
Lübeck/ dörch Johan
Balhorn mit flite
gedrucket M.D.XLVII.*

Low German

Caspar Hützler

*Eyn behende und künstrike
Rekensbock*

1st edition Rostock ca. 1527

Lübeck: Johann Balhorn ²1547

Translation of the title page
and of the colophon

[coats of arms of the cities
Stralsund, Hamburg, Lübeck, Lüneburg, Rostock]

*An easily
usable and
elaborate arithmetic book
for various commerce activities,
in number, measure and weight,
with the counters and the pen,
very thoroughly arranged and
compiled by
Kaspar Hützler from Nürnberg
revised a second time
and printed with care by
Johann Balhorn*

*Printed with care
in the imperial city of Lübeck
by Johann Balhorn
1547*

Low German

Caspar Hützler

*Eyn behende und künstrike
Rekensbock*

1st edition Rostock ca. 1527

Lübeck: Johann Balhorn ²1547

Content overview

(according to Aiii^v and
the section headings)

Part 1

Species with the counters (*vp der Linien*)

Species with the pen (*vp den cifern*), check by nine (*Proba mit Negen*)

Progressions [as special type of species]

Regula de tri for integers (*gantze Tallen*)

Species for fractions (*gebrakene Tallen, Bröke*), identifying a common denominator of a set of fractions (*reducing*)

Regula de tri for fractions

Profit and loss (*gewin vnde vorlust*)

Geometry of the circle

Motion (pursuit, encounter)

Silver and gold calculation (*Süluer vnd Golde rekenschop*)

Loading the crucible (*schickinge des Degels*)

Coinage (*Münteslag*)

Barbers (*Bütende*)

Regula societatis (*Geselschöppen*)

Additive partition (*Deiling*) [incl. special testament]

Currency exchange (*Wessel, wesling*)

Part 2

Regula falsi

Algebra (*Coss*)

Regula caecis or virginum

Reductio descendens (*Resoluering*) for various units

Low German – Supplement

Arithmetic books 1527 and later

Stephan Stump: *Rychtestich* [richtsteig, 'guide'] *unde Weghewyser in allerley Kopenshop*. Rostock: Ludwig Dietz (for Hans Schaden) 1527-05-25

Goods-price tables; only fragments extant
C: Hooch I/S33; Borchling/Claussen 925
L: Rostock UB (MK 6060(2).24; sign. A)

Achacius Dörinck: *Arithmetica düdesch*.
Hamburg from 1549 on

C: Hooch I/D6
D: [1573] Halle/Saale ULB
L: Hamburg SUB
E: Elbing, Bernhard (Rechenmeister 27).
Annaberg-Buchholz 2023

Franziskus Brassler (ca. 1520–1594):
*Eyn nie [neues] vnde Wolgegründet
Rekensbock*. Lübeck from 1552 on
C: Hooch I/B23
S: Reich, U: Ries-Kolloquium 1996



Frisian

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

Information: Because Frisian is hardly used as a language of instruction, there are no books for arithmetic or mathematics in Frisian.

All books used at school are in Dutch.

Sometimes, however, there are books that deal with arithmetic and in which mathematical issues are presented.

An example of this is (but it's not a school textbook):

Stutvoet, H J: *Fen njuggenproef oant gouden fyk.*

Rekkenkindige biwirkingen, wiskundige fynsten en puzzles [From check by nine to golden ratio.

Arithmetic operations, mathematical results and puzzles]. Amsterdam: Ahrend 1943.

In parallel, this book was published in Dutch with the title: *Van negenproef tot gulden snede. Rekenkundige bewerkingen, wiskundige vondsten en puzzles.*

Reference: Fryske Akademy, Leeuwarden

Date: November 2020

Dutch

Anonym

*Die maniere om te leeren cyffren
(ende rekenen metter pennen end
metten penningen [ca. 1510])*

na die rechte consten Algorismi

Brussel: Thomas van der Noot
1508-09-09

2nd edition

Antwerpen: Willem Vorsterman ca. 1510

French translation of the 2nd edition

La manière pour apprendre a cyfrer

Antwerpen: Martin Lempereur (De Keyser)
(for Guillaume (Willem) Vorsterman) 1529

(cf. French – Supplement)

96 p.

C/V: Hoock I/-20

D/L: Brussel Royal L KBR

L: [1510] Amsterdam U (Ned.Inc. 293)

Die maniere om te leeren cyffren
na die rechte consten Algorismi.
Int gheheele ende int ghebroken



Gheprint bi mi Thomas vand Noot
Woenende in die princelijcke stadt van
Brussel Indē Zeeridder Anno. 1508.
In septeembre 9 daghen

Dutch

Anonym

Die maniere om te leeren cyffren
Brussel: van der Noot 1508

Transcription of the title page
and of the colophon

S: Bockstaele, Paul:

Het oudste gedrukte Nederlandse
rekenboekje. In: *Scientiarum Historia* 1,
Antwerpen 1959, S. 53–71 und 117–127;
The first arithmetics printed in Dutch and
English. In: *Isis* 51 (1960) 315–321

Holl, Alfred: *Ries-Kolloquium* 2023

Smeur, Alphons J E M:

De zestiende-eeuwse Nederlandse
rekenboeken. s' Gravenhage 1960

Struik, Dirk J: Mathematics in the
Netherlands during the first half of the
sixteenth century. In: *Isis* 25 (1936) 46–56

*Die maniere om te leeren cyffren
na die rechte consten Algorismi.
Int gheheele ende int ghebroken*

*Gheprint bi mi Thomas van der Noot/
Woenende in die princelijke stadt van
Bruessel In den Zeeridder Anno .1508.
In septembre 9 daghen/*

Dutch

Anonym

Die maniere om te leeren cyffren
Brussel: van der Noot 1508

Translation of the title page
and of the colophon



*The way to learn to calculate [cf. French chiffrer]
according to the correct art of algorism.
For integers and fractions*

*Printed by me Thomas van der Noot
dwelling in the princely city of
Brussel in the [house] Zeeridder in the year 1508
on the 9th day of September*

zeeridder (sea knight, chevalier marin, Seeritter, zitiron)
with the inscription *Ic sals ghedincken*
(‘I shall keep the memory alive’) in the end of the book

Dutch

Anonym

Die maniere om te leeren cyffren
Brussel: van der Noot 1508

Content overview

(according to the section headings)

2nd edition ca. 1510 additionally contains
a 4th part on calculating with the counters

[1] Species (*bewerking*) for integers (*gheheele*)

1 Numeration

2 Addition

3 Subtraction

4 Halving (*mediatio, medieren*)

5 Duplication (*dupleren*)

6 Multiplication

7 Division (all these with check by 7 or by inverse
operation)

[2] 8–14 The same operations for fractions (*ghebroken
ghetalen*)

[3] [Rules]

[3.1] [Basic rules]

Regula de tri (*ghulden reghel, reghel von tri*)

Regula societatis and regula societatis temporum (*reghel
van gheselscape; reghel van den tide der ghesellen*)

Rule of bartering (*reghel van barteringhen*)

[3.2] [Other rules]

[1] Hare and greyhound: pursuit (*hase ende haeswint*)

[2] Motion in the same direction with constant vs
increasing distances per day: pursuit

Dutch

Anonym

Die maniere om te leeren cyffren
Brussel: van der Noot 1508

Content overview

(according to the section headings)

- [3] Motion in opposite directions with different distances per day: encounter
- [4] Egg woman and broken eggs: remainder
- [5] Lazy worker: temporal part
- [6] Unknown inheritance: nesting
- [7] Testament, one son two daughters triplet: twin inherit.
- [8] Two cups and a lid
- [9] Gold smith: alloy
- [10] Gold coins to silver coins: regula equalitatis
- [11] Ship purchase: company (sum of the parts > 1)
- [12] Four carpenters build a house: shared work
- [13] Lord and servant: interrupted contract
- [14] Three young men play dice, equal amounts in the end: nesting
- [15] Batch of pepper (unknown price): too much, too little
- [16] Almonds (unknown money): too much, too little
- [17] A drunkard, his wife and a barrel of beer: shared work

The editions ca. 1510, 1529 (French) widely coincide with [4.4] and the 2nd part (counters) of the earliest English arithmetic books (1537, 1539).

Dutch – Supplement

Later than Anonym 1508/10

Gielis/Aegidius van den Hoecke

1521 University Leuven/Louvain

1535 Lived in Gent/Gand

*Een sonderlinge boeck in dye
edel conste Arithmetica, met veel
schoone perfecte regulen
Antwerpen/Anvers ¹1537*

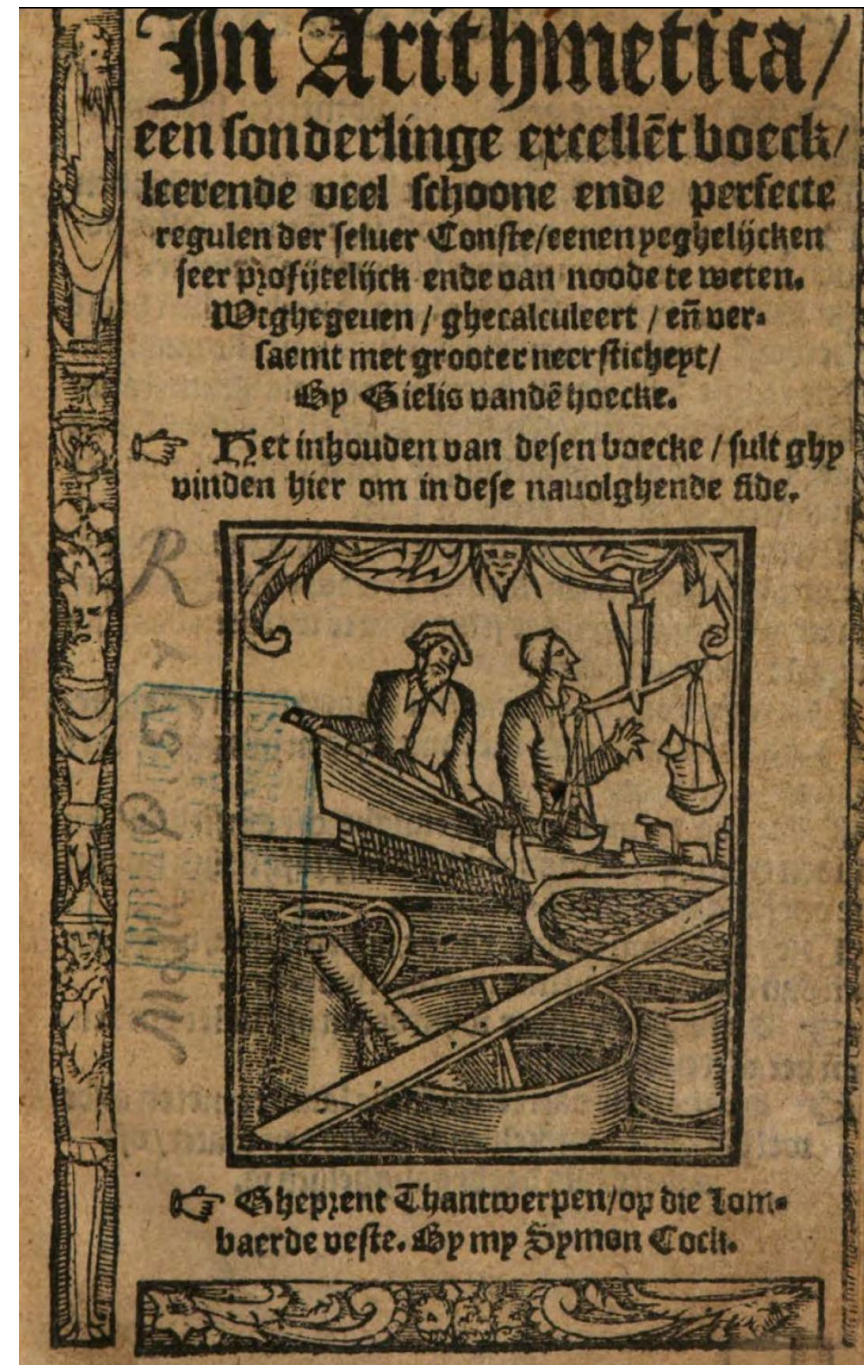
*In Arithmetica, een sonderlinge
excellent boeck, leerende veel
schoone ende perfecte regulen der
seluer Conste. Antwerpen ²1545*
(same pagination; title page on the right ►)

C: Hoock I/V3

S: Kaunzner, W: Ries-Kolloquium 1999

Simon Stevin (1548–1620) *De Thiende* etc.

S: Schneider, I: Ries-Kolloquium 2008



Afrikaans

Casper Peter Hoogenhout

b. 1843 Amsterdam

d. 1922 Wellington

Teacher, poet, translator of the bible,
pioneer of the language Afrikaans
(Afrikaans Wikipedia;
[namibiana.de/namibia-information/
lexikon/begriff/c-p-hoogenhout.html](http://namibiana.de/namibia-information/lexikon/begriff/c-p-hoogenhout.html))

Uw en mijn cijferboekje

**Paarl: Daniël François du Toit
1882**

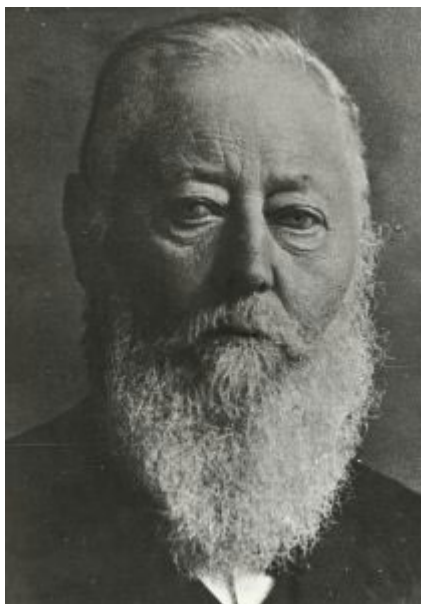
Later editions: ²1889, ⁴1899

Solutions in: *Sleutel van "Uw en mijn
cijferboekje"*. Paarl: du Toit 1882, ³1893

94 p.

C/V: WorldCat

L: Paarl Afrikaanse Taalmuseum
(OCLC 1058 47264; 1058 47001)



Afrikaans

Casper Peter Hoogenhout

Uw en mijn cijferboekje

Paarl: D. F. du Toit 1882

Transcription of the title page
and of the colophon

“Uw en mijn Cijferboekje”

voor

Hollandsch-Afrikaansche Kinderen,
op de lagere scholen
in Zuid Afrika.

Zamengesteld door een Onderwijzer.

Uitgegeven door en voor rekening van
D. F. du Toit & Co.,
Aan de Paarl, Kaap de Goede Hoop.
1882.

Gedrukt voor Rekening van de Eigenaars door
Saul Salomon & Co., Drukkers, St. Georgestraat.

Afrikaans

Casper Peter Hoogenhout

Uw en mijn cijferboekje

Paarl: D. F. du Toit 1882

Translation of the title page
and of the colophon

“Your and my arithmetic booklet”
for
Dutch-African children,
at the primary schools
in South Africa

Arranged by a teacher

Edited by and at the expense of
D. F. du Toit & Co.,
Aan de Paarl, Cape of Good Hope
[= Cape Province, Kaapland, Cape Town area]
1882

Printed at the expense of the owners by
Saul Salomon & Co., printers, St. George Street

Afrikaans

Casper Peter Hoogenhout

Uw en mijn cijferboekje

Paarl: D. F. du Toit 1882

Content overview

(according to the table of contents)

1. Inleiding	...	...	...	...	...
2. Notatie en Numeratie	...	...	...	...	...
3. Optellen (additio)	...	...	..	...	...
4. Aftrekken (subtractio)	...	..	...	...	...
5. Vermenigvuldigen (multiplicatio)	...	...	...	...	...
6. Deelen (Divisio)	...	...	...	...	...
7. Herleiding (reductio)	...	...	...	...	...
8. Zamengesteld of dubbel Optellen	...	...	...	...	...
9. " " " Aftrekken	...	..	...	...	...
10. " " " Vermenigvuldigen	...	...	...	...	...
11. " " " Deelen	..	...	...	...	...
12. Regel van Drieën	...	..	...	...	...
13. Dubbele of Zamengestelde Regel van Drieën	..	...	...	...	...
14. Praktijk	...	...	...	...	...
15. Renten en Disconto	...	...	...	...	...
16. Winst en Verlies	...	...	...	...	...
17. Maatschappij	...	...	...	...	...
18. Breuken (gewone)...	...	..	...	...	...
19. Tiendeelige of Decimale Breuken	...	...	...	...	...
20. Toepassing van geleerde Regels (allerlei)	...	...	...	...	...
21. Aanhangsel	...	...	...	...	...

- 1 Introduction
- 2 Numeration
- 3 Addition (*Optellen*)
- 4 Subtraction (*Aftrekken*)
- 5 Multiplication (*Vermenigvuldigen*)
- 6 Division (*Deelen*)
- 7 Reduction (*Herleiding*)
- 8–11 Compound species [for denominate numbers]
- 12 Regula de tri (*Regel van Drieën*)
- 13 Regula quinque, double or compound regula de tri
(*Dubbele of Zamengestelde Regel van Drieën*)
- 14 Practice
- 15 Interest and discount (*Renten en Disconto*)
- 16 Profit and loss (*Winst en Verlies*)
- 17 Regula societatis (*Maatschappij*)
- 18 Common fractions (*Gewone Breuken*)
- 19 Decimal fractions (*Tiendeelige or Decimale breuken*)
- 20 Application of learned rules – various problems
(*Toepassing van geleerde Regels – allerlei*)
- 21 Appendix

English 1

Anonym

Arte and science of Arismetique

London: Richard Faques

1526-03-13

Only the colophon page extant.

D: Early English Books Online (ProQuest)

L: London BL (OCLC 1170 674509)

S: Holl, Alfred: Ries-Kolloquium 2023

Williams, Travis. In: *The Library* 13 (2012)
164–184

At the top, the end of the problem of the three saints:

... he had in his purse .5. grete blanz & the fourth of a blanc &c.

This problem is the last one in section [4.3] in the editions of 1537 and 1539.

ye hau in his purse .5. grete blanz & the fourth
of a blanc. &c.

thus endeth the Arce and science of Arismetique
out by goodly & pmples and Rules Translas
d out of French in to Englyshe not without
grete laboure & ludy / To chentēt that mar=
chanty occuppyng be youtē the see may haue
ue knowlege of there ceptes of mony
that is to say Croones / Ducatz / and Sas=
lutz / Frācz / and with all other small
mony after ther valour And also
the Mesures bothe of corne and wyne every
after theyr mesures as it showeth moze playne
ly In the sayd boke C Impryn
tyd by me Rychard Faques dwel=
lyng In Duram Kent, Or elles In
Powles chyrche yerde / At the sygne of
the. H. B. O. And fyrshed the yere of
oure lordē god. M. L. L. L. and xxvi. The
xiii. day of Marche.

English 1

Anonym

Arte and science of Arismetique
London: Richard Faques 1526

Transcription of the colophon



*Thus endeth the Arte and science of Arismetique
[set] out by goodly Exemples and Rules Transla-
[ty]d out of Frensche in to Englysche not without
grete labour & study/ To thentent that mar-
chants occupyng be yonde the see may ha-
ue knowledge of there coynes of money
that is to say Cronos/ Ducatz/ and Sa-
lutz/ Francs/ and with all other small
mony after ther valour And also
[wit]h the Mesures/ bothe of corne and wyne euery
[one] after theyr mesures as it showeth more playne-
ly In the sayd boke. Impryn-
tyd by me Rychard Fakes Dwel-
lyng In Duram Rent/ Or elles In
Powles chyrche yerde/ At the sygne of
the .A.B.C. And fynysched the yere of
oure lorde god. M.CCCCC. and xxvi. The
xiii. day of Marche.*

English 1

Anonym

Arte and science of Arismetique
London: Richard Faques 1526

Translation of the colophon

Salut: French gold coin introduced by Charles VI (1380–1422), having as obverse a representation of the Annunciation above/behind the shields of France and England

Thus ends the Art and science of Arithmetic set out with goodly examples and rules translated from French into English not without great labour and study, to the intent that merchants occupying beyond the sea should have knowledge of their coins of money, that is to say Crowns, Ducats and Saluts, Francs, and with all other small money after their value; and also with the measures, both of corn and wine each one after their measures as it shows [it] more plainly in the said book. Imprinted by me Richard Faques dwelling in Durham Rent, or else in Paul's church yard, at the sign of the .A.B.C. and finished the year of our lord God 1526, the 13th day of March.

English 2

Anonym

*An introduction for to learn
to reckon with the pen and
with the counters*

[St. Albans: John Hereford]
(for R[ichard] Stevenage) 1537

London, Aldersgate street:

Nicolas Bourman 1539 etc.

The 1539 edition is the first one which
contains the false position method.

288 p.

C/V: Hoock I/-16 (editions until 1629)

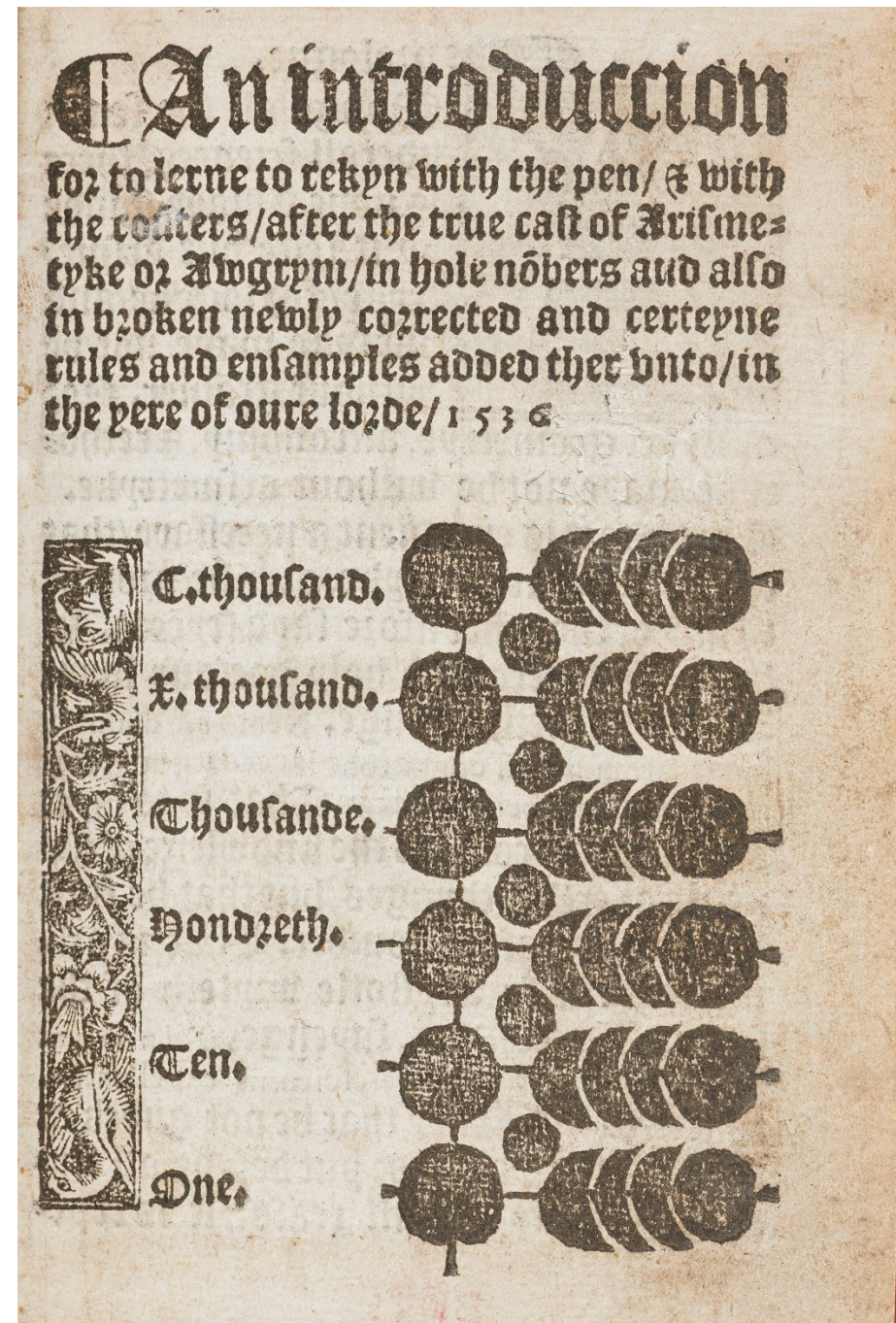
D: [1539] proquest.com

R: [1539] TGR Renascent Books 2009

L: London BL (C.194.a.450)

S: Bockstaele 1959, p. 123–127 (cf. Dutch)

Richeson, A W: The first arithmetic printed
in English. In: Isis 37 (1947) 47–56



English 2

Anonym

*An introduction for to learn
to reckon with the pen and
with the counters*

[St. Albans: John Hereford]
(for R[ichard] Stevenage) 1537

¶ Thus endeth the science of awgrym
the whiche is newly corrected out of dy-
uers bokes, bycause that the people may
come to the moze vnderstandynge and
knowlege of the sayde arte or science of
awgrym. And bycause the marchaūt men
occupynge beyonde the see, maye haue
the better knowlege of the beyonde see
coynes, we haue set dyuers proper rules
as of cronos ducates, and of frances, and
with all other small money after theyz
value. And also of dyuers measures both
of wyne and cozne. Imprinted in the yere
of our lozde 1537.



English 2

Anonym

*An introduction for to learn
to reckon with the pen and
with the counters*

[St. Albans: John Hereford]
(for R[ichard] Stevenage) 1537

Transcription of the title page
and of the colophon
(similar to the one of the 1526 edition)

Richard Stevenage's device carries the
Latin inscription around his initials:
Dominus dedit dominus abstulit [Job 1,21]
sicut domino placuit ita fortuna est. –
*The lord gave and the lord has taken away
as pleased the lord; such is fate.*

*An introduccion
for to lerne to rekyn with the pen/ & with
the counters/ after the true cast of Arisme-
tyke or Awgrym/ in hole nombers aud [sic!] also
in broken newly corrected and certeyne
rules [of false posytions [1539]]
and ensamples added ther vnto/ in
the yere of oure lorde/ 1536*

*Thus endeth the scyence of awgrym
the whiche is newly corrected out of dy-
uers bokes, bycause that the people may
come to the more vnderstandynge and
knowlege of the sayde arte or scyence of
awgrym. And bycause the marchaunt men
occupyenge beyond the see, maye haue
the better knowlege of the beyond see
coynes, we haue set dyuers proper rules
as of cronos ducats, and of frances and
with all other small money after theyr
value. And also of dyuers measures both
of wyne and corne. Imprinted in the yere
of our lorde 1537.*

English 2

Anonym

*An introduction for to learn
to reckon with the pen and
with the counters*

[St. Albans: John Hereford] 1537

Translation of the title page and
of the colophon

Middle English *augrim*, *algrim* ‘algorithm’

*An introduction
into learning to calculate with the pen and
with the counters, according to the true form
of arithmetic or algorism for integers
and also for fractions, newly corrected,
and certain rules [of false positions [1539]]
and examples added there onto,
in the year of our lord 1536*

*Thus ends the science of algorithm
which was newly corrected on the basis of
diverse books so that people should
get a better understanding and
knowledge of the mentioned art or science of
algorithm. And so that merchants
occupying beyond the sea, should have
a better knowledge of the coins beyond
the sea, we have set diverse proper rules
as of Crowns, Ducats and of Francs and
with all other small money after their
value. And also of diverse measures both
of wine and corn. Imprinted in the year
of our lord 1537.*

English 2

Anonym

An introduction for to learn to reckon with the pen and with the counters

[St. Albans: John Hereford] 1537

Content overview

(according to the not numbered section headings and according to the math. problems)

The 1st part (pen) until [4.3] widely coincides with a later edition (Trepperel 1512/19) of the earliest French arithmetic book (≤ 1496).

[4.4] and the 2nd part (counters) widely coincide with the editions ca. 1510 and 1529 (French translation) of the earliest Dutch arithmetic book.

Learn to reckon with the pen

[1] Eight species for integers: numeration, addition, subtraction, multiplication, division (*partition*), duplication, halving (*mediatio*), progression with check by 9 or inverse operation

Reduction (*reduction*) [only 1539]:

reductio descendens (*to reduce the more summe to the lesse*),

reductio ascendens (*to reduce the lesse to the more*)

Arithmetic progressions with sum formula

[2] Species (*speche k.i^v*) for fractions (*broken numbers*): numeration, addition, subtraction, multiplication, division, duplication, halving (*mediatio*)

[1537 totally and 1539 partly uses Dutch terminology: *teller* ‘numerator’ and *number* ‘denominator’ from *Die maniere*]

[3] Multiplication phrases [in the 1537 edition in the end of Part 1]

[4.1] The rules 1

Regula de tri (*rule of three*) for integers (*whole numbers*), fractions

Regula de tri for measures (corn, wine and oil) and weights

[4.2] The rules 2

Regula societatis (*rule of company*) simplex and temporum

Factors (*rule of company of factors*)

Barthers (*rule of changes for to use deceit or fraud*)

English 2

Anonym

*An introduction for to learn
to reckon with the pen and
with the counters*

[St. Albans: John Hereford] 1537

Content overview

(according to the not numbered section
headings and according to the math.
problems)

- [4.3] Many rules and questions
- [A1] Collect and tallage (*tallyage*): company
- [A2] Three mills (*mylnes*): shared work
- [A3] Shepherd: company, pasture lease
- [A4] Vessel with three fountains: shared work
- [A5] To throw Saracens in the sea: arrangement
- [A6] Testament, son daughter twins: twin inheritance
- [A7] Building – place: area
- [A8] Building – walls: volume, price
- [A9] Building – covering: area
- [A10] Gatekeepers in the apple garden: nesting
- [A11] Ladder with 100 steps: arithmetic progression
- [A12] Motion in the same direction with constant vs increasing
distances per day (*two men*): pursuit [like [B6]]
- [A13] Three women, apples for the market: equal proceeds
- [A14] Batch of three metals (*bagge*): alloy [like [B10]]
- [A15] Bell: alloy
- [A16] Gold coins to silver coins: regula equalitatis [like [B11]]
- [A17] Cloth of divers colors: find length
- [A18] Spices (*spyceryes*): regula equalitatis
- [A19] Egg woman and broken eggs: remainder
- [A20] Money forgotten with a changer: nesting [like [B9]]
- [A21] Age (*time*): find the age, sum of fractions
- [A22] Divide a distribution: company

English 2

Anonym

*An introduction for to learn
to reckon with the pen and
with the counters*

[St. Albans: John Hereford] 1537

Content overview

(according to the not numbered section
headings and according to the math.
problems)

[A23] Spear in the water: find length

[A24] Motion in opposite directions with different distances per day
(*two men going against each other*): encounter [like [B7]]

[A25] Cat on a tree: Motion to and fro

[A26] Scholars and hoste: equal additive partition

[A27] The pilgrims' drink bill: regula caecis

[A28] The chanter's rent: regula caecis

[A29] Guess (*dyvyne*) the number of pieces of silver in your fellow's
right hand: number guessing

[A30] Three saints: nesting

This is the end of the 1526 edition.

[4.4] Diverse other proper rules

[B1] Lord and servant: interrupted contract

[B2] Three young men play dice, equal amounts in the end: nesting

[–] Weight-price relations of saffron and alum: regula de tri

[B3] Batch of pepper (unknown price): too much, too little

[B4] A drunkard, his wife and a barrel of beer: shared work

English 2

Anonym

*An introduction for to learn
to reckon with the pen and
with the counters*

[St. Albans: John Hereford] 1537

Content overview

(according to the not numbered section headings and according to the math. problems)

Learn to reckon with the counters

[5] Five species (basic arithmetic operations)

[6] [Rules]

[6.1] [Basic rules]

Regula de tri (*golden rule, regula aurea*) for quantities and prices

Regula societatis simplex (*rule of company*), regula societatis
temporum (*rule of company with time*)

Rule of bartering

[6.2] [Other rules]

[B5] Wat and greyhound: pursuit – *wat(te)* Middle English ‘rabbit, hare’ (Lewis, Robert E: Middle English Dict., vol. 13, p. 146)

[B6] Motion in the same direction with constant vs increasing distances per day (*rule of two fellows*): pursuit [like [A12]]

[B7] Motion in opposite directions with different distances per day: encounter [like [A24]]

[B8] Lazy worker: temporal part

[B9] Unknown inheritance: nesting [like [A20]]

[B10] Goldsmith: alloy [like [A14]]

[B11] Gold coins to silver coins: regula equalitatis [like [A16]]

[B12] Four carpenters build a house: shared work

This is the end of the 1537 edition.

[6.3] Regula falsi (*rule of one and two false positions*) [from 1539 on]

Section	<i>Art et science</i> ≤ 1496	<i>Art et science</i> 1512/19	<i>Arte and science</i> 1526	<i>Intro- duccion</i> 1537	<i>Intro- duction</i> 1539	<i>La manière</i> 1529	<i>Die maniere</i> ca. 1510	<i>Die maniere</i> 1508
Number of parts	6	6	?	[6]	[6]	[4]	[4]	[3]
Preface	Philosophes	Philosophes	?	7 liberal arts	That art	7 liberal arts	7 liberal arts	7 liberal arts
Species with the pen	Part 2 6 species	Part 1 9 species	?	Part [1] 8 species	Part [1] 7 species	Part [1] 7 species	Part [1] 7 species	Part [1] 7 species
Fractions	Part 3 6 species	Part 3 6 species	?	Part [2] 7 species	Part [2] 5 species	Part [2] 7 species	Part [2] 7 species	Part [2] 7 species
Multiplication phrases	Part 2 end	Part 1 end	?	Part [1] end	Part [3]	-	-	Title page
Rule of three	Part 4 7+3 cases	Part [4] 4+3 cases	?	Part [4.1] 4+3 cases	Part [4.1] 4+3 cases	-	-	-
Companies with/out time, factors, barter	Part 5	Part 5	?	Part [4.2]	Part [4.2]	-	-	-
Problems (starting with proportional partition)	Part 6 probl. 1–34 12: 3 saints	Part 6 probl. 1–30 30: 3 saints	Last problem 3 saints	Part [4.3] [A1]–[A30] [A30]: 3 snts.	Part [4.3] [A1]–[A30] [A30]: 3 snts.	-	-	-
Problems (starting with interrupted contract)	-	-	-	Part [4.4] [B1]–[B4]	Part [4.4] [B1]–[B4]	Part [3.2] [13]–[17]	Part [3.2] [13]–[17]	Part [3.2] [13]–[17]
Species with the counters	Part 1 6 species	Part 2 6 species	-	Part [5] 5 species	Part [5] 5 species	Part [4] 5 species	Part [4] 5 species	-
Rule of three (7 cases), com- panies with/out time, barter	-	-	-	Part [6.1]	Part [6.1]	Part [3.1]	Part [3.1]	Part [3.1]
Problems (starting with hare and greyhound)	-	-	-	Part [6.2] [B5]–[B12]	Part [6.2] [B5]–[B12]	Part [3.2] [1]–[12]	Part [3.2] [1]–[12]	Part [3.2] [1]–[12]
Simple and double false position method	-	-	-	-	Part [6.3]	-	-	-

English – Supplement

Later than Anonym 1537

Robert Record (Tenby 1510/12–1558 London)

The grounde of artes

London: Reynold Wolfe 1543 etc.

232 p.

C: Hooch I/R3

D/R: [1551] Early English Books Online EEBO (ProQuest)

L: London BL, Oxford Bodleian L

S: Ulff-Møller, Jens: Ries-Kolloquium 2002, 2005

Reich, Ulrich: Ries-Kolloquium 2011

Robert Record

The whetstone of witte

London: John Kingston 1557

336 p.

R: TGR Renascent Books 2010

Contains the second part of arithmetic [*Grounde of artes*]:
roots, algebra and irrational numbers

Hugh Oldcastle

A profitable treatise

London 1543

C: Hooch I/O3: no copy extant

Swedish

Aegidius (Eggert)

Mathie (Matsson)

Aurelius Upsaliensis

b. ca. 1580 Stockholm

d. 1648 Stockholm

1613–1618 School teacher, Uppsala

1618–1648 Administrator, Stockholm
(Svenskt Biografiskt Lexikon)

*Arithmetica Eller Een Kort
och Eenfaldigh Räknebook*
Uppsala: Eskill Mattson 1614

156 p.

C/V: Hooek II/A17

D: digi-tilaukset.lib.helsinki.fi/

L: Helsinki U

E: Johansson, Bengt. Uppsala 1995

S: Flensburg/Holl: Ries-Kolloquium 2017



Swedish

Aegidius (Eggert)

Mathie (Matsson)

Aurelius Upsaliensis

*Arithmetica Eller Een Kort
och Eenfaldigh Räknebook
Uppsala: Eskill Mattson 1614*

Transcription of the title page

*ARITHMETICA
Eller
Een Kort och Eenfaldigh
Räknebook/ vthi
heele och brutne Taal/ medh
lustige och sköne Exempel/ them Een-
faldighom som til thenne Konst lust och be-
hagh hafwe/ kortelighen och eenfaldeli-
ghen til Nytto och Gagn för-
fattat och tilsamman-
dragen.
aff
ÆGIDIO AURELIO
Upsaliensi S.

Cum Gratia et Privi. Reg.
Tryckt j Vpsala/ aff
Eschillo Matthiæ,
ANNO
1 6 1 4*

Swedish

Aegidius (Eggert)

Mathie (Matsson)

Aurelius Upsaliensis

*Arithmetica Eller Een Kort
och Eenfaldigh Räknebook*
Uppsala: Eskill Mattson 1614

Translation of the title page

*Arithmetic
or
a brief and basic
arithmetic book
for integers and fractions
with pleasant and nice examples,
for the common people
who enjoy and like this art
for their benefit and use briefly and plainly
composed and
collected
by
Aegidius Aurelius
from Uppsala*

*With grace and privilege of the king
printed in Uppsala by
Eskill Mattson
in the year
1614*

Swedish

Aegidius (Eggert)

Mathie (Matsson)

Aurelius Upsaliensis

*Arithmetica Eller Een Kort
och Eenfaldigh Räknebook*
Uppsala: Eskill Mattson 1614

Content overview

(according to the section headings)

- 1 Numeration (incl. representation of numbers with counters)
Four species with the pen (*räkning med figurer/siffror*) and with the counters (*på linjer med räknebänk/räknebord och räknepenningar*)
- 2 Addition (check by nine)
- 3 Subtraction or *subductio* (check by addition, by nine)
- 4 Multiplication (check by division)
- 5 Division (check by multiplication)

- 6 Fractions (*bråk, brutne tal*; among others reducing, comparing)
- 7 Addition; 8 Subtraction; 9 Multiplication and division

- 10 Regula de tri or aurea (incl. purchase and sales)
- 11 Regula de tri inversa (*avig* [cf. *afwug*], *omvänd regula detri*)
- 12 Regula quinque (*Regula dupli*) (incl. interest)

- 13 Regula societatis (*sälskapsregel*) (incl. twin testament)
- 14 Regula alligationis

- 15 Arithmetic progressions (*progressio arithmetica*)
- 16 Geometric progressions (*progressio geometrica*)

- 17 Regula caecis or virginum
- 18 Square root, square side (*extrahere, uppfinna latus quadratum*)

- 19 Regula falsi simplicis positionis
- 20 Regula falsi duplicis positionis (*den andre Regula falsi med 2 tal*)

- Seven corollaries (number guessing, arrangement)

Danish

Hermen/Hermann Veyere

Veigere/Vejgere/Weier/Weiger

b. Malmö

d. 1556/57 København

1518 University Rostock

1527 Citizen and alderman of Malmö

1541 Citizen of København, owns an inn

(Dansk Biografisk Leksikon DBL)

En kaanstelig och nyttelig

Regne Bog

Wittenberg: Jürgen Rhaus Erben

(København: Claus Foerd) 1552

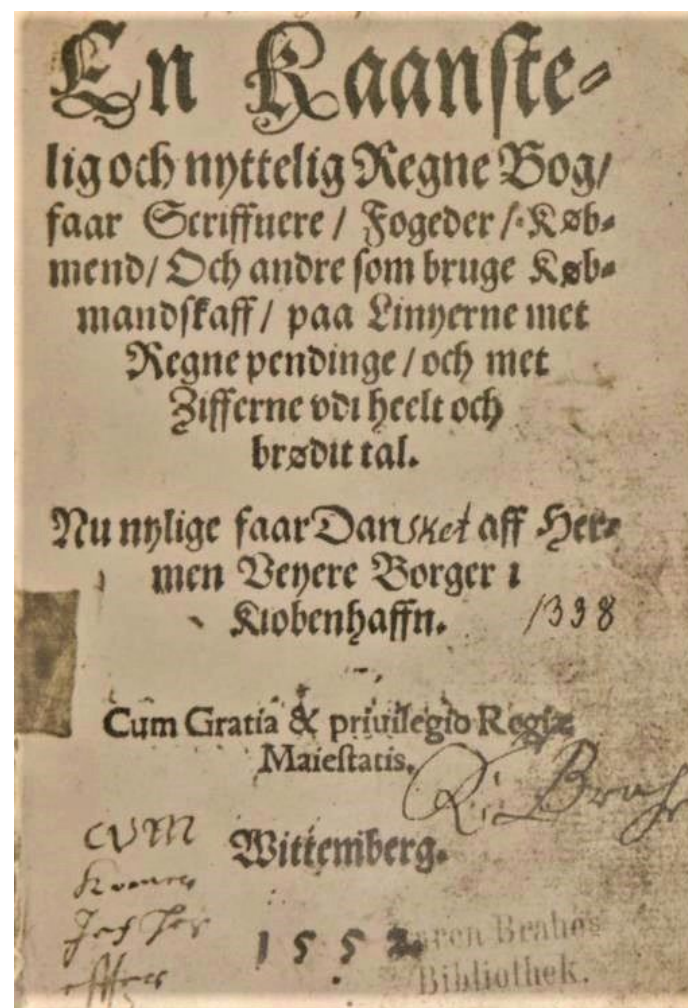
(Dedication 1551-08-10 Laurentius' day)

272 p.

C/V: Hooek I/-33.1

D: Internet Archive

L: København Royal L



Denne Bog er Prentede i
Wittenberg hoefs Jürgen Rhaus
Arffuinge / Nar effter Gudz
byrd / M. D. LII. oc sin
dis tiltizbs hoefs Claws
Foerd/borger oc Bogs
fører i Købens
haffn.

Danish

Hermen Veyere

En kaanstelig och nyttelig

Regne Bog

Wittenberg: Rhau 1552

Transcription of the title page
and of the colophon

S: Ulff-Møller, J: Ries-Kolloquium 2002,
2005

Larsen, L Melchior: Traek af regnekunstens
historie i Danmark. Matematisk Tidskrift
A 1952

Nielsen, Niels: Matematiken i Danmark
1528–1800. København 1912

Christensen, Sophus A: Matematikens
udvikling i Danmark og Norge i det
XVIII. aarhundrede. Odense 1895

*En kaanste-
lig och nyttelig Regne Bog/
faar Scriffuere/ Fogeder/ Køb-
mend/ Och andre som bruge Køb-
mandskaff/ paa Linyerne met
Regne pendinge/ och met
Zifferne vdi heelt och
brødit tal.*

*Nu nylige faar Danskent aff Her-
men Veyere Borger i
Kiobenhaffn.*

*Cum Gratia & priuilegio Regiae
Maiestatis
Wittemberg
1552*

*Denne Bog er Prentedt i
Wittemberg hoess Jurgen Rhaws
Arffuinge/ Aar effter Gudz
byrd/ M. D. LII. oc fin-
dis til kiøbs hoess Claws
Foerd/ borger oc Bog-
fører i Kiøben-
haffn.*

Danish

Hermen Veyere

En kaanstelig och nyttelig

Regne Bog

Wittenberg: Rhau 1552

Translation of the title page
and of the colophon

*An elaborate
and useful arithmetic book
for clerks, administrators, merchants
and others, who use commerce knowledge,
on lines with counters
and with digits [that is, with the pen]
for integers
and fractions.*

*Now recently for Danish
by Hermen Veyere,
citizen in København.*

*With grace and privilege of the royal
majesty
Wittenberg
1552*

*This book is printed
in Wittenberg by Jurgen Rhau's heirs
in the year 1552 after God's birth
and is sold
by Claus Foerd, citizen
and bookseller
in København.*

Danish

Hermen Veyere

En kaanstelig och nyttelig

Regne Bog

Wittenberg: Rhau 1552

Content overview

(according to the section headings)

According to Ulff-Møller 2002, oriented towards

Jacob Köbel: *Rechenbüchlein*.

Oppenheim 1520

- 1 Numeration
- 2 Species with the counters (incl. numeration, duplication, halving (*mediatio*), progressions)
- 3 Regula de tri
- 4 Species with the pen; check by nine
- 5 Species and regula de tri for fractions (*brødit tal*, with Roman and Arabic numbers); purchase and sales, compound denominate numbers
- 6 Regula de tri conversa (*omvent*), regula societatis (*maskaberi*); lazy worker (temp. part); regula quinque (*settis sammen aff fem tal*); testament, son daughter twins/triplet (twin inherit.), regula falsi
- 7 Silver purchase and weights (*sølfkkøb oc vecter*, silver and gold calculation), regula virginum or caecis, extracting the square root (*extrahere radicem*), pleasant rules for social gatherings (*collatz*) for amusement (*morskab*) and pastime (*tidskortning*) (guessing numbers; proportional distribution, if the claims are higher than the available money), calendar computation (golden number (*gyldene tal*), indiction number (*Rommers skatte tal, indictio romana*))

Danish – Supplement

Claus Lauritsen Scavenius

b. Skagen (Jütland), therefore Scavenius

d. 1590 København

1543–1555 Univ. Wittenberg, Paris

1555–1564 Prof. math. Univ. København

1564–1590 Prof. physics Univ. København
(Dansk Biografisk Leksikon DBL)

Arithmetica – regnekunst

Paris: Estienne Mesvière 1552

112 p.

C/V: Hooock I/S7

D: Internet Archive

L: København U

S: Ulff-Møller, J: Ries-Kolloquium 2005



Norwegian(-Danish koine)

Tyge Hansøn/Hansen

Teacher at the cathedral school
in Trondheim, S. Jørgens Gaard

Arithmetica Danica

København: Georg Lamprecht
(for Joachim Moltke) 1645 (8^r)

In the preface (*fortalen*), one finds the designation as Norwegian arithmetic book (*norske regnebog*, 5^v, 7^v) and a reference to the Norwegian language (*paa Norske*, 2^r).

222 p.

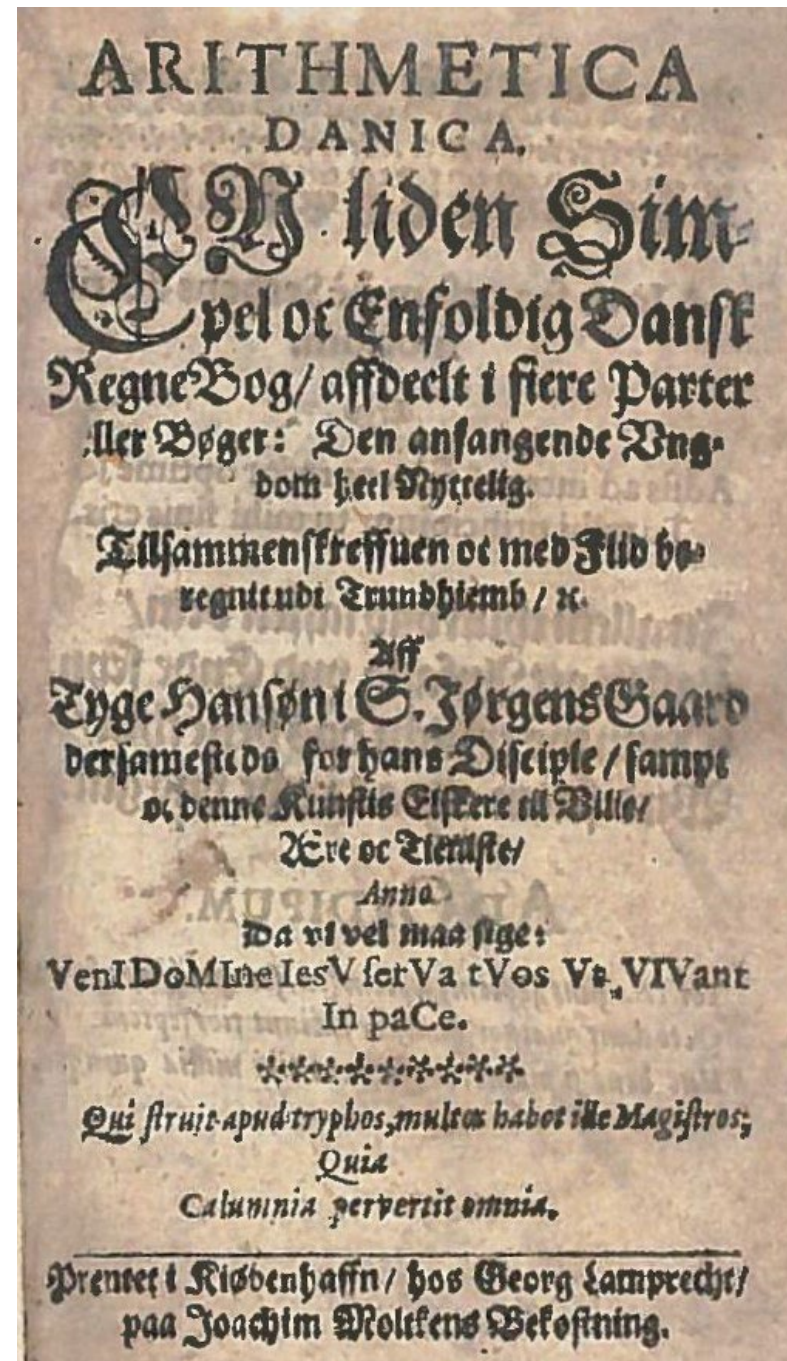
C: Hooek II/H4

D/L: København Royal L

S/V: Nossun, Ralf T.; Siegmund-Schultze,
Reinhard: *Mathematik in Norwegen III.*

In: MDMV 27 (2019) 140–146

Brun, Viggo: *Regnekunsten i det gamle
Norge.* Oslo/Bergen 1961



Norwegian

Tyge Hansøn/Hansen

Arithmetica Danica

København: Lamprecht 1645

Transcription of the title page

1397–1814 Kalmar Union

The chronogram expresses the year 1640 although the preface is dated 1645-04-12 (8^r); the chronogram before part 4 also expresses 1645.

In an apologetic dialog of the 2nd century by Iustinus Martyr, Trypho appears as literary character: a Jew who criticizes Christianity for many reasons.

The hexameter normally starts: *qui struit in callem* ‘who builds (a house in public) by the highway side’ [cf. Thomas Lansing Masson]

ARITHMETICA

DANICA.

EN liden Sim-

pel oc Enfoldig Dansk

RegneBog/ affdeelt i fiere Parter
eller Bøger: Den anfangende Vng-
dom heel Nyttelig.

Tillsammenskreffuen oc med Flid be-
regnit udi Trundhiemb/ etc.

Aff

Tyge Hansøn i S. Jørgens Gaard
dersamesteds for hans Disciple/ sampt
oc denne Kunstis Elskere til Ville/

Ære oc Tieniste/

Anno

Da vi vel maa sige:

VenI DoMIne IesV serVa tVos Vt VIVant
In paCe.

Qui struit apud trypho⟨s⟩, multos habet ille Magistros;

Quia

calumnia pervertit omnia.

*Prentet i Kiøbenhaffn/ hos Georg Lamprecht/
paa Joachim Moltkens Bekostning.*

Norwegian

Tyge Hansøn/Hansen

Arithmetica Danica

København: Lamprecht 1645

Translation of the title page

Chronogram before Part 1: 1643

O HErre IesV Wer Wor skIoLD

Saa at DV Styrer SVenskIs VoLD

O lord Jesus, be our shield

in order to rein the Swedes' violence

*Danish
arithmetic.*

*A small, simple and basic
Danish arithmetic book,
divided into four parts or books,
quite useful for the young beginners.
Composed and calculated with care
in Trondheim etc.*

By

*Tyge Hansøn at Saint Jørgens Court
arranged for his pupils
as well as at the request, in honor and at the service
of the enthusiasts of this art*

In the year

*in which we certainly may say:
Come, lord Jesus, save the faithful
so that they live in peace.
[with chronogram 1640]*

*Who builds (relies) on Trypho, has many masters (critics);
as calumnies distort everything.*

*Printed in København by Georg Lamprecht
at the expense of Joachim Moltke*

Norwegian

Tyge Hansøn/Hansen

Arithmetica Danica

København: Lamprecht 1645

Content overview

(according to the section headings)

Chronogram before Part 3: 1645

O IesV ChrIste Wer Wor Wen

I rot OMVent Denn' Krlg IgIen.

O Jesus Christ, be our friend,

Turn this war radically back

[certainly a misprint: one 'I' too much!]

Chronogram before Part 4: 1645

KoM nV kler' HErre IesV ChrIst/

Wor enIst Trøster est <d>[D]W WlSt.

Come now, dear lord Jesus Christ,

you are undoubtedly our only comforter

- 1 Numeration (numerals to the basis 10, not 20 as in Danish – incl. unit reductions), addition, subtraction, multiplication, division (checks with the inverse operation only), 1.6 regula de tri; all that for integers
- 2 The six topics of Part 1 for fractions
 - 2.7 tare (incl. regula fusti)
- 3 3.1 Regula de tri inversa
 - 3.2 Regula quinque (*dupla* – incl. interest)
 - 3.3 Currency conversions (*wedsel*)
 - 3.4 Profit and loss (*vind oc forlost eller tab* – incl. percentage, comparison of offers, barters)
 - 3.5 Regula societatis (*societet* – incl. subcontractor)
 - 3.6 Distributions (*deel* – incl. testaments)
 - 3.7 Ship shares (*skibsparter*)
- 4 4.1 Silver and gold (*Sølf oc Guld*)
 - 4.2 Regula alligationis
 - 4.3 Square and cube root (*Quadratz oc Cubic Rod*)
 - 4.4 Regula falsi (reg. f. duplicis positionis, algebra (*Algebraica operatio* with *Radix* as unknown), reg. f. simplicis positionis (*unius positionis*)), reg. virginum

Icelandic

Halldór Brynjólfsson

b. 1692-04-15 Saurar (Helgafellssveit)
d. 1752-10-28 Eyrarsund
–1716 Studies in København
1746–1752 Bishop of Hólar (Hjaltadal)
(Icelandic Wikipedia)

Edward Hatton

ca. 1664 – after 1733 London

Lijted Agrip Vmm þær Fioorar Species I Reiknings Konstenne Hólar: Halldór Eiríksson 1746

14 p.

D: Internet Archive

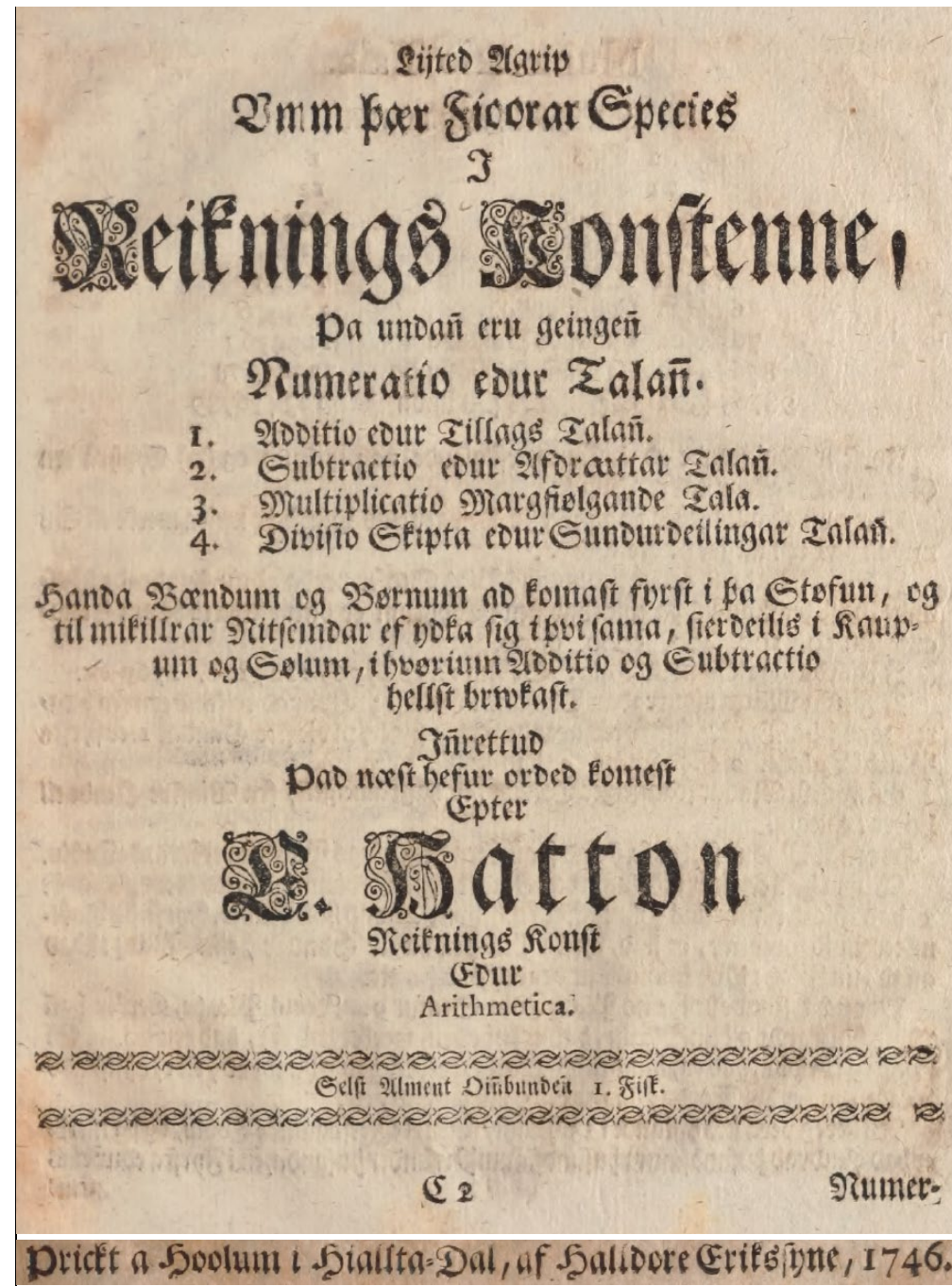
L: København Royal L

S/V: Bjarnadóttir, Kristín: Mathematical Education in Iceland in historical context. PhD dissertation. Roskilde 2007, 69–70

Ulff-Møller: Ries-Kolloquium 2008, 2014



Portrait in
the National
Museum
of Iceland



Icelandic

Halldór Brynjólfsson

Lijted Agrip Vmm þær Fioorar Species I Reiknings Konstenne
Hólar: Halldór Eiríksson 1746

Probably based on Edward Hatton:
An Intire System of Arithmetic.
London 1721 (C: Hooch II/H6.16);
translated into Icelandic and adapted
to Icelandic usage (long hundred 120)
by Halldór Brynjólfsson

Transcription of the title page
and of the colophon

*Lijted Agrip
Vmm þær Fioorar Species
I*

*Reiknings Konstenne
Þa undann eru geingenn
Numeratio edur Talann.
1. Additio edur Tillags Talann.
2. Subtractio edur Afdrattar Talann.
3. Multiplicatio Margfiølgande Tala.
4. Divisio Skipta edur Sundurdeilingar Talann.*

*Handa bændum og Børnum ad komast fyrst i þa Støfun, og
til mikillrar Nitsemdar ef ydka sig i því sama, sierdeilis i Kaup-
um og Sølum, i hvørium Additio og Subtractio
hellst brwkast.*

*Innrettud
Þad næst hefur orded komest
Epter
E. Hatton
Reiknings Konst
Edur
Arithmetica.*

Selst Alment Oinnbundenn I. Fisk.

Þrickt a Hoolum i Hiallta-Dal, af Halldore Erikssyne, 1746.

Icelandic

Halldór Brynjólfsson

*Lijted Agrip Vmm þær Fioorar
Species I Reiknings Konstenne
Hólar: Halldór Eiríksson 1746*

Translation of the title page
and of the colophon
with content overview
(according to Bjarnadóttir 2007, 69)

Three more detailed arithmetic books
were not published before 1780–1785
(printed in København) (cf. Bjarnadóttir/
Christiansen/Lepik. In: Nordic studies in
mathematics education 18 (2013))

Authors:
Ólafur Ólafsson Olavius
Jón Jónsson Johnsonius
Ólafur Stefánsson

*A little compendium
of the four species
in the art of arithmetic
preceded by the numeration.*

*1. Addition. 2. Subtraction. 3. Multiplication. 4. Division.
Intended for farmers and children to get as early as possible
in contact with these designations and for great usefulness
when practicing them, especially in buying and selling,
in which addition and subtraction is most often used.
Designed – as far as has become known – according to*

*E. Hatton's
Art of Arithmetic or Arithmetica*

Generally sold in sheets – 1 fisk [Icelandic currency]

Printed in Hólum in Hjaltadal by Halldór Eiríksson, 1746

The booklet was published as appendix to
*Tilskipan umm þann Islenska Taxta og Kauphöndlan.
Kaupmannahöfn/ D. X. April. Anno MDCCII.
[Directive on Icelandic prices and trading]
[København 1702-04-10]*

Czech

Ondřej Šimkovic Klatovský

b. ca. 1504 Klatovy/Klattau

d. ca. 1551 Prostějov (SW Olomouc)

1524 Baccalaureate Univ. Praha

1533 Citizen of Praha old town

1540 Czech German language textbook

1544 Title of nobility: von Dalmanhorst
(z Dalmanhorstu)

1547 Moved to Olomouc/Olmütz

Nowé knížky wo pocztech na

Cifry a na lyny. Nürnberg:

Friedrich Peypus ¹1530-02-10

Praha: Jan Kantor ²1558

220 p.

C/V: Hoock I/K5

D: 1558 [≈ 1530] aleph.nkp.cz, EBSCO,
manuscriptorium.com

L: Praha NL, National Museum, Strahov

S: Škvorová, J: Ries-Kolloquium 2002

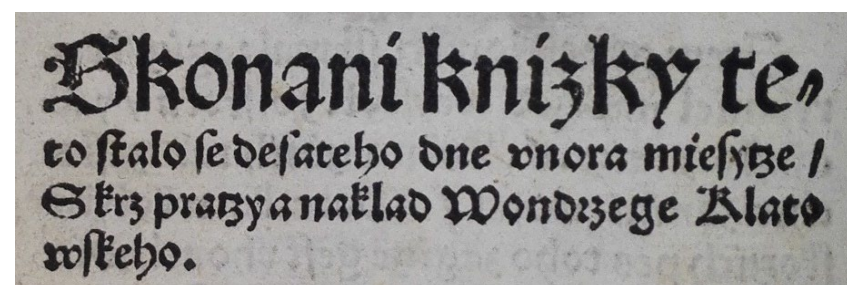


Czech

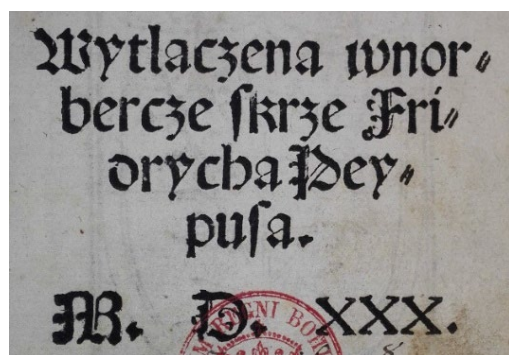
Ondřej Šimkovic Klatovský

Nowé knížky wo pocztech
Nürnberg: Friedrich Peypus 1530

Orthographically carefully
modernized transcription of the
title page, of the next to the last
page and of the colophon



Skonání knížky te
to stalo se desátého dne února měsíce /
Skrz prázy a náklad Wondrysege Klato-
vského.



Wytlaczena wnor-
berce skrze Fri-
drycha Peyp-
pusa.
M. D. XXX.

*Nové knížky o
počtech na cifry a na liny, při-
tom některé velmi užitečné re-
gule a exempla, mince rozličné
podle běhu kupeckého, krátce
a užitečně sebraná*

*V Norberce tlačena léta Páně
1530 měsíce ledna*

*Skonání knížky te-
to stalo se desátého dne února měsíce/
Skrz práci a náklad Ondřeje Klato-
vského*

*Výtlačená v Nor-
berce skrze Fri-
drycha Pey-
pusa.
M. D. XXX.*

Czech

Ondřej Šimkovic Klatovský

Nowé knížky wo pocztech
Nürnberg: Friedrich Peypus 1530

Translation of the title page,
of the next to the last page and
of the colophon

S: Foltá, Jaroslav. In: Science and
technology in Rudolfinian Time (= Prague
studies in the history of science and
technology 1). Praha 1997, 168–194
[contains further references]

*New booklets
on calculating with the pen and with the counters,
at the same time several very useful rules
and examples, various coins
according to the commercial business activities,
briefly and usefully compiled*

*Printed in Nürnberg in the year of our lord
1530 in the month of January*

*The completion of the booklet
took place on the 10th day of the month of February
by the work and the expenses
of Ondřej Klatovský*

*Printed in Nürnberg
by Friedrich Peypus
1530*

Czech

Ondřej Šimkovic Klatovský

Nowé knížky wo pocztech
Nürnberg: Friedrich Peypus 1530

Content overview

(according to the section headings,
taken from the 1558 edition as contents
and pages are nearly identical with the
1530 edition)

- 1 Seven species: numeration, addition;
checks (*proba*) by inverse operation, by 9 and 7;
subtraction, duplication, halving (*mediatio*), multiplication,
division;
arithmetic progressions with sum formula
Units: weights (*vaha*), currencies/coins (*mince*),
measures (*míra*) for wine (*vino*), textiles (*sukno*),
corn (*obilí*), time (*čas*), counting (*počet*)
Species for denominate numbers, incl. progressions
Regula de tri
- 2 Calculating with the counters (*počet na liny*):
species for pure and denominate numbers,
units mentioned in 1,
regula de tri
- 3 Calculating with fractions (*lámaný počet*):
species,
fractions of fractions (*lámaný od lámaný*),
reducing fractions (*menší udělat*),
regula de tri,
denominate fractions

Czech

Ondřej Šimkovic Klatovský

Nowé knížky wo pocztech
Nürnberg: Friedrich Peypus 1530

Content overview

(according to the section headings,
taken from the 1558 edition as contents
and pages are nearly identical with the
1530 edition)

4 About various commercial business activities
(*O rozličném běhu kupeckém*)

[partly German/Czech headings]

Regula societatis (*Gesellschaft, tovaryšstvo*), testament, alloy

Currency exchange (*Wechsel, změněný*)

Various purchases and sales (*rozličné koupí a prodeje*)

Regula dupla/quingue (*dvojitá regule detry*)

Textiles (*sukno*)

Fusti

Profit and loss (*zisk a ztráta*)

Barter (*prostrčení zboží*) [*prostrčit* is a verbal translation
of German *durchstecken* (!) instead of *durchstechen*]

Silver and gold calculation (*počet stříbra a zlata*)

Regula virginum, by some people called caecis

Usury, loan (*lichva*)

Textiles of three colours

Motions

Four further problems

Czech – Supplement

Later than Klatovský 1530

Optát, Beneš (from Telč, South Moravia);

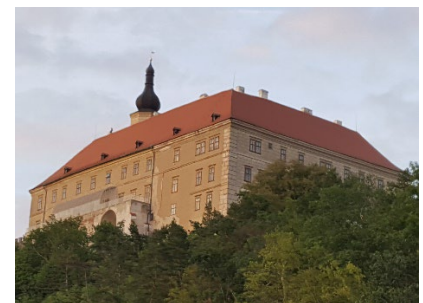
Gzel, Petr (from Praha): *Isagogicon*.

Náměšť nad Oslavou (W Brno) 1535,

Prostějov (SW Olomouc) 1548

[published also Czech grammar book 1535]

C: Hooek I/O5



Náměšť/Namiest



Prostějov/Proßnitz

Brněnský, Jiří Mikuláš: *Knížka ...*

Praha 1562, 1567

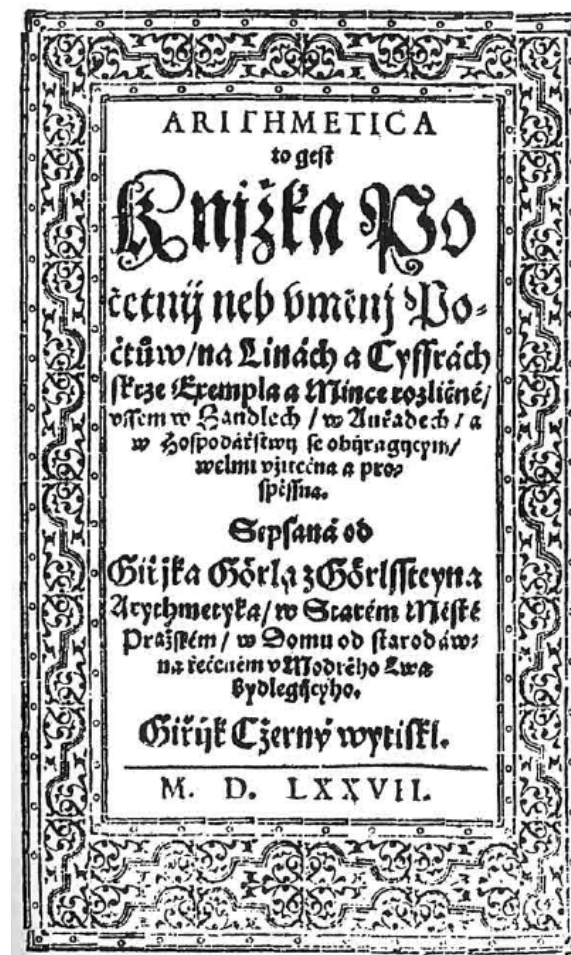
C: Hooek I/B25

Šram, Pavel: *Arithmetica*. 1615

C: not in Hooek

S: Škvorová, J: Ries-Kolloquium 2002

Clausen, D: Ries-Kolloquium 2020



Gerl von Gerlstein, Georg = Goerl z Goerlšteyna, Jiří
(from Locket/Elbogen; writes in German and Czech):
*Arithmetica to gest Knížka Početnij neb vmenj Poctuw,
na Linách a Cyfrách*. Praha 1577, 1597, 1610

C: Hooek I/G9

S: Kaunzner, W: Ries-Kolloquium 1999

Slovak

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

The earliest arithmetic textbook held by the Slovak NL “is probably in Czech language or a variant of it” (same reference):

Čulen, Martin:

Aritmetika pro I. a II. třídu nižšího [lower] gymnasia.

Vienna: C. Kr. nakladatelství školních knih 1854, 285 p.

Information: The Slovak and Czech languages developed similarly. Czech was the predominant language of literature and administration (also due to the university of Praha). Even in the 19th century, the so-called biblical Czech (language with elements of Slovak and Czech) was used in Slovakia. Slovak – with its simpler morphological system – was not standardized before 1851. Foundation of the Language cultivation society in 1863.

The earliest Slovak arithmetic textbook is:

Kordoš, Gustáv (1836–1908): *Úkoly ku počtovaniu pre slovenské l’udové školy a domácu potrebu. Sväzok 2, Počtovanie v kruhu čísel 1–100* [Arithmetic problems for Slovak primary schools and the use at home.

Vol. 2, calculations in the number range 1–100].

Uherská Skalica: Dedičia Jozefa Škarnicla 1884, 36 p.

Reference: Slovak NL, (Turčianský Svätý) Martin

Date: October 2020

Sorbian

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

Information: The first arithmetic book in Sorbian was published in 1951:
Józef Nawka: *Aritmetika*.

Reference: catalog of the Sorbian Central L,
Bautzen

Date: December 2020

Polish

Thomas Kłós

Roman-Catholic priest

No other biographical data known
(Polish Wikipedia)

Algoritmus:

To iesth nauka liczby

Kraków/Krakau: Ungler 1538

32 p.

C/V: Hooock I/K6

D: jbc.bj.uj.edu.pl/dlibra

L: Kraków U (copy incomplete),
Göttingen SUB

E: Biblioteka Pisarzów Polskich, Kraków
6(1889), ed. Baraniecki, Maryjan
Alexander (WorldCat)



Polish

Thomas Kłos

Algoritmus:

To iesth nauka liczby

Kraków: Ungler 1538

Orthographically carefully
modernized transcription
of the title page

*Algoritmus: To
iesth nauka Liczby: Polską
rzeczą wydana: Przez Księdza Tomasa
Kłosa. Na trzy się części dzieli, Pierwsza bę-
dzie osobach Liczby, wtora o Regule
detri, Trzecia o rozmaitych rachun-
koch y o społkach Kupieczkich.*

Cracouię ex Officina Ungleriana 1538

Polish

Thomas Kłos

Algorismus:

To iesth nauka liczby

Kraków: Ungler 1538

Translation of the title page
with content overview

Later than Kłos 1538:

Bernhard Wojewodski: *Algorithm.*

Kraków 1553, 1574

C: Hooek I/W10

Algorism:

That is the science of the number:

edited in the Polish language:

by the priest Thomas Kłos.

Divided into three parts,

the first one will be about the forms of the number,

the second one about the rule of three,

the third one about various calculations and

companies of merchants.

In Kraków from the printing house Ungler 1538

[under the text the coat of arms of the city of Kraków]

Russian

Elias / Ilia Fëdorov(ič)
Kopievskij / Kopievič

b. ca. 1651 Ljachoviči (Belarus)

d. 1714 Moskva

Prot. theologian, author, translator, printer

Latin-Russian-German/Dutch dictionaries

(*Nomenklator*), Amsterdam: Tessing 1700;

Russian and Latin grammar books

*Krátkoe i poléznoe
rukovedénie vo aritmétyku*

Amsterdam:

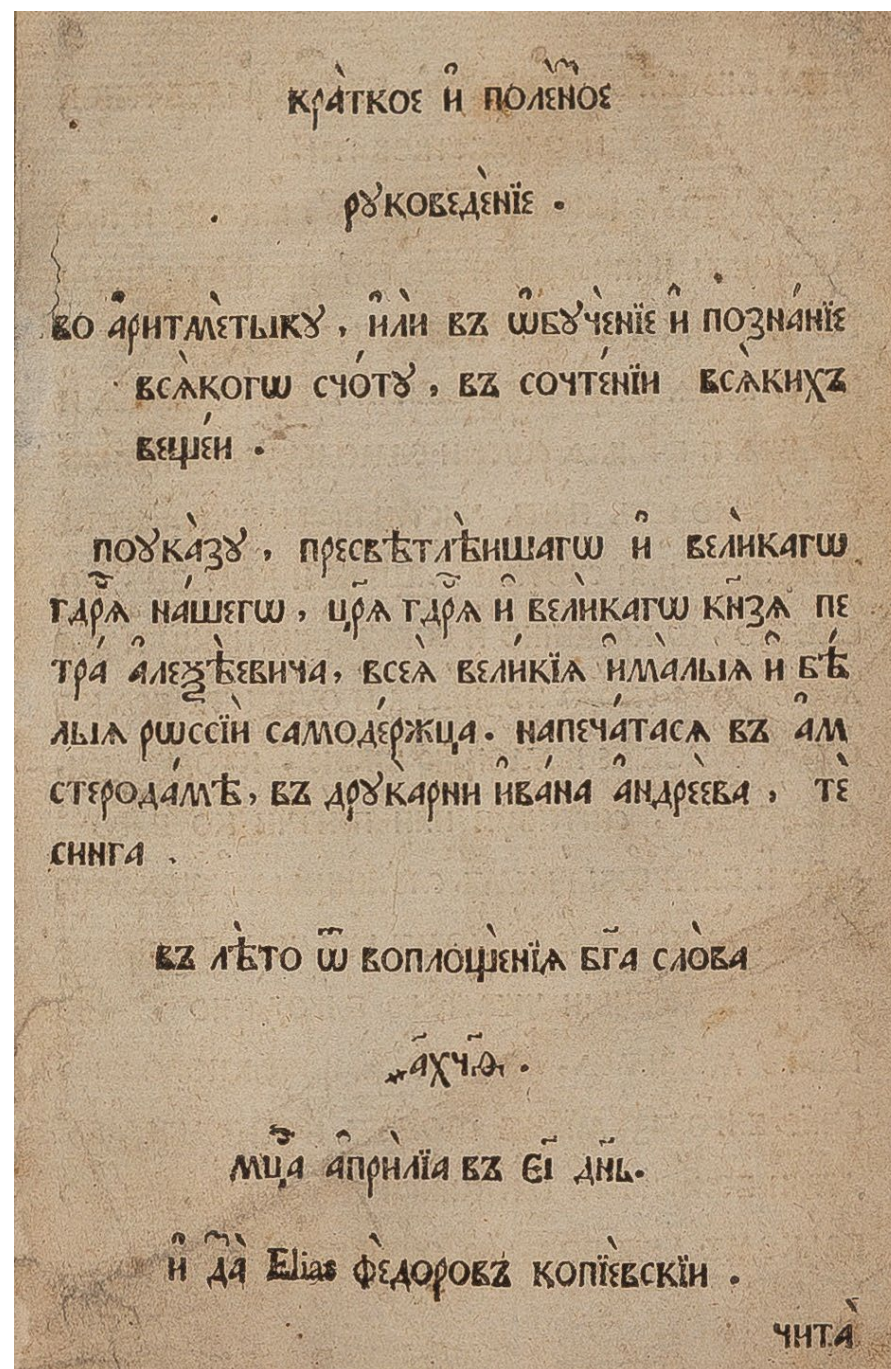
Jan Andrieszoon Tessing 1699

16 p. arithmetic, 32 p. mottos and fables
(3350 copies printed)

C/V: Hoock II/K7

D/L: Wolfenbüttel HAB

S: Roussanova, E: Ries-Kolloquium 2023
cerl.org; d-nb.info/gnd/1023021889



Russian

Elias Fëdorov Kopievskij

*Krátкое i poléznoe
rukovedénie vo aritmétyku
Amsterdam: Tessing 1699*

Romanization of the title page

S: Haara, Stapelbroek, Immanen (ed.):
Passions, politics and the limits of society.
München, Wien 2020, p. 106
Pekarskij, P P: Nauka i literatura v" Rossii
pri Petrě Velikom". Sankt Peterburg 1862

*krátkoe `i poléznoe
rukovedènie
vo `aritmètyku, `ili v" `ōbučènie `i poznánie
vsěkogō sčótu, v" sočténii vsěkih" `vešéi.*

*po ukàzu, presvètlèišagō `i velìkagō
gosudarę nášegō, carę gosudarę `i velìkagō knâzę pe-
trá `alexěviča, vsěę velìkię `i màlyę `i bě-
lyę rōssii samodéržca. Napečátasę v" `am-
sterodámě, v" drùkarni `ivána `andrèeva tè-
singa.*

*v" lěto ōt voplošènię boga slòva
a h q f.*

mesâca `aprilia v" e i dn'.

`i zdàv Elias fèdorov" kopièvskii.

Russian

Elias Fëdorov Kopievskij

*Krátkoe i poléznoe
rukovedénie vo aritmétyku
Amsterdam: Tessing 1699*

Translation of the title page

1689–1725 Czar Peter the Great

*Brief and useful
introduction
into arithmetic or into instruction and knowledge
of all calculating, into calculating with all things.*

*By order
of our most serene and great sovereign,
the Tsar, sovereign and Grand Duke
Peter Alexěevič, the ruler
over the entire of Great and Little and White Russia,
printed in Amsterdam,
in Ivan Andreev Tesing's printing house.*

*In the year of the incarnation of the word of God
1699.*

In the month of April on the 15th day.

And he created it: Elias Fëdorov Kopievskij.

Russian

Elias Fëdorov Kopievskij

*Krátkoe i polézneoe
rukovedénie vo aritmétyku*
Amsterdam: Tessing 1699

Content overview

(according to the table of contents and
the section headings)

Arithmetic book (16 pages, signature A)

Species only for integers

1 Numeration (*číslo*)

2 Addition (*pridáča*)

3 Subtraction (*ízetie, ubávka*)

4 Multiplication (*oŭmnožénie*)

5 Division (*razdělénie*)

Annual table of sunrise and sunset hours
for the horizon of Moscow

Mottos, Latin – Russian (16 pages, signature B)

Fables (16 pages, signature C)

(fox and donkey, lamb and wolf, eagle and turtle,
wolf and goat, mouse and frog, wolf and crane,
fox and raven, cricket and ant, old lion and fox etc.)

Russian – Supplement

Leontij Filippovič Magnickij

b. 1669 Ostaškov (Tver Oblast)

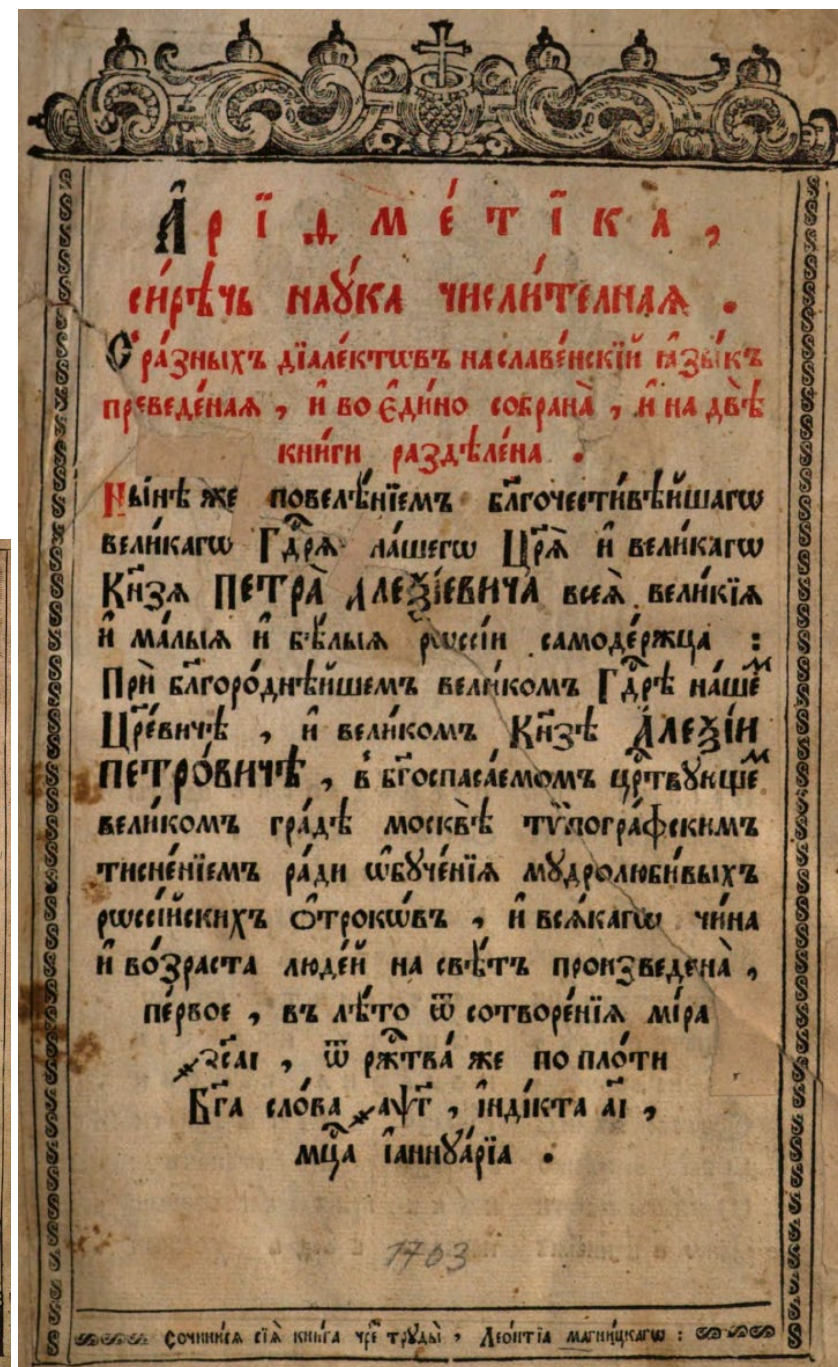
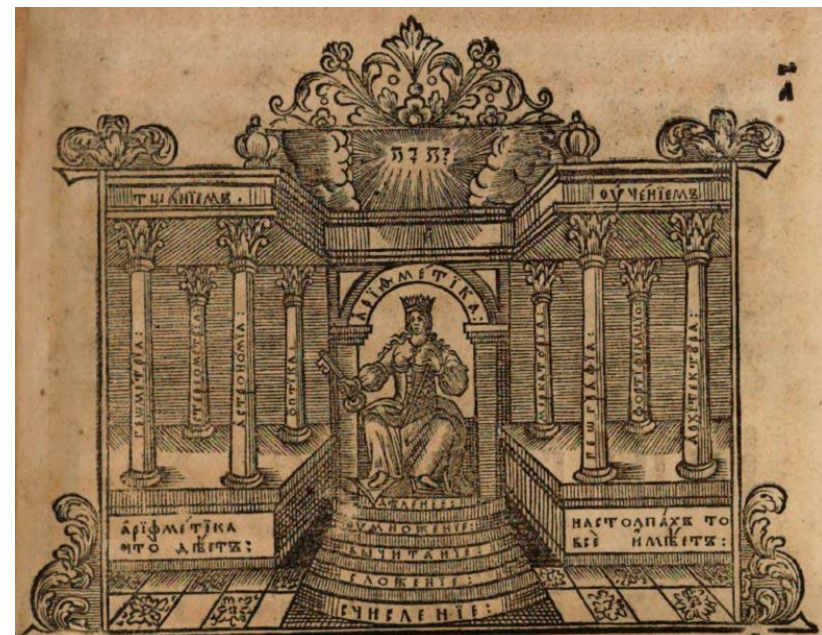
d. 1739 Moskva

1714–1739 Director of the Moskva School of Mathematics and Navigation

Arifmética. Moskva 1703

36+612 p. (2400 copies) D: München BSB

S: Roussanova, E: Ries-Kolloquium 2008, 2011



Ukrainian

Olexandr Yakovyč Konyskyj
Alexandr Yakovlevič Koniski

b. 1836 Perehodivka (gov. Černigov)

d. 1900 Kiev

Lawyer, journalist, author, translator
(Encyclop. of mod. Ukraine esu.com.ua)

Ariħmetika abo šotnicâ

Sankt-Peterburg:

P[anteleimon] A. Kuliš 1863

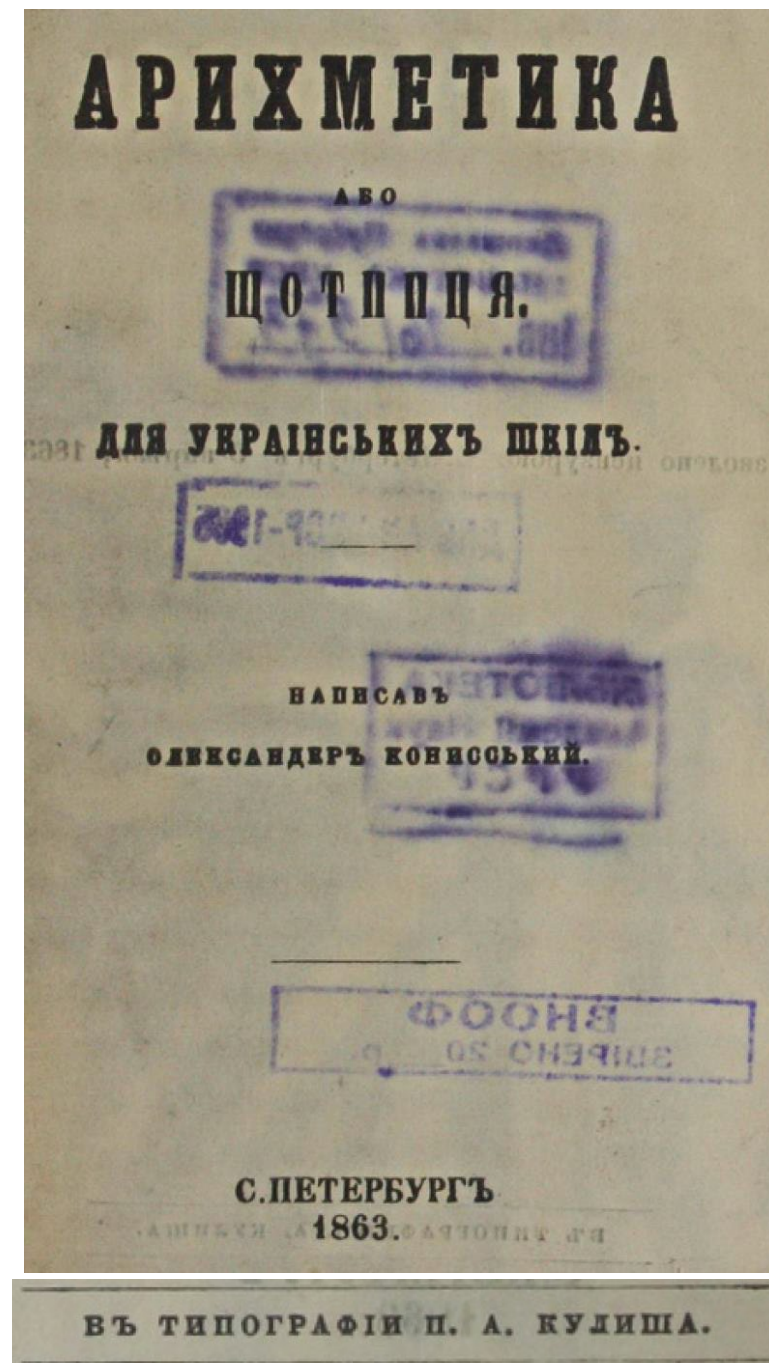
66 p.

D: irbis-nbuv.gov.ua/ulib/item/0000878

L: Electronic L “Ukrainica”

S/V: Moser, Michael. In: East/West:

Journal of Ukrainian studies (ewjus.com)
4 (2017) 39–95 [examines the period when
the Ukrainian language was introduced in
schools; Koniski’s *Ariħmetika* was
published at the beginning of that time]



Ukrainian

Olexandr Yakovyč Konyskyj

Ariħmetika abo ŝotnicâ

Sankt-Peterburg: Kuliš 1863

Romanization of the title page

This Romanization is based on ISO 9 which neglects national differences in the phonetic value of Cyrillic characters, e.g. the character и (Romanized i) corresponds to the phoneme /i/ in Russian and to /y/ in Ukrainian.

Ariħmetika

abo

ŝotnicâ.

Dlâ ukraïns 'kih'' ŝkil''.

Napisav''

Oleksander'' Koniss 'kij.

S[ankt]. Peterburg''

1863

V'' tipografïi P. A. Kuliša

Ukrainian

Olexandr Yakovyč Konyskyj

Ariħmetika abo ŝotnicâ

Sankt-Peterburg: Kuliš 1863

Translation of the title page

Arithmetic

or

calculation

For Ukrainian schools

He wrote it:

Olexander Koniski

Saint Petersburg

1863

In P. A. Kuliš's printing house

Ukrainian

Olexandr Yakovyč Konyskyj

Ariħmetika abo ŝotnicâ

Sankt-Peterburg: Kuliš 1863

Content overview

(according to the section headings)

Four species (*sprava*) for integers (*proste číslo*)

1 Addition (*skladanne*)

2 Subtraction (*odlič', vičitanne*)

3 Multiplication (*pomnoženne*)

4 Division (*podil'', dīlenne*)

Check (*povīrka*) of the four species with inverse operations

Denominate numbers (*pojmenovanne číslo*)

1 Sales

2 Packing

Four species for denominate numbers

Simple fractions (*driḃ'' prosta*, pl. *drobi*)

and the four species

Decimal fractions (*desâtična driḃ''*) and the four species

Repeating decimals, periodic fractions (*periodična driḃ''*)

Continued fractions (*bezpererivna driḃ''*)

Ratios and proportions (*otnošenna, proporcii*)

Regula de tri (*trojna sprava*): simple (*prosta*),

compound (*skladova*) [regula quinque]

Regula societatis (*trojna sprava tovaristva*)

Rule of the percentage (*sprava procenti/odsotki*)

Belarusian

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

Information: Early arithmetic books in Belarus were either written in Polish or Russian depending on the political situation.

The first arithmetic book in Belarusian is:

Yurevič, R. Ya.: *Zadačnik dla pačatkovaj školy*.

[Arithmetic book for primary schools].

Vilnius (Lithuania) 1916

It is held by Martynas Mažvydas NL of Lithuania and in NL of Belarus:

<http://www.libis.lt/simpleSearch.do?marcFullType=full&BI001=C10001657096>

<https://e-catalog.nlb.by/Record/BY-NLB-br689012>

Information is available in “Кнігі Беларусі: 1517–1917. Зводны каталог”

Reference: NL of Belarus, Minsk

Date: November 2020

Slovene

Marko Pohlin/Pochlin

Born as Anton Pohlin; OSA name:
Marcus a Sancto Antonio Paduano
b. 1735 Ljubljana/Laibach
d. 1801 Monastery Mariabrunn, Vienna
Order of Saint Augustine OSA
Author of a Slovene grammar, dictionary,
theologic and religious literature
(Wurzbach, Constantin von: Biograph.
Lexikon des Kaiserthums Oesterreich)

Bukuvze sa rajtengo

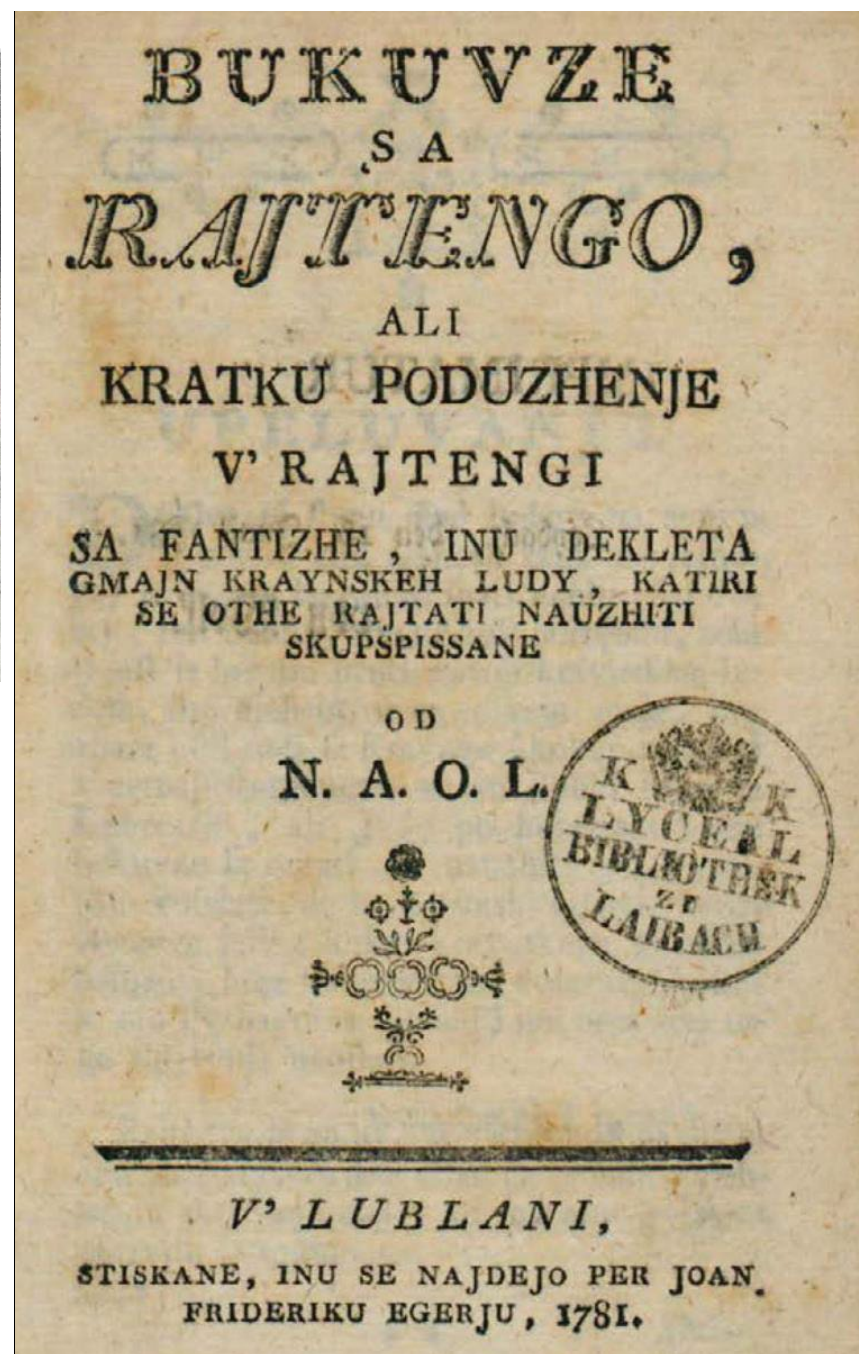
Ljubljana: Johann Friedrich
Egerius 1781

56 p.

D: Digitalna knjižnica Slovenije dlib.si

L: Ljubljana Narodna in univerzitetna
knjižnica

V: slovenska-biografija.si



Slovene

Marko Pohlin

Bukuvze sa rajtengo
Ljubljana: Egerius 1781

Transcription of the title page

The pen name *N. A. O. L.* could mean
Novus Augustiniani ordinis Laibacensis;
Pohlin also used other pen names such as
just *Novus* (id.loc.gov/authorities)

*Bukuvze
sa
rajtengo
ali
kratku poduzhenje
v' rajtengi
sa fantizhe, inu dekleta
gmajn kraynskeh ludy, katiri
se othe rajtati nauzhiti
skupspissane
od
N. A. O. L.

V' Lublani,
stiskane, inu se najdejo per Joan
Frideriku Egerju, 1781.*

Slovene

Marko Pohlin

Bukuvze sa rajtengo
Ljubljana: Egerius 1781

Translation of the title page

*Booklet
for
arithmetic
or
short instruction
in arithmetic
for boys and girls
of those of the Carniolan people who
want to learn to calculate
compiled
by
Marko Pohlin*

*In Ljubljana,
printed by, and can be found with Johann
Friedrich Egerius, 1781*

Slovene

Marko Pohlin

Bukvze sa rajtengo
Ljubljana: Egerius 1781

Content overview

(according to the section headings)

Pohlin's text contains particular word creations.

Translated using fran.si/iskanje; Slovarji
Inštituta za slovenski jezik Frana Ramovša

1 1.1 Numeration (*numerazijo*)

1.2 Addition (*addizijo*)

1.3 Subtraction (*subtrakzijo*)

1.4 Multiplication (*multiplikazijo*)

1.5 Division (*divisijo*)

(verification for all four species with check by 9)

2 Denominate numbers (*od shtivila is imenam*)

2.1 Currencies (*dnarji*); measures (*mira*) of time, wine, capacity, length; weight (*vaga*) of merchandise, gold, silver; measures of paper

2.2 Addition

2.3 Subtraction

2.4 Multiplication

2.5 Division

3 Regula de tri

Regula de tri inversa (*narobe*)

Six corollaries for fun (*Perstavkov sa shpas*)

Croatian (Kajkavian)

Mihael Šilobod-Bolšić

b. 1724

d. 1787

Studied philosophy in Vienna and
theology in Bologna

Pastor in Martinska Ves and Sveta Nedelja

Author of religious literature, a small
encyclopedia and Latin songs

His name became proverbial for math.
knowledge

Arithmetika horvatszka

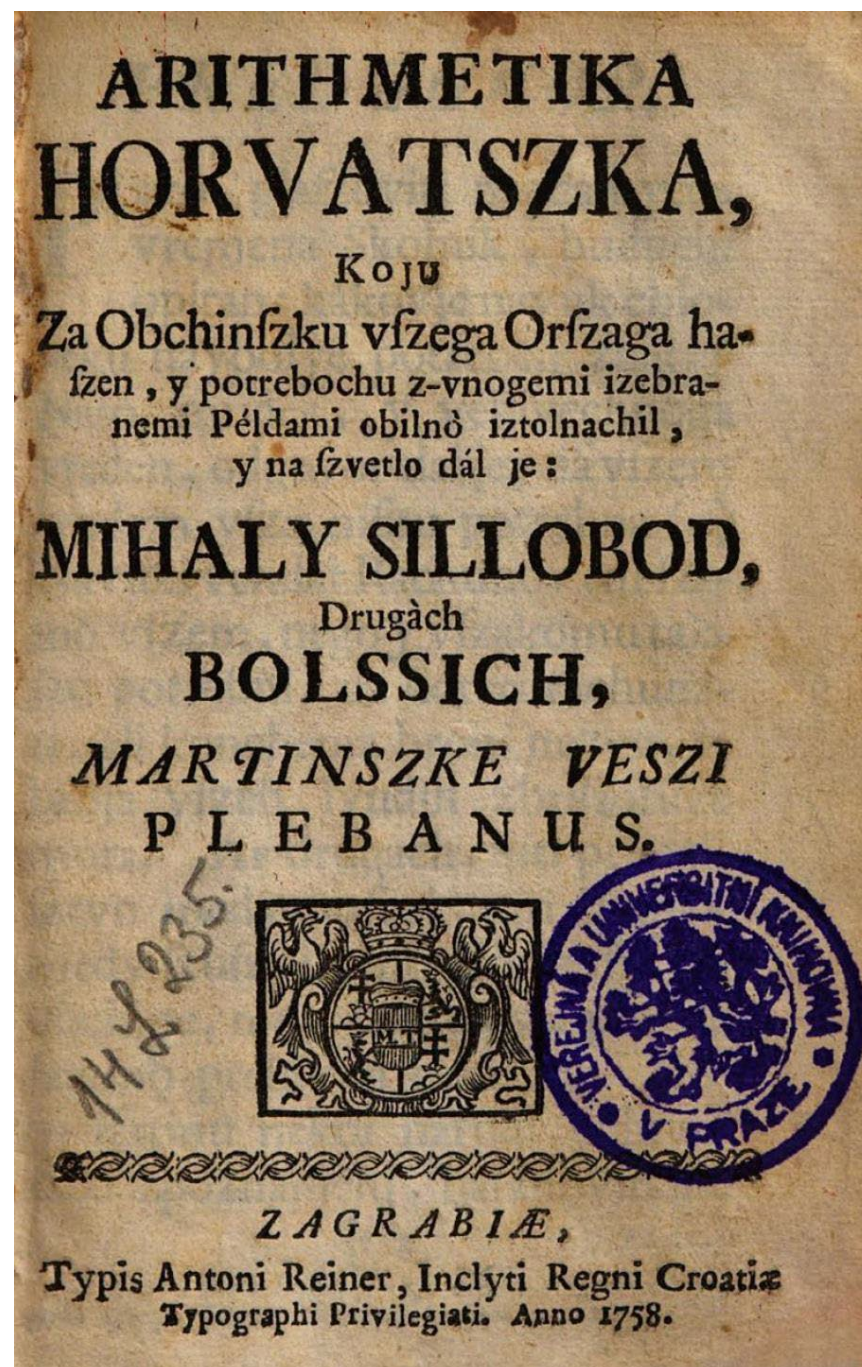
Zagreb: Anton Reiner 1758

384 p.

D: aleph.nkp.cz, EBSCO; google books

L: Praha NL

S/V: Ptičar, Adela: Prvi hrvatski računski
priručnici. In: Rasprave, časopis instituta
za hrvatski jezik i jezikoslovlje 30 (2004)
173–179 (hrcak.srce.hr/9473)



Croatian

Mihael Šilobod-Bolšić

Arithmetika horvatszka

Zagreb: Anton Reiner 1758

Transcription of the title page

Later than Šilobod-Bolšić 1758:

Mate Zoričić (OFM): *Aritmetika u slavni jeziku ilirički sastavljena. Jakin (Ancona):*

Peter Ferik 1766 (in Štokavian – basis of today's Serbian, Croatian, Bosnian and Montenegrin standards);

(OCLC 8559 15955)

Arithmetika

horvatszka,

koju

Za Obchinszku vszega Orszaga haszen, y potrebochu z-vnogemi izebranemi Példami obilnò iztolnachil,

y na szvetlo dál je:

Mihaly Sillobod,

Drugàch

Bolssich,

Martinske Veszi

plebanus.

Zagrabiae,

Typis Antoni Reiner, Incltyi Regni Croatiae

Typographi Privilegiati. Anno 1758.

Croatian

Mihael Šilobod-Bolšić

Arithmetika horvatszka

Zagreb: Anton Reiner 1758

Translation of the title page

Translated using fran.si/iskanje; Slovarji
Inštituta za slovenski jezik Frana Ramovša

*Croatian
arithmetic
which [he],
for the benefit related to the municipalities
of the entire country and for the demand,
with many selected examples
abundantly commented
and [which he] made see the light [of the world]:
Mihael Šilobod,
otherwise
Bolšić,
pastor
of Martinska Ves.*

*In Zagreb,
at the printing house of Anton Reiner, privileged
typographer of the famous Kingdom of Croatia.
In the year 1758.*

Croatian

Mihael Šilobod-Bolšić

Arithmetika horvatszka

Zagreb: Anton Reiner 1758

Content overview

(according to the Croatian and Latin tables of contents)

1 Simple calculations (*račun*)

1.1 Numbers (*broj*), numeration

1.2 Addition (*pridavanye*)

1.3 Subtraction (*odnimanye*)

1.4 Multiplication (*povekšavanye*)

1.5 Division (*razdelivanye*)

2 Fractions (*drobis*)

2.1 Simple fractions

2.2 Fractions of fractions

2.3 Conversion of fractions to integers and v.v.

2.4 Identifying a common denominator (reduction)

2.5 Reduction of fractions

2.6 Addition of fractions

2.7 Subtraction of fractions

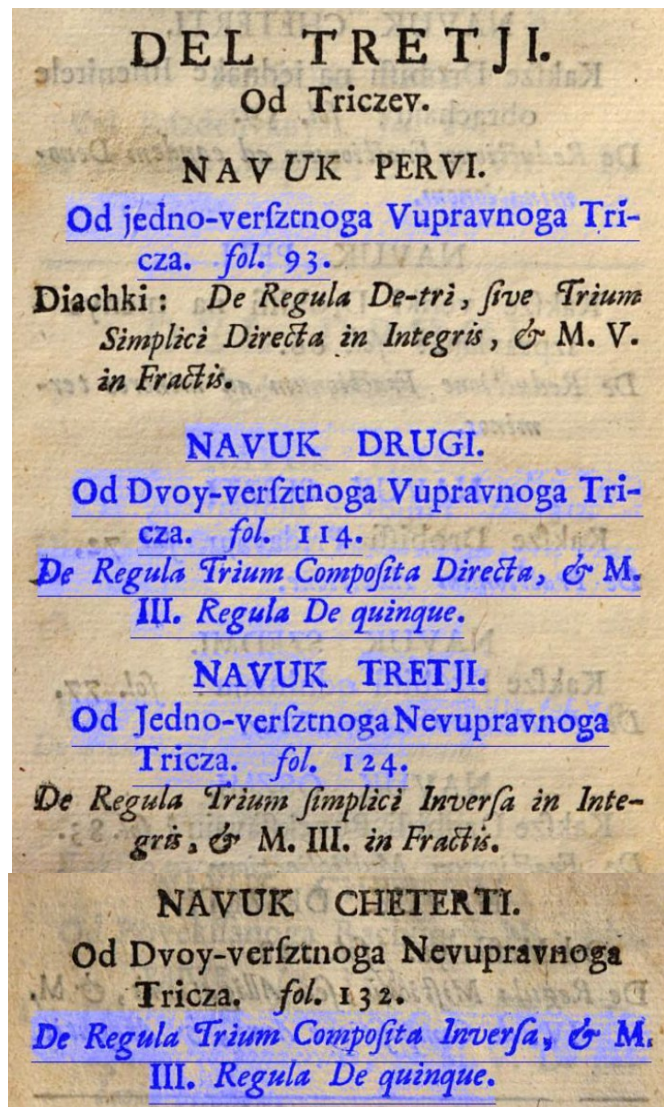
2.8 Multiplication of fractions

2.9 Division of fractions

Croatian: Mihael Šilobod-Bolšić

Arithmetika horvatszka 1758

Content overview



3 Regula de tri (*tricza*)

3.1 Regula de tri (simplex) directa

3.2 Regula de tri composita directa (*regula quinque*)

3.3 Regula de tri (simplex) inversa

3.4 Regula de tri composita inversa (*regula quinque*)

3.5 Regula societatis (*paydastvo*)

3.6 Subcontractor (*regula factoris; detič*)

3.7 Profit, loss (*regula lucri, damni; dobiček, zgubiček*)

3.8 Tare, tret (*regula tarae, fusti, faecis; poszudje, szmetje*)

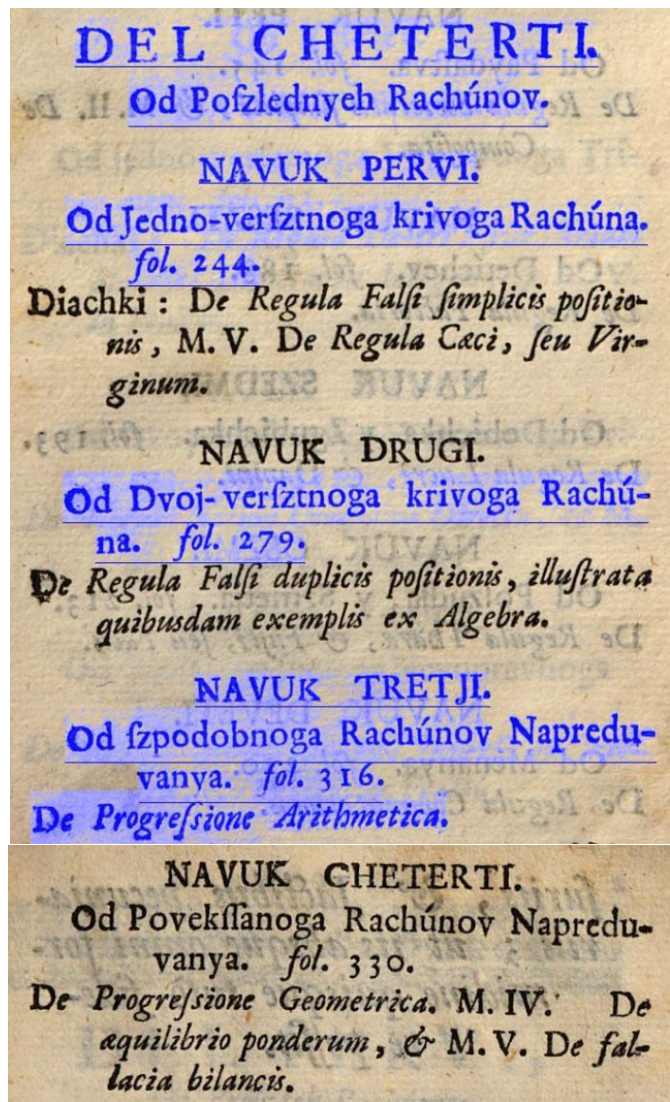
3.9 Rule of bartering (*regula commutationis; menanye*)

3.10 Regula alligationis (*regula misionis; mešanye*)

Croatian: Mihael Šilobod-Bolšić

Arithmetika horvatszka 1758

Content overview



4 Final calculations

4.1 Regula falsi simplicis positionis (*jedno-versztnoga krivoga račun*); regula caecis

4.2 Regula falsi duplicis positionis (*dvoj-versztnoga krivoga račun*)

4.3 Arithmetic progression (*szpodobnoga računov napreduvanye*)

4.4 Geometric progression (*povekšanoga računov napreduvanye*)

4.5 Permutation, anagram, lottery

4.6 Riddle (aenigma, arithmetica divinatoria; *zganke*)

Appendix: tables for interests and conversions of currencies

Bosnian (Štokavian)

Ambrož Matic

b. 1795 Blaževac, Pelagićevo

d. 1849 Garevac, Modriča

Author, poet, teacher in Kraljeva Sutjeska

Studies in philosophy and theology

in Slavonska Požega

Latin textbook: Knjižica ručna 1832

(Croatian Wikipedia)

Račun

Osijek: Divald 1827

Preface dated 1827-01-04

120 p.

D: data.onb.ac.at/rec/AC10106032

D/L: Wien ÖNB

S/V: Ptičar, Adela: Prvi hrvatski računski priručnici. In: Rasprave, časopis instituta za hrvatski jezik i jezikoslovlje 30 (2004) 173–179 (hrcak.srce.hr/9473)

R A C S U ' N

ZA

PERVU I DRUGU
GODINU SHKULSKU,

IZ

LATINSKOG' U BOSANSKI
JEZIK

PRINESE

P. AMBROXA MATHICH,

REDA S. FRANE OD OBS. DERXAVE

BOSANSKE MISNIK I SHKULA

GRAMMATICSKI UCSITELJ.

1827.

U OSSIKU,

Slovima Divaldovimā povlast. Knjigotisca.

Bosnian

Ambrož Matić

Račun

Osijek: Divald 1827

Transcription of the title page

Racsun
za
pervu i drugu
godinu shkulsku,
iz
latinskog' u bosanski
jezik
prinese
p. Ambroxa Mathich,
reda s. frane od obs. derxave
bosanske misnik i shkula
grammaticski ucitelj.

1827.

U Ossiku,

Slovima Divaldovima povlast. Knjigotiska.

Bosnian

Ambrož Matić

Račun

Osijek: Divald 1827

Translation of the title page

Ivan Martin Divald (1743–1806)
since 1775 privileged printer in Osijek

Arithmetic
for
the first and second
school year,
from
the Latin into the Bosnian
language
translated it
friar Ambrož Matić,
order of St. Francis of the observant branch
Bosnian missionary and
grammar school teacher

1827
In Osijek,
printed by [literally: with the types of]
Divald's privileged printing house.

Bosnian

Ambrož Matic

Račun

Osijek: Divald 1827

Content overview

(according to the table of contents and the section headings)

List of ecclesiastical and secular supporters

Basic knowledge

Part 1: Various changes (*prominjivanja*) of numbers (*brojevi*)

1 Numeration

2 Changes of numbers in general

3 Species for integers (*dillovanja u brojema čitavim*)

Addition (*skupljenje*)

4 Subtraction (*uzimanje*); check (*izkušanje*) by addition

5 Multiplication (*uzmložanje*)

6 Division (*razdielenje*); check (*izkušanje*) by multiplication

Part 2: Arithmetic for the second grammar school year

7 Denominate integers and descending reduction:

“well-known reducible integers” (*brojevi poznati čitavi okretljivi*)

7.1 Various changes

7.2–7.5 Four species

8 Ordinary fractions (*prikinutja običajni*): Properties

9 Ordinary fractions: Various changes

10 Ordinary fractions:

10.1–10.4 Four species

Four problems (*vježbanja*)

Serbian (Štokavian)

Vasilije Damjanović

b. 1734 Sombor (Serbia, prov. Vojvodina,
at the Hungarian border)

d. 1792 Sombor

Prot. high school Bratislava

Student in Venezia

Senator in Sombor

Novaja serbskaja Arifmetika

Venezia 1767

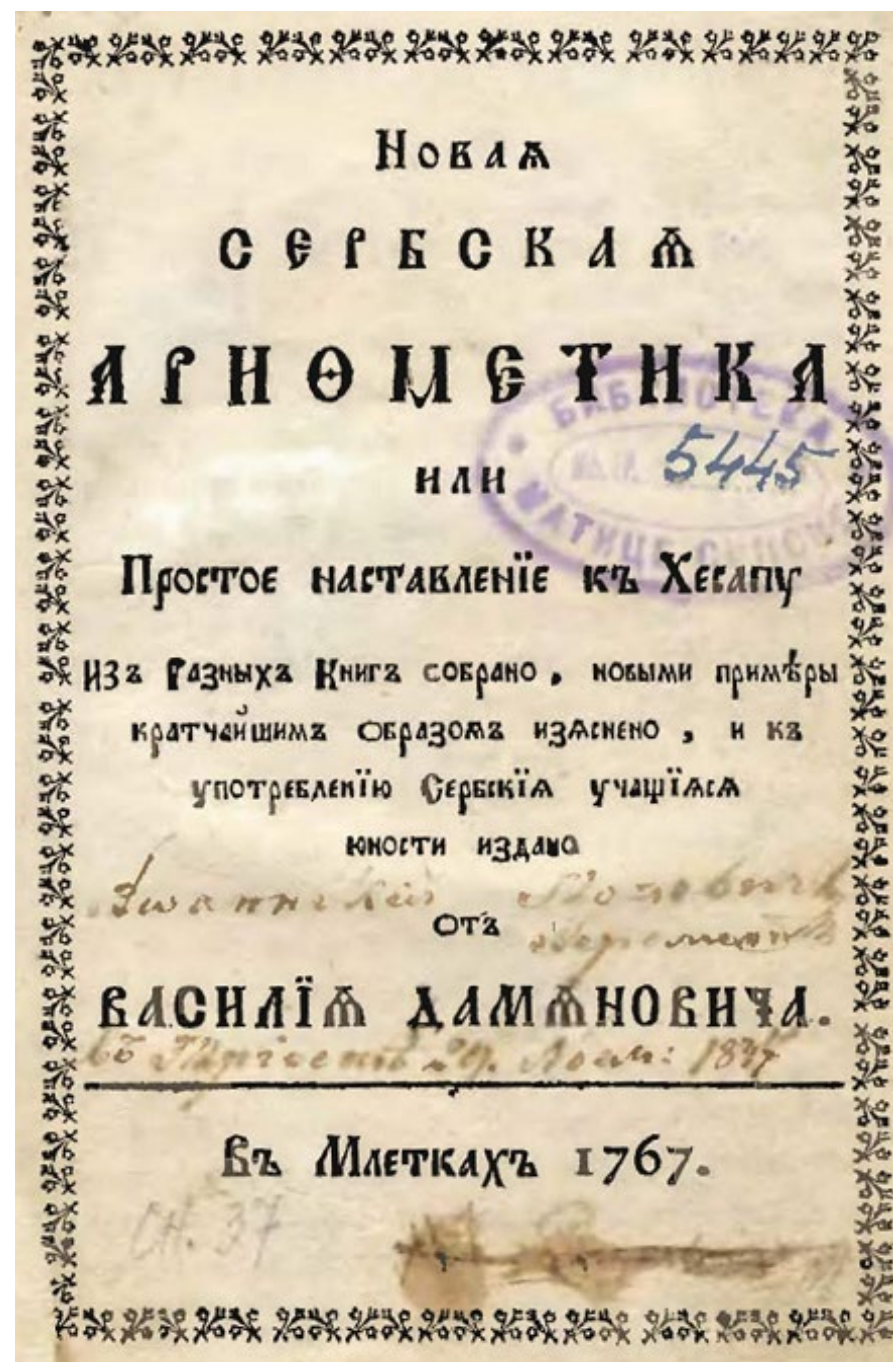
368 p.

D: elib.matf.bg.ac.rs

L: Novi Sad, L of Matica Srpska

S/V: Pejović, Nadežda: Digitization of
math. textbooks. In: Pregled Nacionalni
centar za digitalizaciju (Overview NCD)
12 (2008) 55–64, ncd.org.rs;

Karp/Schubring: Handbook on the history
of mathematics education. 2014, p. 149



Serbian

Vasilije Damjanović

Novaja serbskaja Arifmetika
Venezia 1767

Romanization of the title page
(no information about the printer)

hesap (from Turkish *hesap*, Arabic *ḥisāb*)
'arithmetic, calculation'

Novaę
serbskaę
Arifmetika
ili

Prostoe nastavlenie k" Ĥesapu
Iz" Raznyh" Knig" sobrano, novymi priměry
kratčojšim" obrazoę" izęsneno, i k"
upotrebleniũ Serbskię ućašięsę

ũnosti izdano

ot"

Vasilię Damęnovića

V" Mletkach" 1767

Serbian

Vasilije Damjanović

Novaja serbskaja Arifmetika
Venezia 1767

Translation of the title page

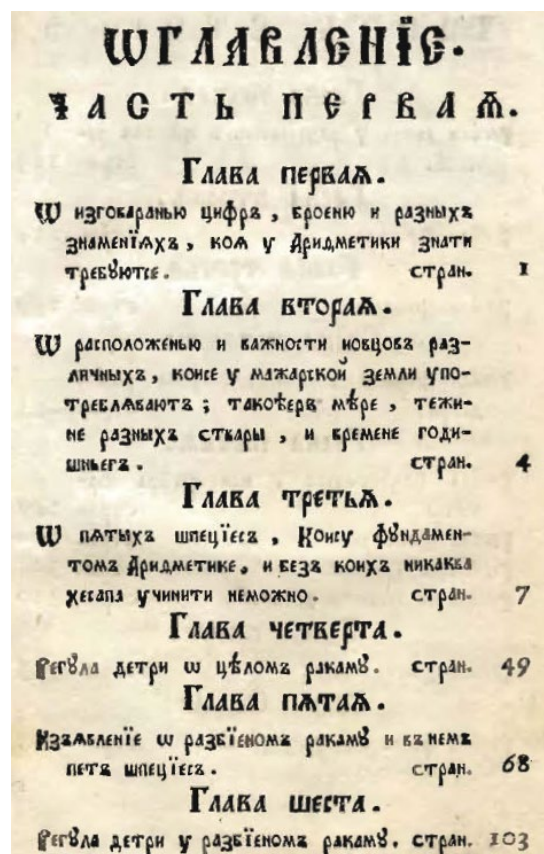
*New
Serbian
arithmetic
or
simple introduction into calculating
compiled from various books,
with new examples
briefly explained for teaching,
and for the use
of the participating Serbian young people
published
by
Vasilije Damjanović
In Venezia 1767*

Serbian

Vasilije Damjanović

Novaja serbskaja Arifmetika
Venezia 1767

Content overview



ОГЛЯДЕНІЕ.
ЧАСТЬ ПЕРВАЯ.

Глава первая.
О изъясненіи цифръ, брѣнои и разныхъ знаменѣхъ, кои у Арифметики знати требуются. стран. 1

Глава вторая.
О расположеніи и важности монетъ разныхъ, кои у мажарской земли употребляются; такоже о мѣрѣ, тежинѣ разныхъ стѣаръ, и времени годишнихъ. стран. 4

Глава третья.
О пятихъ шпеціесахъ, кои су фундаментомъ Арифметике, и безъ коихъ никака хезага учинити невозможно. стран. 7

Глава четверта.
Регла дѣти о цѣломъ ракамѣ. стран. 49

Глава пятая.
Изъясненіе о разбѣеномъ ракамѣ и безъ немъ пѣти шпеціесахъ. стран. 68

Глава шестая.
Регла дѣти у разбѣеномъ ракамѣ. стран. 103

Part 1:

1 Numeration, abbreviations

2 Currencies (among others Hungarian), measures, weights, paper measures, units of time

3 Five species (*špecies*”, incl. *numeracia*)

4 Regula de tri for integers (*ō cělom*” *rakamu*)

5 Five species for fractions

6 Regula de tri for fractions (*ō razbienom*” *rakamu*)

Serbian

Vasilije Damjanović

Novaja serbskaja Arifmetika
Venezia 1767

Content overview

ЧАСТЬ ВТОРАЯ:	
ГЛАВА ПЕРВАЯ.	
Регула дѣтри у раздѣленомъ и цѣломъ ра- камъ.	страни. 125
ГЛАВА ВТОРАЯ.	
Регула Пропорцій.	страни. 224
ГЛАВА ТРЕТЬЯ.	
Регула Конверса.	страни. 239
ГЛАВА ЧЕТВЕРТА.	
Регула Квинкве, или двогубка регула дѣтри.	страни. 255
ГЛАВА ПЯТАЯ.	
Регула Соціетатисъ, или регула Ор- тачка.	страни. 267
Регула Фактори.	страни. 300
Регула ш Бекели.	страни. 314
Регула ш щети и добиткѣ.	страни. 330
ГЛАВА ШЕСТА.	
Регула Амгаціонисъ.	страни. 353
ГЛАВА СЕДМА.	
Регула флеса или позиціонисъ.	страни. 365

Part 2:

- 1 Regula de tri for fractions and integers
- 2 Quantity-price relationships (*regula proporciï*)
- 3 Regula [de tri] conversa
- 4 Regula quinque or Regula dupla (*dvostruka*)
- 5 Regula societatis (or: *ortačka*), subcontractors, money exchange, barter, profit and loss
- 6 Regula alligationis
- 7 Regula falsi or positionum

Bulgarian

Hristaki Pavlovič Georgiev

b. ca. 1804 Dupnica (S Sofia)

d. 1848 (cholera) Svištov (on the Danube)

Teacher and author of school books

Education: Rila Monastery, Melnik, Ser

1834–1848 Teacher in Svištov

Arifmetika ili nauka čislitelna

Beograd: Princely Serbian

Printing House 1833

72 p. arithmetic, 46 p. calendar

D: stariknigi.bg/book.php?id=1578;

dl.wdl.org/12879/service/12879.pdf

L: Bulgaria NL, Bulg. Acad. of Sciences

S/V: Gančev, Ivan: Matematičeskite znaniâ

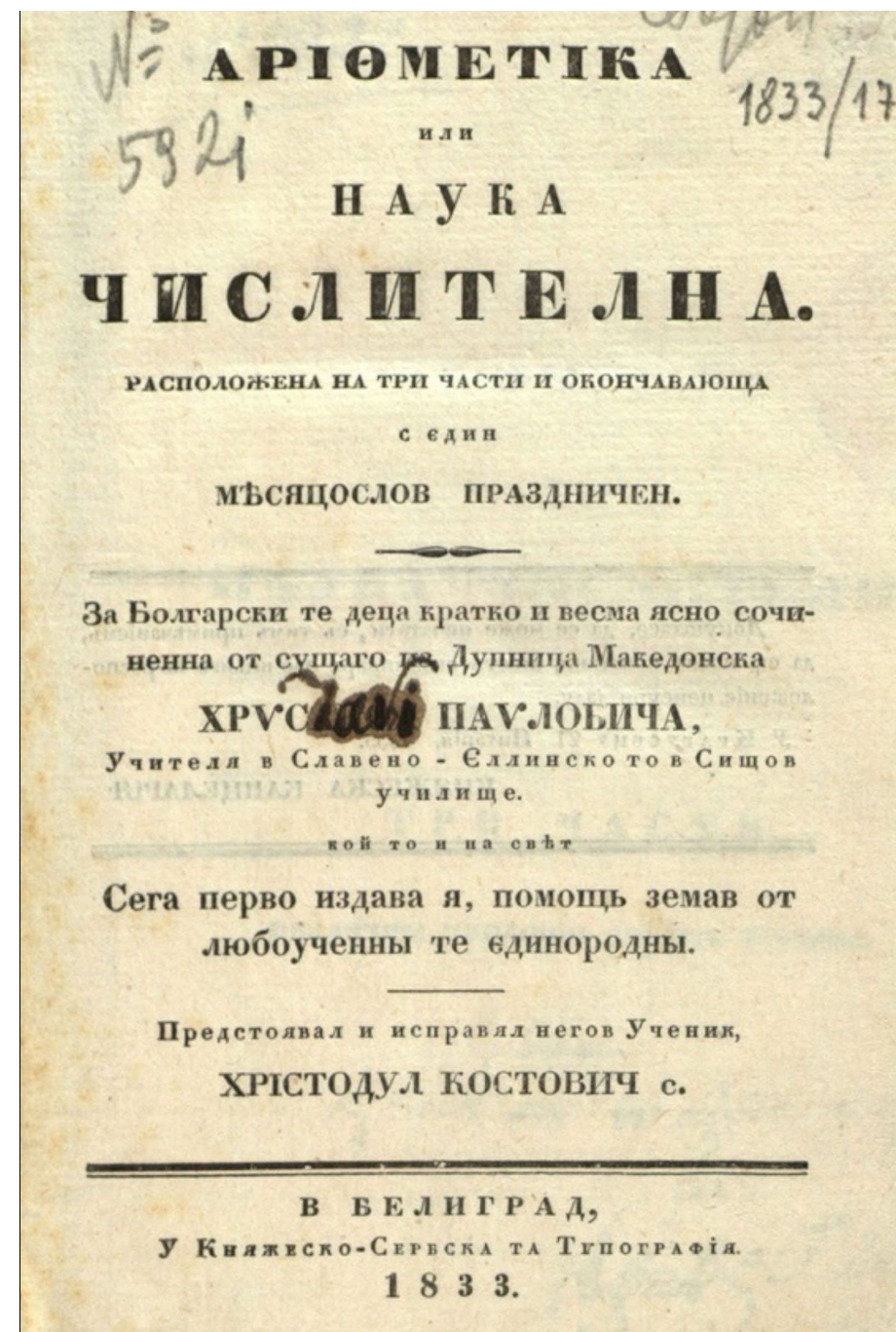
u nas do 1878 g. In: Bulgarski matematič.

Sofia 1987, 5–15, esp. 8–9

Institute of Mathematics and Informatics

(Muzei matematikata i informatikata v

Bulgaria) mmib.math.bas.bg/?page_id=378



Bulgarian

Hristaki Pavlovič Georgiev

Arifmetika ili nauka čislitelna

Beograd: Princely Serbian

Printing House 1833

Romanization of the title page

This Romanization is based on ISO 9 which neglects national differences in the phonetic value of Cyrillic characters, e.g. the character ш (Romanized š) corresponds to the phoneme /šč/ in Russian and to /št/ in Bulgarian.

Arifmetika

ili

nauka čislitelna.

Razpoložena na tri časti i okončavaûša

s êdin

mêsâcoslov prazdničen.

Za Bolgarski te deca kratko i vesma âsno soči-

nenna ot sušago iz Dupnica Makedonska

Hrÿstaki Paylobiča,

Učitelâ v Slaveno-Ellinsko to v S[v]išov

učiliše,

koj to i na svět

Sega pervo izdava â, pomoš' zemav ot

lûboučenny te êdinorodny.

Predstoâval i ispravâl negov Učenik,

Hristodul Kostovič s.

V Beligrad,

U Knâžesko-Serbska ta Tÿpografîâ.

1833.

Bulgarian

Hristaki Pavlovič Georgiev

Arifmetika ili nauka čislitelna

Beograd: Princely Serbian

Printing House 1833

Translation of the title page



Hristodul Kostovič Sičan-Nikolov

b. 1808 Samokov; d. 1889 Samokov

Teacher and author of textbooks, e.g.

Bolgarska Aritmetika, București 1845

Arithmetic

or

the science of numbers.

Arranged in three parts and ending

with a

monthly calendar of the holidays.

For the Bulgarian children, briefly and very clearly com-

posed by a true native from Dupnica

Hristaki Pavlovič,

teacher at the Slavic-Greek school

in Svištov

who is in the world

now the first to publish it taking help

from benevolent compatriots.

His student Hristodul Kostovič

represented him and corrected it.

In Beograd,

at the Princely Serbian Printing House

1833

Bulgarian

Hristaki Pavlovič Georgiev

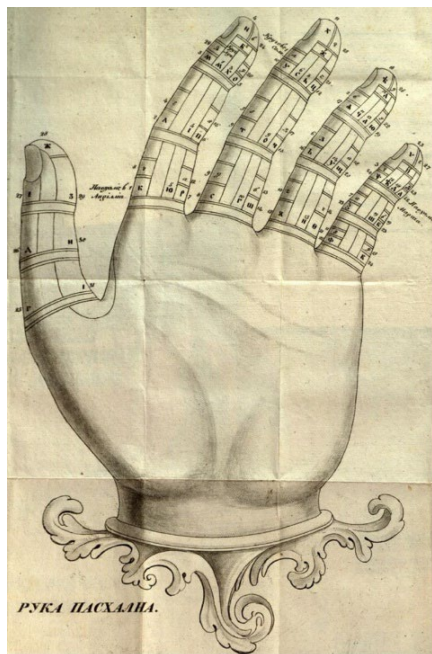
Arifmetika ili nauka čislitelna

Beograd: Princely Serbian

Printing House 1833

Content overview

(according to the section headings – there are no section numbers)



- [1] Basic operations (*dělanîê*) for integers (*číslo*, pl. *čísła*)
- [1.1] Numeration, addition (*priloženîê*), subtraction (*izâtîê*), multiplication (*umnoženîê*), division (*dělenîê*)
- [1.2] Check (*uvěrenîâ*) of the four species with inverse operations
- [1.3] Denominate numbers: Turkish currency, time, wine, wheat, length, paper, capacity; reductio descendens (*privedenîê*), reductio ascendens (*vozvedenîê*), species

[2] Fractions (*razdroblenny čísła*)

Numeration, basic operations, reduction, expansion

[3] Regula de tri (*trojno pravilo*) [Cyrillic *H* symbol for unknown *x*]

Simple (*prosto*) regula de tri

Compound (*složenko*) regula de tri [regula quinque]

Regula societatis (*sodružestvenno*)

Regula falsi (*ložno*) simplicis (*prosto*), duplicis (*dvojno*) positionis

Regula alligationis (*směšenko*)

[4] Calendar of moveable (*dvižimi*), not moveable feasts (*prazdnici*) (containing “month hand”, “Easter hand” *ruka pašalna*)

List of good and bad monthly days

List of supporters of the book (12 p.)

Addition, subtraction, multiplication, division table

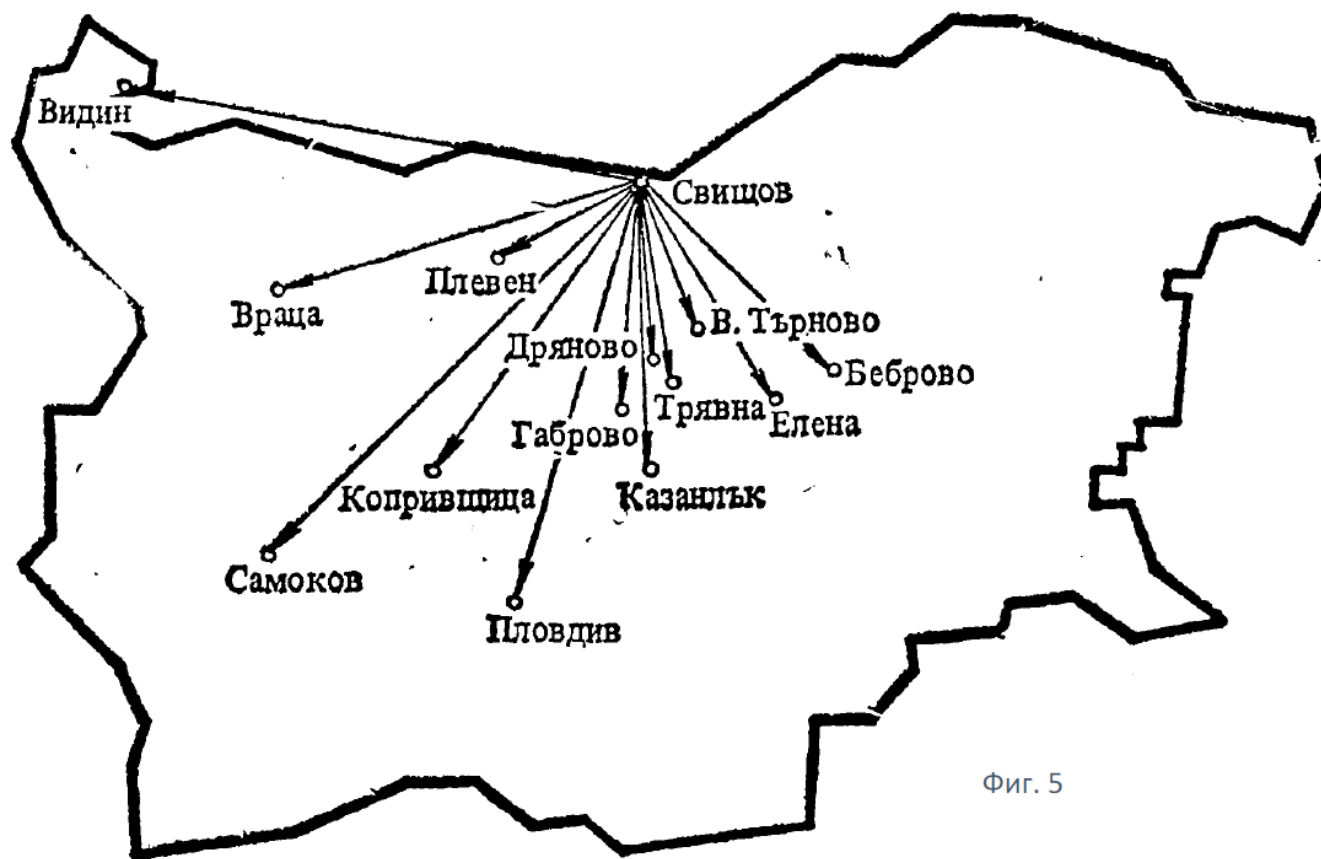
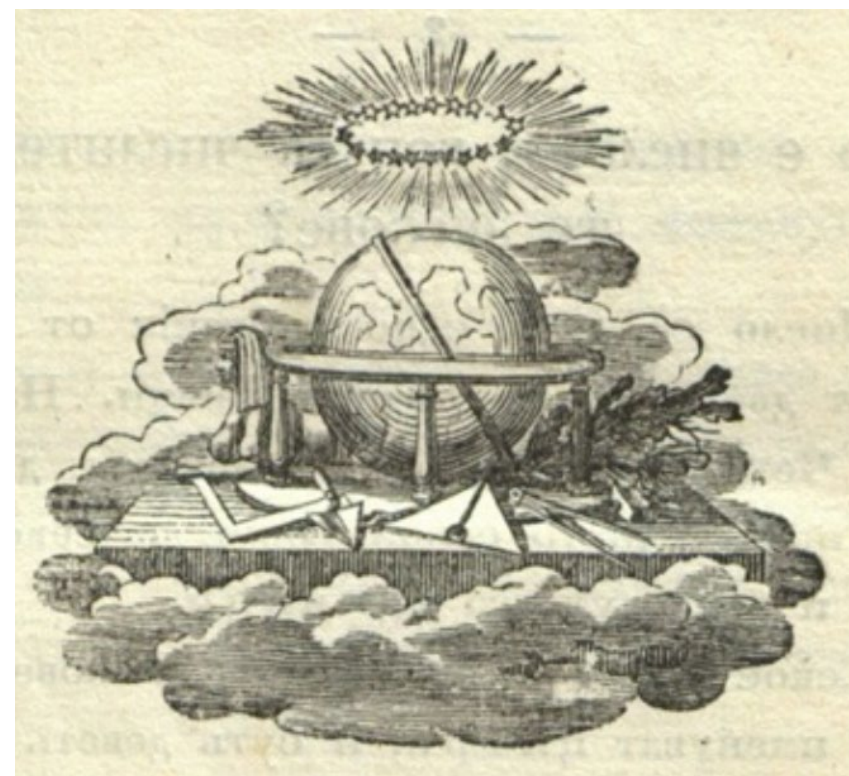
Bulgarian

Hristaki Pavlovič Georgiev

Arifmetika ili nauka čislitelna

Beograd: Princely Serbian

Printing House 1833



Map showing the home towns of supporters
(according to the list in the end of the book)
(Gančev 1987)

Latvian

Christoph Harder

b. 1747

d. 1818

Studies in Königsberg/Kaliningrad

1772–1817 Pastor of Rubene (Papendorf),

Kocēni (Kokenhof) community

SW Valmiera (Wolmar)

[not S Jekabpils (Jakobstadt)]

Rēķināšanas grāmatiņa

Riga: Julius Konrad Daniel

Miller 1806

134 p.

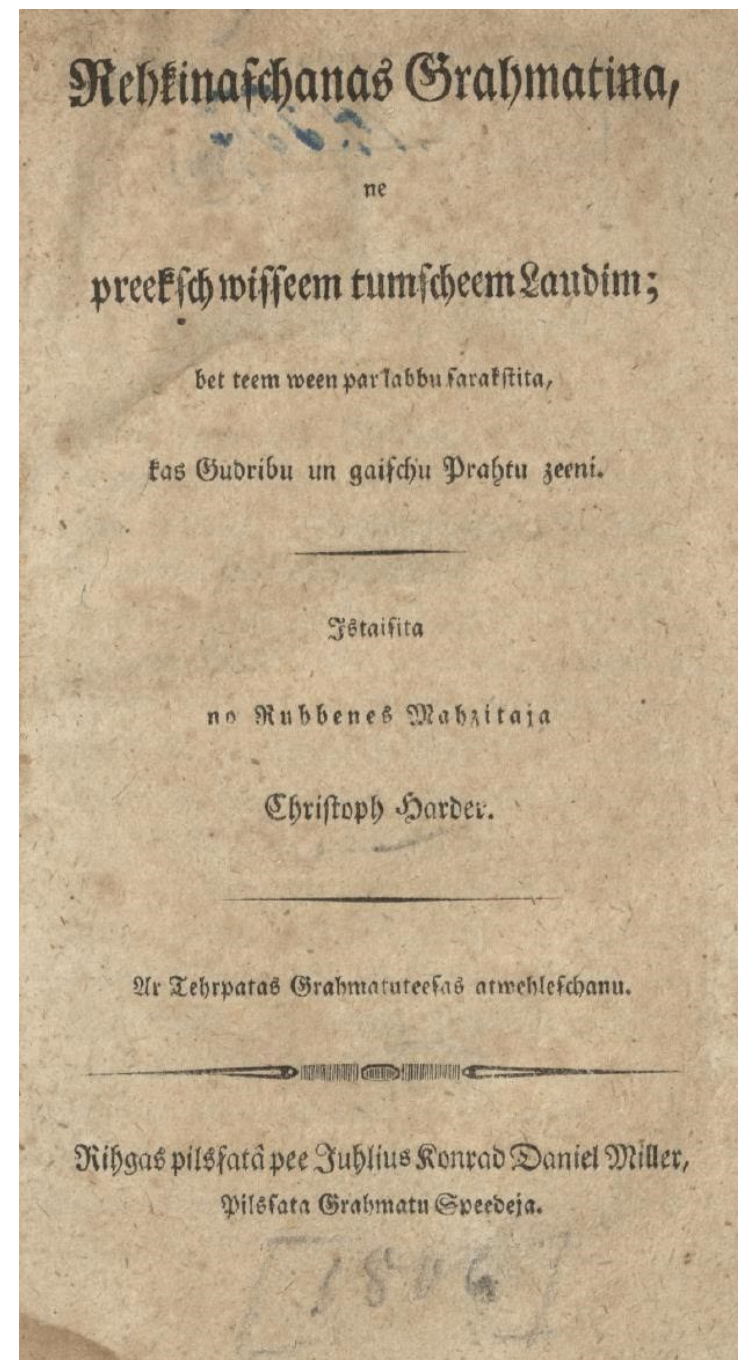
D: dom-acc.lndb.lv/data/obj/634773.html;

proxy.europeana.eu/97/634733

L: Latvijas Nacionālā Bibliotēka

V: [literatura.lv/en/person/Christof-](http://literatura.lv/en/person/Christof-Harder/872958)

[Harder/872958](http://literatura.lv/en/person/Christof-Harder/872958)



Latvian

Christoph Harder

Rēķināšanas grāmatiņa

Riga: Miller 1806

Transcription of the title page

Modern orthography

(according to library catalog)

*Rēķināšanas grāmatiņa ne
priekš visiem tumšiem ļaudīm,
bet tiem vien par labu
sarakstīta, kas gudrību un gaišu
prātu cienī
Iztaisīta no Rubenes mācītāja*

[letters with cedille are palatals]

Rehķinašchanas Grahmatiņa,

ne

preekšč wiššseem tumšcheem ļaudim;

bet teem ween par labbu šarakstita,

kas Gudribu un gaišču Prahtu zeeni.

Istaišita

no Rubbenes Mahzitaja

Christoph Harder.

Ar Tehrpatas Grahmatuteešas atwehlešchanu.

Rihgas pilsšatâ pee Juhlius Konrad Daniel Miller,

Pilsšata Grahmatu Špeedeja.

Latvian

Christoph Harder

Rēķināšanas grāmatiņa

Riga: Miller 1806

Translation of the title page

For help with translations, I am indebted to Latvia NL.

Arithmetic book

not

for all the obscure people

*but only for the benefit of those, of those alone
who respect knowledge and understanding.*

Arranged

by the pastor of Rubene

Christoph Harder.

*With the permission of the Book Court
in Tērbata [Tartu, Dorpat].*

*Riga's town hall by Julius Konrad Daniel Miller,
Town hall book shipping agency.*

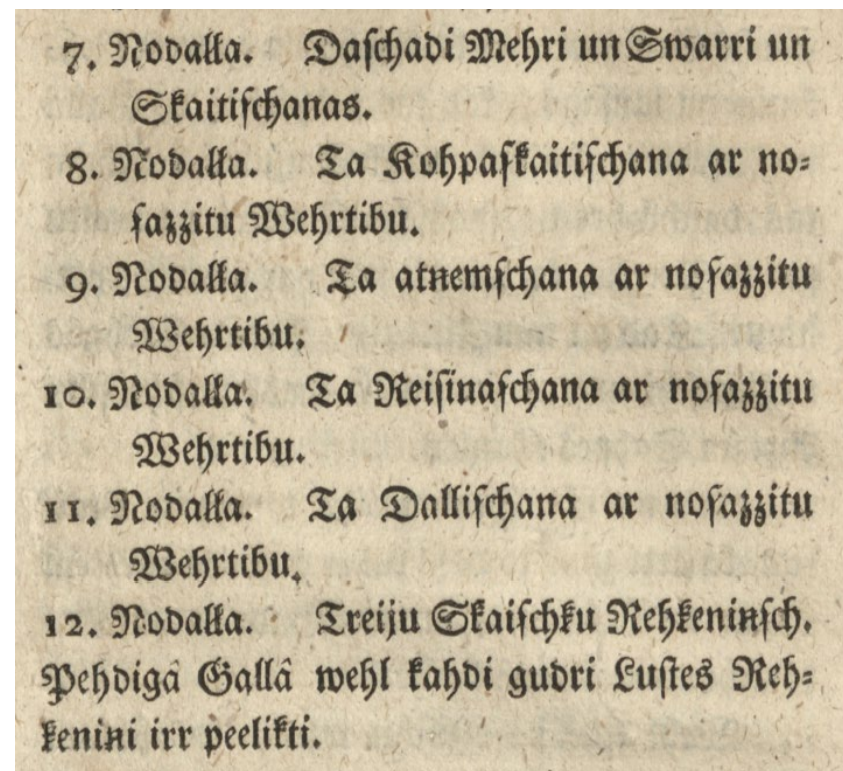
Latvian

Christoph Harder

Rēķināšanas grāmatiņa

Riga: Miller 1806

Content overview



- 1 Numeration: The learning of numbers (*zihper*), or how to designate the numbers properly, as well as how to designate denominate numbers correctly
 - 2 How many ways [*Wihse* corresponds to German *Weise*] of calculation (species) available?
 - 3 Addition (*kohpaskaitišchana*)
 - 4 Subtraction (*atnemšchana*)
 - 5 Multiplication (*reisinaschana*)
 - 6 Division (*dallišchana*)
 - 7 Various measures for length, weight and for counting objects; currencies
 - 8 Addition with denominate numbers (*ar nošazzitu Wehrtibu*)
 - 9 Subtraction with denominate numbers
 - 10 Multiplication with denominate numbers
 - 11 Division with denominate numbers
 - 12 Regula de tri (*treiju skaišchķu rehķeniņsch*)
- At the very end, some more complicated arithmetic problems for fun are added

Lithuanian

Jonas Spudulis,
pen name J. Gailutis

b. 1860 Pašvinys (Šiauliai district)

d. 1920 Tauragė

Physician, linguist, creator of Lithuanian
arithmetic and linguistic terminology
Studies in Moskva, Sankt Peterburg
(Lithuanian Wikipedia)

*Užduotinas tai ira rankius
užduocziu aritmetikos arba
rokundos mokslo*

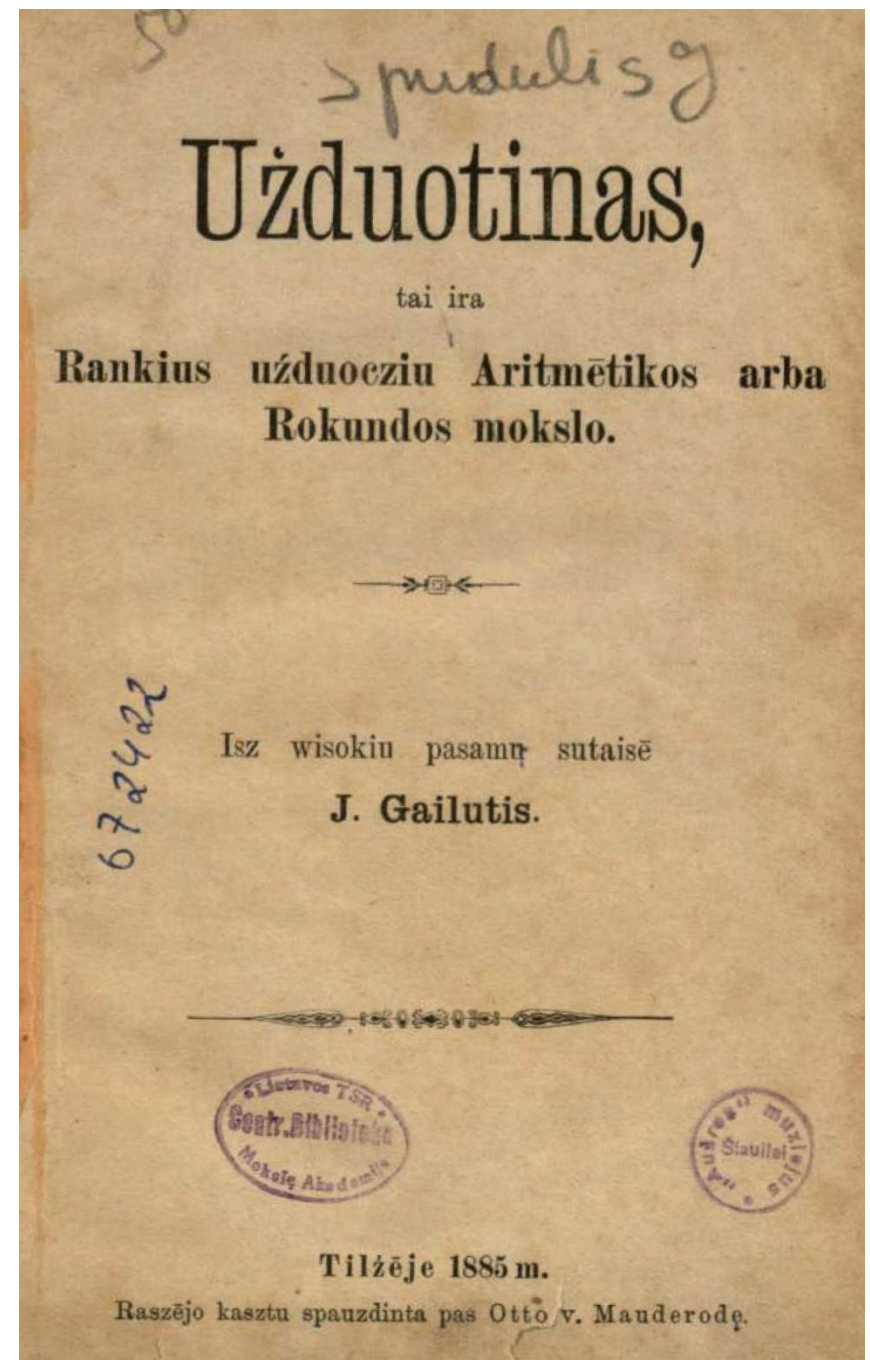
*Tilsit/Tilžė/Sovietsk: Otto v.
Mauderode 1885*

80 p.

D: elibrary.mab.lt/handle/1/22367

L: Poland NL (OCLC 8302 69198)

V: Banionis 2009 (see Supplement)



Lithuanian

Jonas Spudulis,
pen name J. Gailutis

*Užduotinas tai ira rankius
užduocziu aritmetikos arba
rokundos mokslo*
Tilsit/Sovietsk: Mauderode 1885

Transcription of the title page

S: Duoba, Jonas: Lietuviški matematikos
terminai pirmuosiuose vadovėliuose
[Lithuanian mathematical terms in the
earliest textbooks]. In: Matematikos
Istoria $\alpha + \omega$ (2002, 2) 42–48

*Užduotinas,
tai ira
Rankius užduocziu Aritmētikos arba
Rokundos mokslo.*

*Isz wisokiu pasamu sutaisē
J. Gailutis.*

*Tilžēje 1885 m.
Raszējo kasztu spauzdinta pas Otto v. Mauderode.*

Lithuanian

Jonas Spudulis,
pen name J. Gailutis

*Užduotinas tai ira rankius
užduocziu aritmetikos arba
rokundos mokslo
Tilsit/Sovietsk: Mauderode 1885*

Transcription of the title page

Regarding pen names: In 1863, the use of the Lithuanian language in official life was forbidden. Textbooks used in the secret Lithuanian schools had to be published in Prussia (Leipus/Manstavičius in European Math. Society Newsletter 12/2020, 68).

*Questions,
that is,
a collection of problems in arithmetic or
calculation science.*

*With all kinds of protections provided [it]
[cf. suteikti ‘to provide’]
J. Gailutis.*

*In Tilsit in the year 1885.
With assumption of the expenses
printed by Otto v. Mauderode.*

Lithuanian

Jonas Spudulis,
pen name J. Gailutis

*Užduotinas tai ira rankius
užduocziu aritmetikos arba
rokundos mokslo*
Tilsit/Sovietsk: Mauderode 1885

Content overview
(according to the section headings)

- I Non-denominate numbers (*gryni skaitliai*)
 - 1 Addition (*Sudėjimas*)
 - 2 Subtraction (*Atėmimas*)
 - 3 Multiplication (*Dauginimas*)
 - 4 Division (*Dalijimas*)
 - 5 Various mixed problems for the four species (*veikmė*)
 - II Denominate numbers (*praminti skaitliai*)
 - 6 Reductio descendens (*smulkinimas*)
 - 7 Reductio ascendens (*stambinimas*)
 - 8 Addition; 9 Subtraction
 - 10 Multiplication; 11 Division
 - 12 All kinds of problems with denominate numbers
 - III Fractions (*nuotrupos*)
 - 13 Origin (*kiltis*) of fractions
 - 14 Simplification (*sutrumpinimas*) of fractions
 - 15 Expansion (*padidinimas*) and reduction (*pamažinimas*) of fractions
 - 16 Addition and subtraction of fractions
- Solutions, multiplication table, conversions
Some unusual mathematical terms (German, Polish)

Lithuanian – Supplement

Later than Spudulis 1885

Petras Vileišis,
pen name **Petras Nėris**

1851–1926, engineer

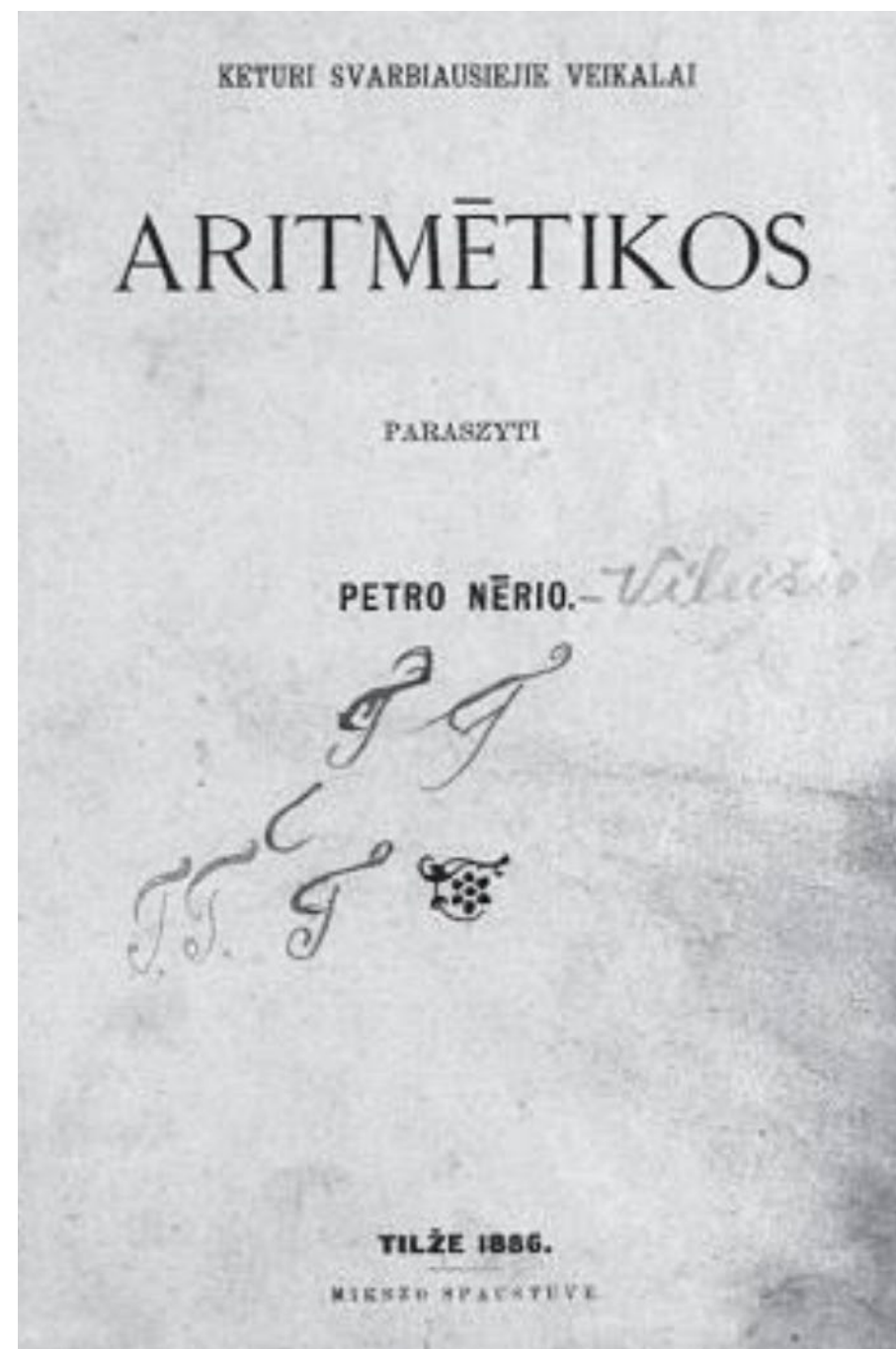
*Keturi svarbiausieji veikalai
aritmetikos* [The four most
important arithmetic operations]
Tilsit: Jurgis Mikšas 1886

50 p.

L: Martynas Mažvydas NL of Lithuania
(lnb.libis.lt);

Lietuvos Akademine Elektronine
Biblioteka (aleph.library.lt)

S: Banionis, Juozas: P. Vileišis. In: Liet.
mat. rink. LMD darbai 50 (2009) 145–148
(journals.vu.lt/LMR/article/view/17918/
17081)



Scottish Gaelic

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

Anderson, Robert: *The Edinburgh history of education in Scotland*. Edinburgh: Edinburgh University Press 2015
In this book, Chapter 9 ‘Education in rural Scotland’ (153–170):

“Rural Scotland was central to the parochial education system which operated between 1696 and the introduction of compulsory education in 1872.”

In this book, Chapter 17 ‘Gaelic education since 1872’ (304–325):

“The Education (Scotland) Act 1872 aimed to ‘provide elementary education in reading, writing and arithmetic’ for all children aged five to twelve, but did not specify the language in which literacy skills should be developed.”

(WorldCat Identifier 8182 381 776)

A work from the 21st century is:

Maths glossary: English-Gaelic / Gaelic-English

(To be used with Scottish Heinemann Maths)

Kershader, Isle of Lewis: *Stòrlann Nàiseanta na Gàidhlig* 2006
(OCLC 7005 9375)

Irish

Peadar Ua Laoghaire
Peter O'Leary

b. 1839 Clondrohid, County Cork

d. 1920 Castlelyons

Catholic priest, writer;

a founder of modern Irish literature

1891 Priest in Castlelyons, 1906 canon
(English and Irish Wikipedia)

Leabhar nua ar áireamh

Dublin: Browne and Nolan
ca. 1900

112 p.

D: Internet Archive

L: Ireland NL, Toronto U

(OCLC 8480 88320, 5285 5412)

V: Ireland NL, Cork Univ College Boole L



Irish

Peadar Ua Laoghaire

Peter O'Leary

Leabhar nua ar áireamh

Dublin: Browne & Nolan 1900

Transcription of the title page

*Leabhar nua
ar áireamh*

*Aodh Magill i Liam Parr
do chúm i mBéarla ar dtúis*

*An t-Athair Peadar Ua Laoghaire
do chuir Gaedhilg ar*

*Brún agus Ó Nualláin, teor[anta].
i mBaile Átha Cliath – i mBéal Feirste
i gCorcaigh – i bPortláirge*

Irish

Peadar Ua Laoghaire

Peter O'Leary

Leabhar nua ar áireamh

Dublin: Browne & Nolan 1900

Translation of the title page

An original English textbook by Magill and Parr could not be found.

Content overview:

the four basic arithmetic operations for integers and fractions

*New book
on calculation*

*Hugh Magill and William Parr
composed it in English first*

*The Father/Reverend Peter O'Leary
translated it into Irish*

*Browne and Nolan, ltd.
in Dublin – in Belfast
in Cork – in Waterford*

Irish – Supplement

Earlier books for trading between Ireland and the UK were written in English, e.g.

Edward Hatton:

The Irish comes commercii

Dublin 1739

C: Hooch II/H6.24 etc.

Textbooks of the 19th century were also in English, e.g.

A treatise on arithmetic in theory and practice: for the use

of the Irish National Schools

Dublin: Commissioners of

National Education in Ireland

³1850

The digital copy (Internet Archive) of *Leabhar nua ar áireamh* contains additionally:

1. Peter O’Leary:

Eólas ar áireamh [Knowledge of calculation] –
Arithmetical tables in Irish.

[Irish numerals, calculation tables, conversions]

Dublin: Browne and Nolan [n. d.]

Dublin: Irish Book Company 1902

2. Anonym (“a bilingual teacher”):

Bilingual arithmetic (revised and enlarged)

[in the beginning Irish numerals,
in the end mathematical terms English – Irish]

Dublin: Browne and Nolan 1922

Welsh

John Roberts /
Siôn Robert Lewis

b. 1731 Llanaelhaearn, Caernarfonshire

d. 1806 Holyhead, Isle of Anglesey

Author of many works on various subjects

Around 1760 license of the bishop of

Bangor to open a school

Rhifydddeg neu Arithmetic

Dublin: S. Powell 1768

Arithmetic neu rifydddeg. Dublin 1796

156 p.

D: google books, London BL

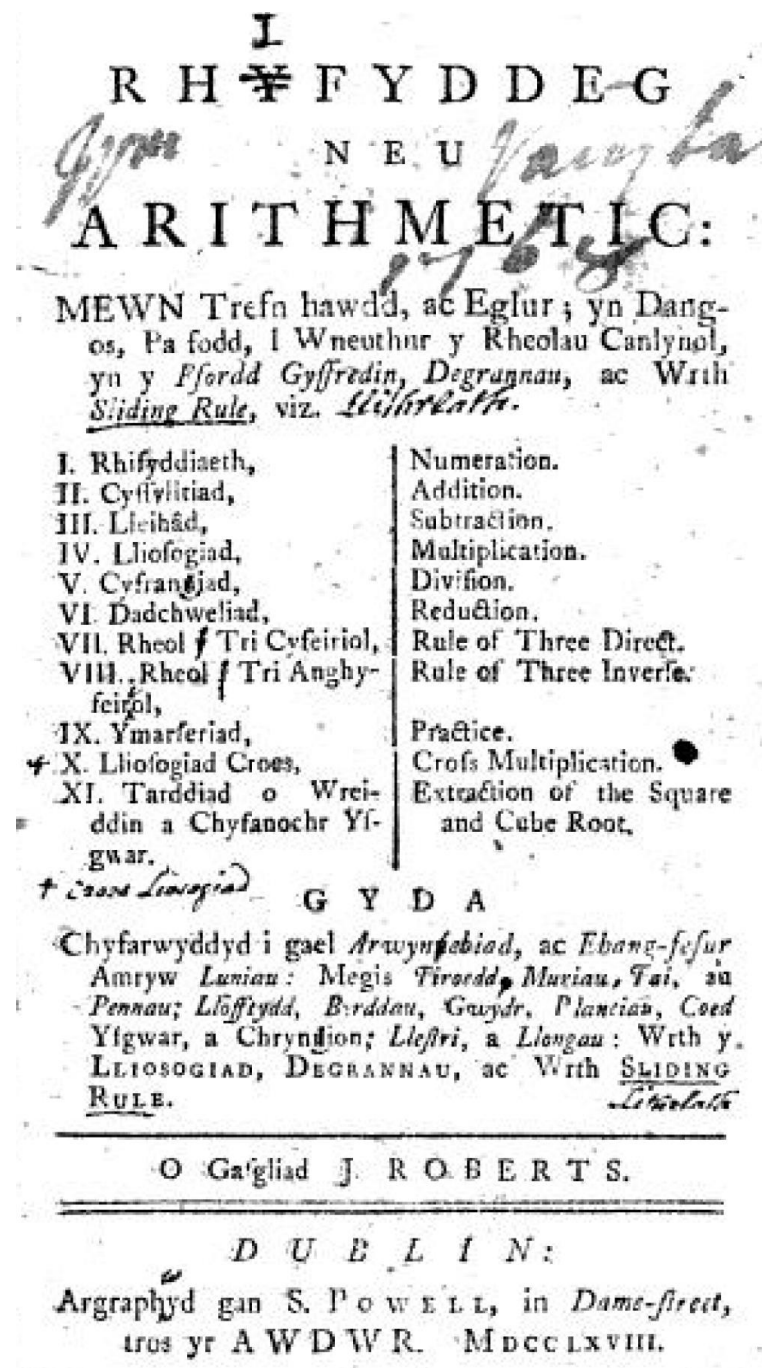
L: London BL, Cardiff U, Wales NL

V: Entry for Roberts, John. In:

Stephens, Meic (ed.): The Oxford
companion to the literature of Wales.

Oxford University Press 1986

biography.wales/article/s-ROBE-JOH-1731



Welsh

John Roberts

Rhifydddeg neu Arithmetic

Dublin: Powell 1768

Transcription of the title page

I
R H ~~F~~ Y D D E G
NEU
ARITHMETIC:
MEWN Trefn hawdd, ac Eglur; yn Dang-
os, Pa fodd, I Wneuthur y Rheolau Canlynol,
yn y Ffordd Gyffredin, Degrannau, ac Wrth
Sliding Rule, viz. *Llithelath*.

O Gasgliad J. ROBERTS.

DUBLIN:
Argraphyd gan S. POWELL, in Dame-street,
tros yr AWDWR. MDCCLXVIII.

Rhifydddeg

neu

Arithmetic

*Mewn Trefn hawdd, ac Eglur; yn Dang-
os, Pa fodd; I Wneuthur y Rheolau Canlynol,
yn y Ffordd Gyffredin, Degrannau, ac Wrth
Sliding Rule viz. [manually added Llithelath]*

[arithmetic content]

Gyda

*Chyfarwyddyd i gael Arwynebiad, ac Ehang-fesur
Amryw Luniau: Megis Tiroedd, Muriau, Tai, au
Pennau; Llofftydd, Borddau, Gwydr, Planciau, Coed
Ysgwar, a Chrynon; Llestri, a Llongau: Wrth y
Lliosogiad, Degrannau, ac Wrth Sliding
Rule. [manually added Llithelath]*

O Gasgliad J. Roberts

Dublin:

*Argraphyd gan S. Powell, in Dame-street,
tros yr Awdwr. MDCCLXVIII*

Welsh

John Roberts

Rhifydddeg neu Arithmetic

Dublin: Powell 1768

Translation of the title page

Calculation

or

Arithmetic

*in easy and clear order, showing
how to profit from the following rules
in the common way, the decimals and
using the slide rule [“flute”]*

[arithmetic content]

With

*guidance to determine area and volume measures
for various forms: such as lands, walls, houses and façades
[front, principal face]; upstairs rooms, boards, glass, planks,
timber (square and round/thick); crockery and ships: using
multiplication, decimals and
the slide rule [“flute”]*

From J. Roberts’s gathering

Dublin:

*Printed by S. Powell in Dame street
for the author 1768*

Welsh

John Roberts

Rhifydddeg neu Arithmetic

Dublin: Powell 1768

Content overview

(according to table of contents, section headings and page headers [do not coincide])

I. Rhifyddiaeth,	Numeration.
II. Cyfylltiad,	Addition.
III. Lleihâd,	Subtraction.
IV. Lliofgiad,	Multiplication.
V. Cyfranjiad,	Division.
VI. Dadchweliad,	Reduction.
VII. Rheol f Tri Cyfeiriol,	Rule of Three Direct.
VIII. Rheol f Tri Anghyfeiriol,	Rule of Three Inverse.
IX. Ymarferiad,	Practice.
X. Lliofgiad Croes,	Cross Multiplication.
XI. Tarddiad o Wreiddin a Chyfanochr Ysgwar.	Extraction of the Square and Cube Root.

- 1 Numeration (*rhifyddiaeth*)
- 2 Addition (*cyssylltiad*): integers (*rhifedi cyfan*), money (*arian o amryw enwau*), troy weight (*pwysau troy*), avoirdupois weight, liquid measure (*gwlyb-fesur*), dry measure (*sych-fesur*), long measure (*hyd-fesur*), land measure (*fesur tir*), time (*amser*)
- 3 Subtraction (*lleihad*): integers, money, troy weight, avoirdupois weight, liquid measure, dry measure
- 4 Multiplication (*lliosogiad*): integers, money
- 5 Division (*cyfraniad*): money
- 6 Reductio a/descendens (*dadchweliad*): money, long measure, time
- 7 Regula de tri directa (*rheol y tri cyfeiriol*), golden rule (*rheol euraid*)
- 8 Regula de tri inversa (*rheol y tri anghyfeiriol*)
- 9 Rules of practice (*ymarferiad*): interest (*log arian*)
- 10 Multiplication of lengths in feet, inches, 1/12 inches (*lliosogiad troedfeddau, modfeddau a rhanau*)
- 11 Decimals (*degrannau*):
 - I. Conversion of fractions to decimals (*toriadau yn degrannau*)
 - II. Reductio descendens: conversion of unit decimals to smaller units: money, weights, measures
 - [III.] Basic arithmetic operations with decimals
- 12 Extraction of the square root (*tarddiad o wreiddin ysgwar*)
- 13 Extraction of the cube root (*tarddiad o wreiddin cyflawnochr*)
- 14 Slide rule: multiplication, division, fractions and decimals, regula de tri, square root, geometric mean (*canolrif perthynol*)

Welsh

John Roberts

Rhifydddeg neu Arithmetic

Dublin: Powell 1768

Content overview

(according to table of contents, section headings and page headers
[do not coincide])

Y Cyfwrdd Llosgol G Y D A

Chyfarwyddyd i gael *Arwynfebiad*, ac *Ehang-fesur*
Amryw *Luniau*: Megis *Tiroedd*, *Muriau*, *Tai*, a'u
Pennau; *Lloffttydd*, *Byrddau*, *Gwydr*, *Plantiau*, *Coed*
Ysgwar, a *Chryndion*; *Llestri*, a *Llongau*: With y
LLIOSOGIAD, *DEGRANNAU*, ac With *SLIDING*
RULE. *Lithographed*

15 Measuring of surfaces (*mesur arwynebiad*): square, rectangle, triangle, circle, semi-circle, quarter circle, ellipse

16 Measuring for certain purposes

1 Carpenter's work (*weith seiri coed*)

2 Stone mason's work (*weith seiri cerrig / meini*)

3 Painting (*baentio*)

4 Roof slater's work (*gwaith llech doiwyr*)

5 Glazier's work (*waith gwydrwyr*)

6 Land measure (*mesur tir*)

7 Board measure (*mesur byrddau*)

8 Timber volume measure (*ehang fesur coed*)

Square timber (*bren ysgwar*)

Round timber (*bren crwn*)

Crockery measure (*mesur llestri*)

Square gauging (*mesur ysgwar*)

Cask gauging (*mesur casc*)

Ship gauging (*mesur llongau*)

Calendar computation

Golden number and epact of a year (*prif neu rhifedi euraid, epact*)

Age of the moon (*oed y lleuad*)

Arrival of the moon in the south (*dyfodiad y lleuad ir deheu*)

Notion of change and defects (*amcan o'r newid a'r diffigiau*)

Breton

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.



Information: The first arithmetic book in Breton was published in 1943:

Kelennerien “Ober”:

Niveri ha konta e Brezoneg. Diazezou istor Breiz [To numerate and to calculate in Breton. A résumé of the history of Brittany].

Roazon / Rennes: Ti-Mouleréz Kreiz-Ker 1943, 66 p. (OCLC 5237 7136, 5075 0062)

References: Paris BNF (Réserve des livres rares); Michigan State U

Date: September 2020

(Modern) Greek

Manuelos Glynzonios

b. ca. 1530 Chios

d. 1596 Venezia (CERL cni00020993)

Since latest 1580 in Venezia

Editor of liturgical books of Byzantine rite

*Biblion prócheiron toîs pâsi
periéchon tèn te praktikèn
arithmetikèn*

Venezia: Francesco Rampazetto

¹1569-02-27

142 p. arithmetic, 22 p. calendar

C/V: Hoock I/G8 [1st edition 1569 missing]

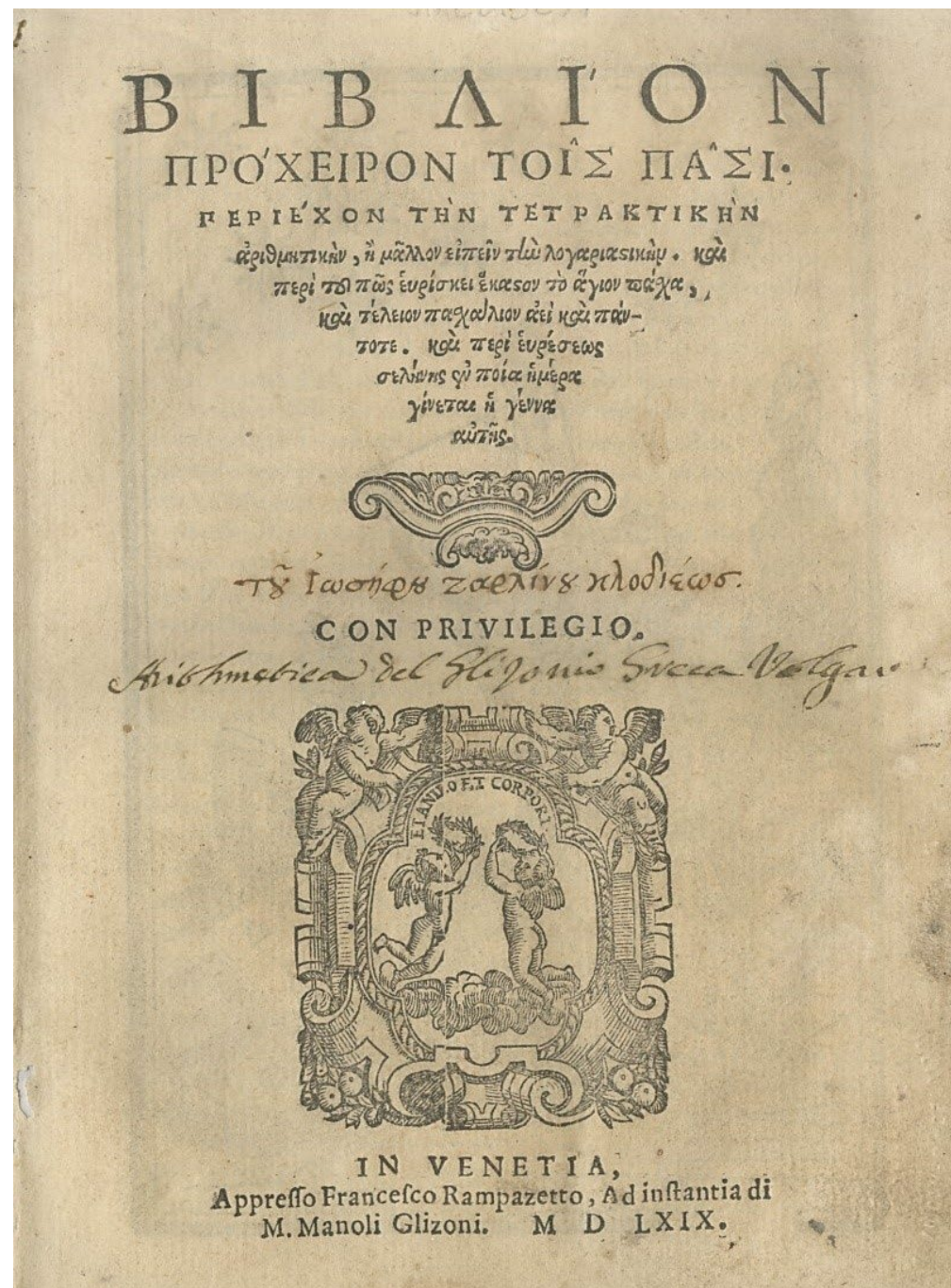
D: Vicenza Biblioteca Civica Bertoliana

L: Venezia Biblioteca Naz. Marciana

S: Sicherl, Martin. In: Byzantin. Zeitschrift
49 (1956) 34–54

Legrand, Émile: Bibliographie Hellénique.

Paris 1885 f., II 120 f.



Greek

Manuelos Glyzonios

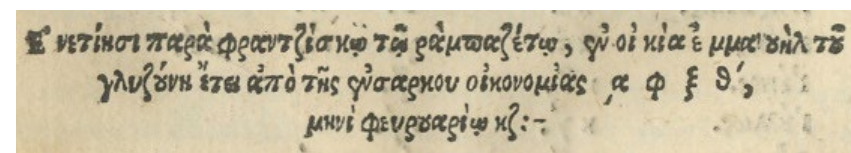
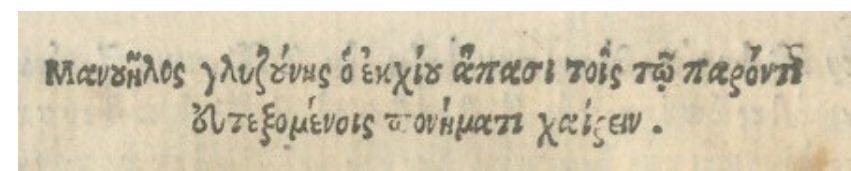
Other spellings of the last name:

Glyzzoneios, Glyzonios, Glynzuni(o)s,
Glyzunios, Glytzounis, Glionzon, Glinzon

*Biblíon ... periéchon tèn te
praktikèn arithmetikèn*

Venezia: Rampazetto ¹1569

Romanization of the title page,
the beginning of the preface
and the colophon



*Biblíon
prócheiron toîs pâsi
periéchon tèn te <p>[t]raktikèn
arithmetikèn, è mâllon eipeîn tèn logariastikèn kai
perì tou̅ pôs heurískei hékaston tò hágion páscha,
kai téleion paschálion aeì kai pán-
tote, kai perì heuréseōs
selénēs en poía hēméra
gínetai hē génna
autês.*

Con privilegio.

*In Venezia,
Appresso Francesco Rampazetto, Ad instantia di
M. Manoli Glizoni. M D LXIX.*

*Manouêlos glyzounēs ho ek chiou hápasi toîs tō parónti
eutexoménois [from tíktō] ponémati chaírein [légei].*

*Enetiēsi parà frantzískō tō rāmpazétō, en oikía emmanuēl tou̅
glyzounē étei apò tēs énsarkou oikonomías, α φ ξ θ',
mēnì feurouariō κζ' :-*

Greek

Manuelos Glynzonios

*Biblíon ... periéchon tèn te
praktikèn arithmetikèn*
Venezia: Rampazetto ¹1569

Translation of the title page,
the beginning of the preface
and the colophon

Computus: a set of rules how to calculate
the Easter calendar date.

Birth of the moon: start of a lunar cycle
with the first visibility of the crescent in
the West (after sunset) after new moon.

*Handbook
for all
which contains both the practical
arithmetic – or rather said the technique of calculating –
and [rules] about how one finds every Holy Easter
and the perfect computus for always and
every time and [rules] about finding
on which day
the birth of the moon
takes place.*

With privilege.

*In Venezia
with Francesco Rampazetto, on request of
Mr. Manuel Glyzoni. 1569*

*Manouelos Glyzounes from Chios sends his greetings to all those
who will achieve good things with the present work*

*In Venezia, with Francesco Rampazetto, in the house of
Emmanuel Glyzounes, moreover at his own expenses, 1569,
in the month of February [day] 27*

Greek

Manuelos Glynzonios

Biblíon ... periéchon tèn te praktikèn arithmetikèn
Venezia: Rampazetto ¹1569

Content overview

(according to the table of contents)

Regula septem, example:

8 people each of whom invests 25 florins over 40 months make a profit of 12 florins each. Which profit make 9 people each of whom invests 50 florins over 35 months?

Answer: 23 5/8 florins each.

Numeration: digit signs (*sēmeía psēphíōn*; *psēphío*, pl. *psēphía*), zero (*noûla*, pl. *noûles*), integers (*akéraio*, pl. *akéraia*), multiplication table (*psēphēphoría*) etc.

Addition (*sýnapsis*, *soumarismós*)

Subtraction (*hypheilmós*)

Multiplication (*polyplasiasmós*) – various methods; check by nine and seven (*dokimè tôn ennéa kai tôn heptá*); products consisting of one and the same digit only

Division (*merismós*) – various methods; conversion:

1 florin (*phlouríon*) = 60 *áspra*; 1 *áspron* = 2400 folles (*phóles*)

Fractions (*tzákisma*, pl. *tzakísmata*)

Addition, subtraction of fractions – various methods

Reduction of fractions (*schismós tzakismátōn*)

Multiplication and division of fractions – various methods

Regula de tri (*méthodos tôn triôn*) – various applications

Regula de tri inversa (*méthodos tôn triôn anápalí*)

Regula quinque (*méthodos tôn e'*); Italian *regula de 'tsinke'*

Regula septem (*méthodos tôn z'*); Italian *regula de sete*

Regula societatis simplex (*syntrophía*) – profit (*kérdos*) and loss (*zēmía*) – various applications

Regula societatis temporum (*syntrophía mè mēnes*)

Dealing with zeros (*noûles*) in multiplications and divisions

Purchase and sales (*koumérkion*)

Barters (*allaxiá*, pl. *allaxiés*)

Greek

Manuelos Glynzonios

Biblíon ... periéchon tèn te praktikèn arithmetikèn
Venezia: Rampazetto ¹1569

Content overview

(according to the table of contents)

For help with translations, I am very indebted to Prof. Dr. Dimitris Maretis, University of Applied Sciences Osnabrück.

Sails (*paní*) with different surfaces (*plátos*)

Travels (*taxídion*)

Problems of motion (*drómos*): ships (*karábi*, pl. *karábia*) etc.

Another type (*strôsis*) of calculations (*psēphía*) with regula quinque and their check (*dokimē*) with regula de tri

Converting metal weights, minting coins (*nomísmata kóptountai*):

1 pound (*lítira*) = 12 ounces (*oggíes*) \cong 96 florins (*phlouría*)

Alloys (*smíxis*, pl. *smíxeis*): separation (*chôrisis*) etc.

Height of a tower (*hýpsos pýrgou*) or another object (*prágma*)

Partition (*moirasía*) of money (*stámena*) in a testament (*diathékē*)

Finding the number of pupils (*mathetēs*, pl. *mathetés*)

Two men draw (*exagklízō* [today *antlō*]) water from a well (*pēgádi*)

[fathom (*orgýia*)]

Building (*ktízei*) a house (*spēti*) and not paying (*plērōnei*)

Finding the quantity of cubits (*péchēs*, pl. *péchēs*) of two textiles

Partition of a number into two summands (*eis dýo mérē*)

Finding a number (*arithmós*) from a comparison (*diaphorá*)

Finding the number someone chooses (*bálei*) in his mind (*noûs*)

The money (*stámena*) three people have in their purses (*pougkí*)

Find a ring (*daktylídion*) in a company (*syntrophía*): who, on which

hand (*chéri*), on which finger (*dáktylos*), on which joint (*harmós*)

Find the number of people of three descents (*geneá*, pl. *geneés*)

Computus (calculation of the Easter calendar date)

Greek – Supplement

Further editions of Glynzonios' *Biblión*:

Venezia: Pietro Zanetti 1596

C: Hooek I/G8

D: EROMM Classic, Google books

L: London BL, Oxford U

Venezia: Francesco Giuliani 1596

L: Glasgow U

Venezia: Antonio Pinelli 1621

L: Amsterdam U, Oxford U, Paris BNF

Venezia: Andrea Giuliani 1654

L: London UC, Oxford U, Harvard U

Venezia: Demetrios Theodosios 1765

C: Hooek I/G8

D: Google books

L: London BL

Venezia: Nicolao Glykai 1679, 1818

L: Athenai NL

Venezia: Nicolao Glykai 1804

C: Hooek I/G8

L: Paris BNF, Athenai NL

Later than Glynzonios 1569

Methódios Anthrakítēs

Hodòs mathematikēs (3 vol.)

[Access to mathematics]

Venezia: Antonio Bortoli 1749

D: onassislibrary.gr

Spyrídōn Asánēs

Stoicheia arithmetikēs te kai álgebras

[Elements of arithmetic and algebra]

Venezia: Nicolao Glykai 1797

[adapted from

Nicolas-Louis de Lacaille

(1713–1762, French astronomer, published among others

Leçons élémentaires de Mathématiques, Paris 1741) and

Guido Grandi

(1641–1742, Italian mathematician, published among others

Istituzioni di aritmetica pratica, Firenze 1740)

(The Oxford Handbook on the History of Mathematics, p. 187)]

D: anemi.lib.uoc.gr (University of Crete)

Albanian

Jani Vreto

b. 1820/22 Postenan, Korçë

d. 1900 Athens

Writer, publisher

Albanian National Awakening

Albanian alphabet designer

Albanian printing house of București
(English Wikipedia)

Numeratoreja
București 1886

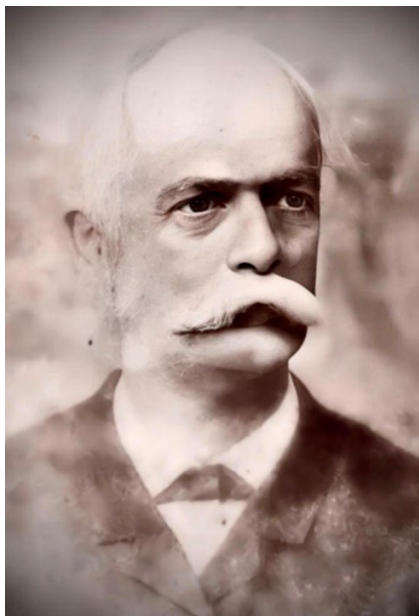
168 p.

D: München BSB (BV046996105)

L: München BSB (1474 2537;

OCLC 1220 904822)

V/S: Elsie, Robert: Historical Dictionary
of Albania. Lanham, Toronto²2010,
478–479



NUMERATOREJA

IREJ

I. VRETOSE

IIAS NUMERATORESE ELINICT

te **KH. VAFESE**

CTYIIURE IREJ GOQERISE „DRITA“

Nde stypeekronet te saj

NDE BUKURECT

mbe

1886

Executée par M-eur Grégoire Balanescu dans l'imprimerie de la
Société Albanaise Drita à Bucarest.

Albanian

Jani Vreto

Numeratoreja
București 1886

Romanization of title page and
of the colophon

The book is printed in the Istanbul alphabet
from 1879; Jani Vreto was involved in the
creation of this alphabet;
cf. BV041839478 (München BSB) and
“Albanian alphabet” in English Wikipedia

Numeratoreja
prej
I. Vretosë
pas Numeratoresë elinisht
të Kh. Vafësë

Shtypurë prej Shoqërisë „Drita“
Ndë shtypëshkrónjët të sâj
ndë Bukuresht
mbë
1886

Exécutede par M-eur Grégoire BalanESCO
dans l'imprimerie de la
Société Albanaise Drita à Bucarest.

Albanian

Jani Vreto

Numeratoreja
București 1886

Translation of title page and
of the colophon

Original Greek textbook:

Bápha(s), Chrēstos (b. 1804 Syrráko):
Praktikē arithmetikē: pròs chrēsin tôn
mathēteuóntōn eis tà hellēnikà scholeîa
tês Helládos. Athenai 1834 until 1851;
Athenai NL (OCLC 6424 42210)

Arithmetic
by
J[ani] Vreto
after the Greek arithmetic
of Kh. Bapha

Printed by the Society „Drita“ [‘light’]
in its printing house
in București
in
1886

Finished by Mr. Grégoire Balanescu
in the printing house of the
Albanian Society Drita [‘light’] in București.

Albanian

Jani Vreto

Numeratoreja București 1886

Content overview

(according to the section headings)

There are a few strange Albanian neologisms due to very literal translations from the Greek original.

Part 1: Numeration for integers: names (*émërat*) of numbers (*númuret*), notations (writing *shkrúarët*) of numbers

Quantities (*shumícat*): especially time

Fractions (broken numbers *númuret të cópëtë*), mixed (*përzjém*) fractions and denominate (*qyshdonjërrashm*, Greek *monodo-diáphoron* ‘uniquely distinct’, *symmigés* ‘joined’) numbers

Numbers with equal denominations (homogeneous – *nënjësës*), also e.g. hundreds and twelfths are considered as denominations!), with different (but compatible!) denominations (inhomogeneous – *jatrënjësës*); denominate numbers with compatible units (*njëshumícës*), with incompatible units (*jatrëshumícës*)

Part 2: Operations (*púnërat*) on integers (*númuret e térëtë*, Greek *akeraíoi*)

Addition (*mblédhja*)

Subtraction (*zbrítja*)

Checks (*próvë*) for addition and subtraction

Multiplication (*shumëzími*)

Division (*pjesëtimi*)

Checks for multiplication and division

Ratios (*fjalët* ‘words’, Greek *lógoi*) and numbers with the same ratio (*njëfjalëtë*, Greek *análogoi* – e.g. $9/45 = 7/35$)

Divisors (*pjesëtónjësit*) and greatest (*madh*) common (*báshkëtinë*) divisors (Euklidean division algorithm)

Finnish

Johan Fredrik Wallin

b. 1799 Turku

d. 1850 Kalvola

Pastor, teacher, author

1820 Ordained priest

1830–1840 Russian language teacher
in Turku

1841–1850 Pastor of Kalvola

(Student register:

ylioppilasmatrikkeli.helsinki.fi; ID 13319)

Luwunlasku- eli Räkningi-Kirja

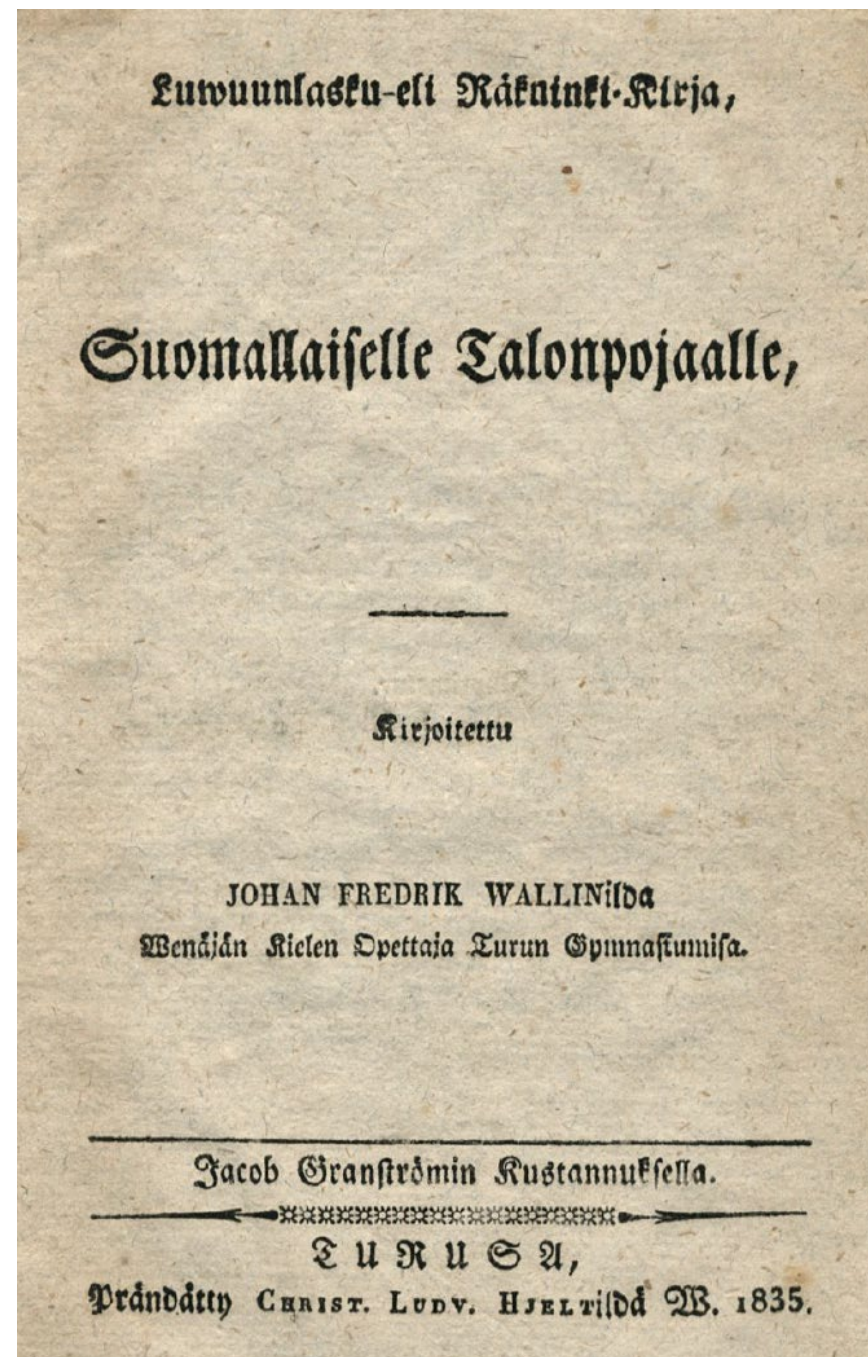
**Turku: Christian Ludvig Hjelt
(for Jacob Granström) ¹1835**

48 p.

D: digi.kansalliskirjasto.fi/collections?id=501

L: NL of Finland

V: L of Congress (July 2020)



Finnish

Johan Fredrik Wallin

Luwunlasku- eli Räkningi-Kirja

Turku: Hjelt 1835

Transcription of the title page

Luwunlasku- eli Räkningi-Kirja,

Suomallaiselle Talonpojaalle,

Kirjoitettu

Johan Fredrik Wallinilda

Wenäjän Kielen Opettaja Turun Gymnasiumissa.

Jacob Granströmin Kustannuksella.

Turussa,

Prändäty Christ. Ludv. Hjeltillä W[uonna] 1835.

Finnish

Johan Fredrik Wallin

Luwunlasku- eli Räkningi-Kirja

Turku: Hjelt 1835

Translation of the title page

Arithmetic or calculation book

for the Finnish peasant

written

by Johan Fredrik Wallin,

Russian language teacher at Turku High School.

At the expense of Jacob Granström.

In Turku,

printed by Christian Ludvig Hjelt in 1835.

[1786–1849 (ylioppilasmatrikkeli.helsinki.fi; ID 11597)]

Finnish

Johan Fredrik Wallin

Luwunlasku- eli Räkningi-Kirja

Turku: Hjelt 1835

Content overview

§. 1— Nimi Selitys.
§. 2— Siffrain eli Räkningi-merkkein Nimestä.
§. 3— Siffra lukuin Ulosnimitämifestä.
§. 4— Merkkein Selityksestä.
§. 5— Additioni eli Yhteenlaskeminen.
§. 6— Subtractioni, eli Eroitus taikka Poispyttämisen.
§. 7— Multiplicationi eli Kertomus.
§. 8— Divisioni eli Jako.
§. 9— Bräki eli Murrettu Luku.
§. 10— Additioni Murrettusa Luvusa.
§. 11— Subtractioni Murrettusa Luvusa.
§. 12— Multiplicationi Murrettusa Luvusa.
§. 13— Divisioni Murrettusa Luvusa.
§. 14— Suurudeista ja Mittoista.
§. 15— Additioni sekoitetuisa Luvuisa.
§. 16— Subtractioni sekoitetuisa Luvuisa.
§. 17— Multiplicationi sekoitetuisa Luvuisa.
§. 18— Divisioni sekoitetuisa Luvuisa.
§. 19— Regula de Tri.
§. 20— Intressi eli Kaswo-Räkningi.
§. 21— Lisäyys Bräkein eli Murrettuin Luvuin muutoksesta.

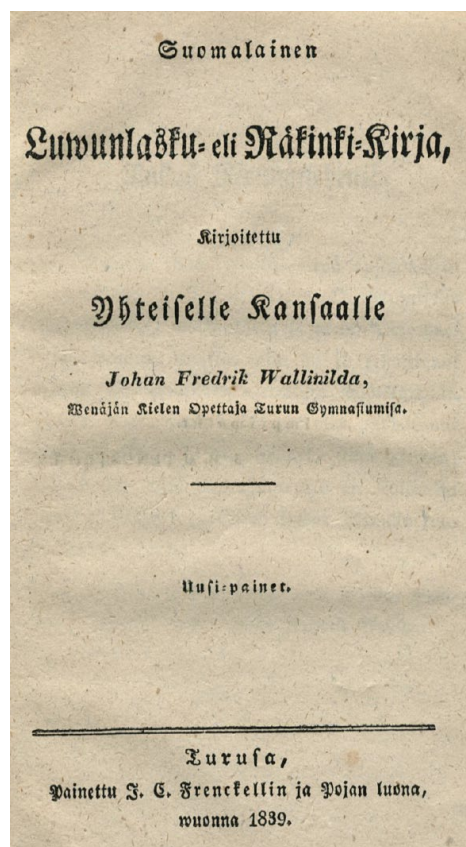
- 1 Explanation of terms
- 2 Digit names
- 3 Designation of numbers
- 4 Explanation of operation symbols
- 5 Addition of integers
- 6 Subtraction of integers
- 7 Multiplication of integers
- 8 Division of integers
- 9 Fractions – reduction, expansion
- 10 Addition of fractions
- 11 Subtraction of fractions
- 12 Multiplication of fractions
- 13 Division of fractions
- 14 Quantities and measures (weights, currencies, time)
- 15 Addition of denominate numbers
- 16 Subtraction of denominate numbers
- 17 Multiplication of denominate numbers
- 18 Division of denominate numbers
- 19 Regula de tri
- 20 Interest calculation
- 21 Conversion of fractions of currency/weight units

Finnish – Supplement

Johan Fredrik Wallin

*Suomalainen Luwunlasku- eli Räk[n]inki-
Kirja. Turku: J. C. Frenckell ²1839*

Transcription and translation
of the title page



*Suomalainen
Luwunlasku- eli Räk[n]inki-Kirja,
Kirjoitettu
Yhteiselle Kansaalle
Johan Fredrik Wallinilda,
Wenäjän Kielen Opettaja Turun Gymnasiumissa.
Uusi-painet.
Turusa,
Painettu J. C. Frenckellin ja Pojan luona,
vuonna 1839.*

*Finnish
arithmetic or calculation book
written
for the common people
by Johan Fredrik Wallin,
Russian language teacher at Turku High School.
New print.
In Turku,
printed by Johan Christopher Frenckell and son,
[1789–1844 (ylioppilasmatrikkeli.helsinki.fi; ID 11845)]
[son Johan Christopher Frenckell, 1819–1856 (ID 15363)]
in 1839.*

Estonian

Peter Heinrich von Frey

b. 1757 Erastvere manor (Kanepi commune)

d. 1833, buried in Pyha (Püha)

Balt of German descent

1777–1780 University Halle-Wittenberg

1785–1833 Pastor in Püha (Pyha) on
Saaremaa island (Ösel), Kuressaare
(Arensburg) municipality

Arropiddamisse ehk

Arwamisse-Kunst

Tartu (Dorpat): Johann Michael

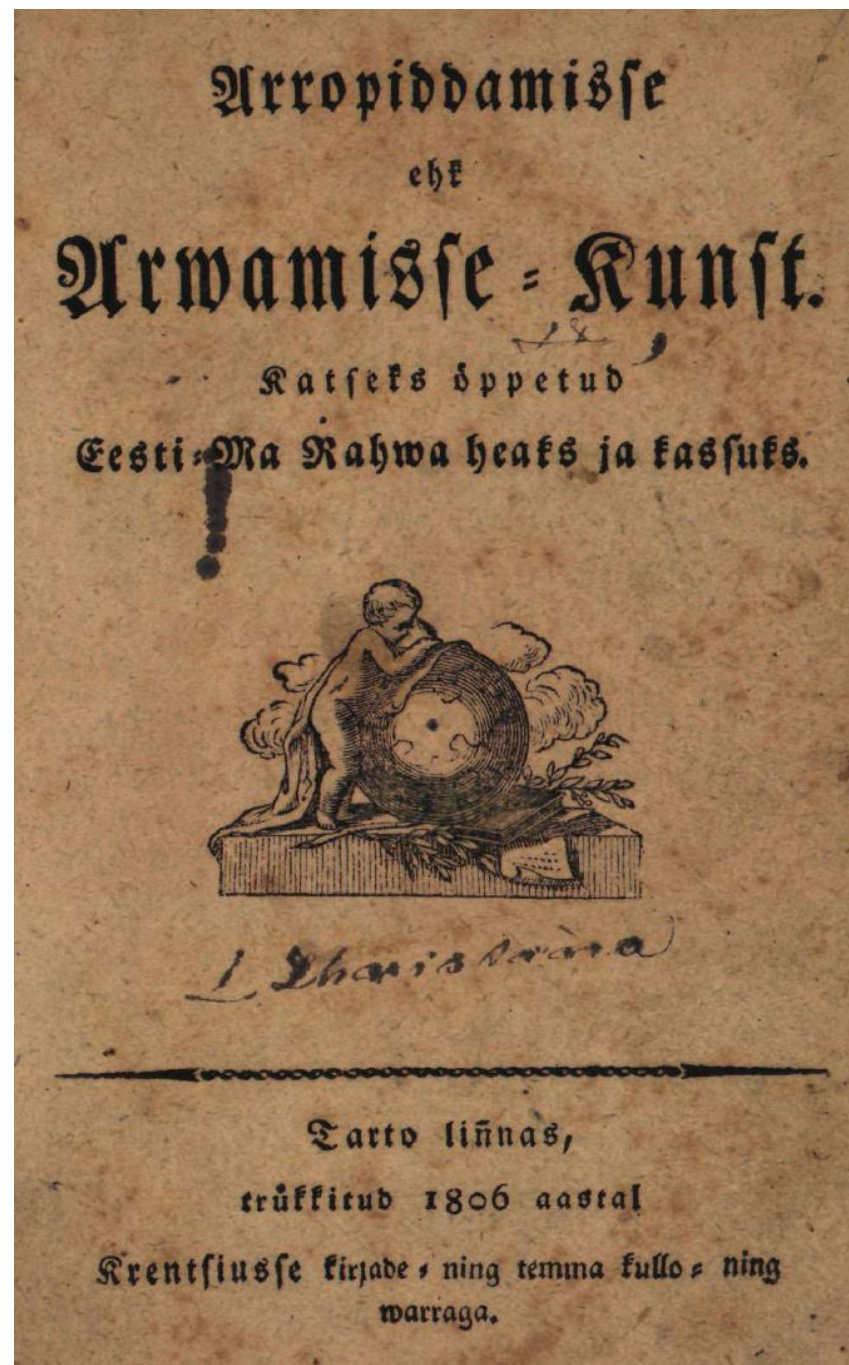
Gerhard Grenzius 1806

163 p.

D: www.digar.ee/arhiv/et/kollektsioonid/14569

L: Estonia NL

S/V: Bjarnadóttir/Christiansen/Lepik. In:
Nordic studies in mathematics education
18 (2013)



Estonian

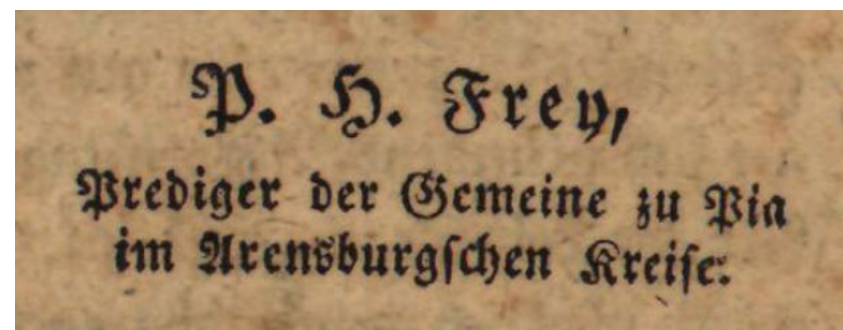
Peter Heinrich von Frey

Arropiddamisse ehk

Arwamisse-Kunst

Tartu: Grenzius 1806

Transcription of the title page
and the author information
in the preface



V: Erelt, Mati: Estonian Language, p. 293
[dspace.ut.ee/bitstream/handle/10062/
56290/estonian_language_erelt_ocr.pdf](https://dspace.ut.ee/bitstream/handle/10062/56290/estonian_language_erelt_ocr.pdf)

*Arropiddamisse
ehk
Arwamisse-Kunst.
Katseks õppetud
Eesti-Ma Rahwa heaks ja kassuks.*

*Tarto linnas,
trükkitud 1806 aastal
Krentsiusse kirjade-ning temma kullo-ning
warraga.*

*P. H. Frey,
Prediger der Gemein[d]e zu Pia
im Arensburgischen Kreise.*

Estonian

Peter Heinrich von Frey

Arropiddamisse ehk

Arwamisse-Kunst

Tartu: Grenzius 1806

Translation of the title page
and the author information
in the preface

For help with translations, I am indebted
to Estonia NL.

Language explanations:

arropiddamisse ‘species’ [acc. to contents]

õpetus ‘teaching (method)’ [acc. to preface]

The art of calculating

or

arithmetic.

*To the attempt of a teaching method
for the use and benefit of the Estonians.*

*In the town of Tartu
printed in the year 1806
with the types of Grenzius
at his expenses and with his assets.*

[that is, *printed and published*
by Johann Michael Gerhard Grenzius (1759–1822),
printer of the University of Tartu 1802–1818]

P. H. Frey,
preacher of the Pyha congregation
in the Kuressaare (Arensburg) municipality.

Estonian

Peter Heinrich von Frey

Arropiddamisse ehk

Arwamisse-Kunst

Tartu: Grenzius 1806

Content overview

(according to the Estonian and German tables of contents)

Earlier publications by Otto Wilhelm Masing (1795) and Georg Gottfried Marburg (1805) contain sections on mathematics, but are not yet arithmetic textbooks.

- 1 Numeration
- 2 Preliminary explanation of the four species
- 3 Addition (incl. fractions, measures, weights)
- 4 Subtraction (incl. fractions)
- 5 Multiplication (incl. fractions)
- 6 Division (incl. fractions)
- 7 Proportional calculation (Regula de tri, Regula quinque)

Hungarian

Anonym

Aritmetica, az az a számvetésnek tudomania mell' az tudós

Gemma Frisiusnak számvetésből Magyar nyelvre fordítottot

Debrecen: Rodolphus Hoffhalter 1577, 1582

Cluj: Heltai 1591

Preface by R. Hoffhalter 1577-08-13

144 p. (8 pages missing in the only copy)

C/V: Hooek I/-4

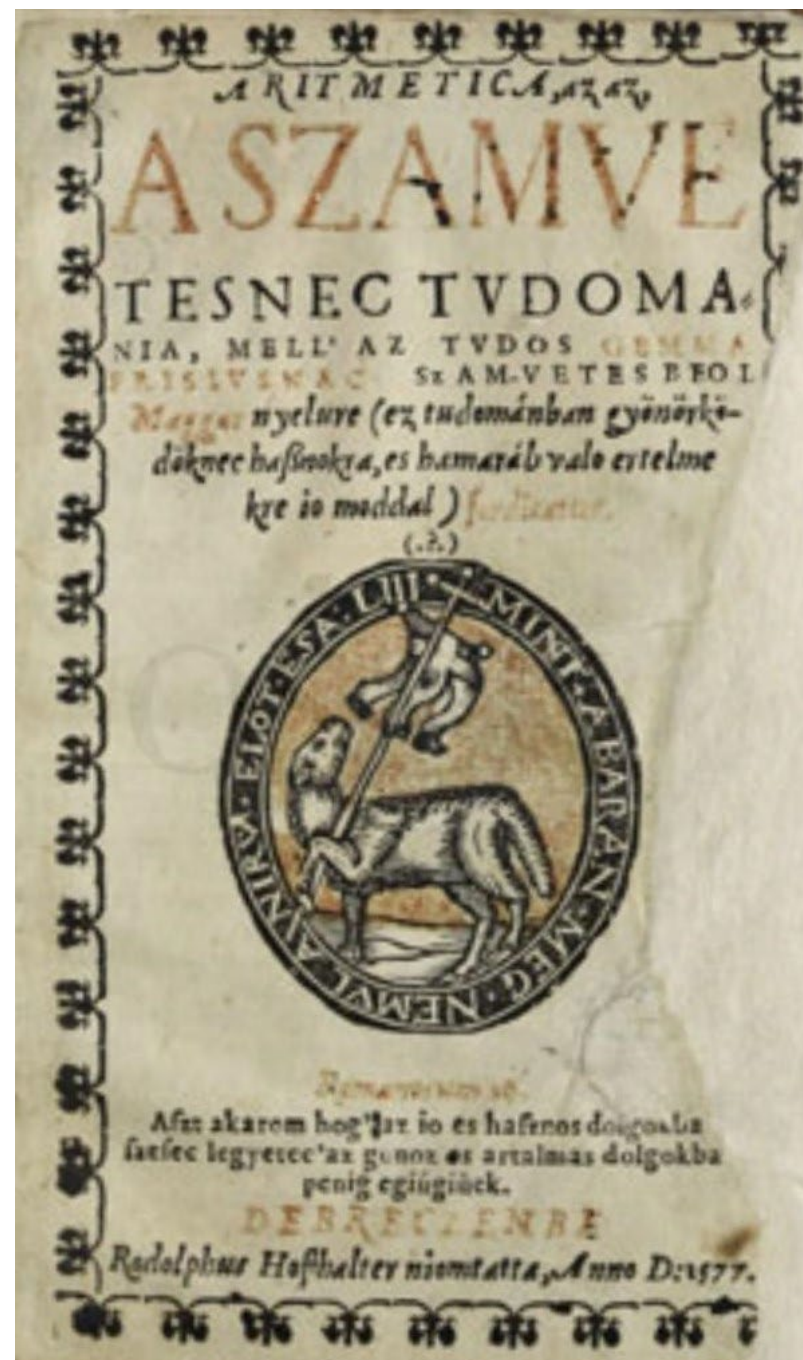
D: oszkdk.oszk.hu/DRJ/6940

L: Budapest NL Országos Széchényi

Könyvtar (Res litt. Hung., 378, 504, 665)

E: Hárs, János: A Debreceni Aritmetika.

Budapest 1938 (German summary)



Hungarian

Anonym

Aritmetica

Debrecen: Hoffhalter 1577

Transcription of the title page

(Hárs 1938, p. 34)

Aritmetica, az az

A Számve

tésnec Tvdoma-

nia Mell' Az Tvdós Gemma

Frisivsnac Számvetésből [sc. Számvetésbeol]

Magyar nyelure (ez tudománban gyön[y]örkö-

dök nec hasznokra és hamaráb valo értelme-

kre io moddal) forditattot.

Mint a bárán[y] megnémvl

a n[y]írv előtt Esa LIII

Romanorum 16.

Aszt akarom hog[y] 'az io es hasznos dolgokba

[e]szesec legyetec 'az gonoz es artalmas dolgokba

pe<n>[d]ig egiúgiúek

Debreczenbe[n]

Rodolphus Hoffhalter niomtatta, Anno D: 1577

Hungarian

Anonym

Aritmetica

Debrecen: Hoffhalter 1577

Translation of the title page

(Hárs 1938, p. 165–166)

For help with translations, I am very indebted to Ms. Mercedesz Mariann Mizsei.

*Arithmetic, that is
the calculation
science*

*which was translated from the scholar's
Gemma Frisius arithmetic
into the Hungarian language (for those who find joy
in this science, for the purpose of quick
understanding in easy method)*

[Inscription around Debrecen's shield: Isaiah 53:7]

*And as a sheep
before its shearers is silent*

Romans 16[:19]

*But I want you to be wise about what is good,
and innocent about what is evil.*

In Debrecen

Printed by Rodolphus Hoffhalter in 1577

Hungarian

Anonym

Aritmetica

Debrecen: Hoffhalter 1577

Content overview

(according to Hárs 1938, p. 166–167)

The referenced work by Gemma Frisius (1508–1540), *Arithmeticae practicae methodus (facilis)*, Antwerpen 1540, however, uses a completely different structure in this and all of the other editions:

- 1 Basic arithmetic operations for integers; progressions, regula de tri
- 2 Fractions, regula de tri
- 3 Regulae vulgares, societatis, alligationis, falsi, square/cube roots, coss (algebra)
- 4 De proportione (Arithmetica speculativa according to Boethius)

[Title repeated in slightly changed form]

Numeration, addition, subtraction and multiplication for integers and fractions

Division for integers only

Arithmetic progressions

Regula de tri for integers and fractions

Regula vulgaris

Regula societatis simplex and temporum

Regula falsi

Hungarian and German currencies and measures

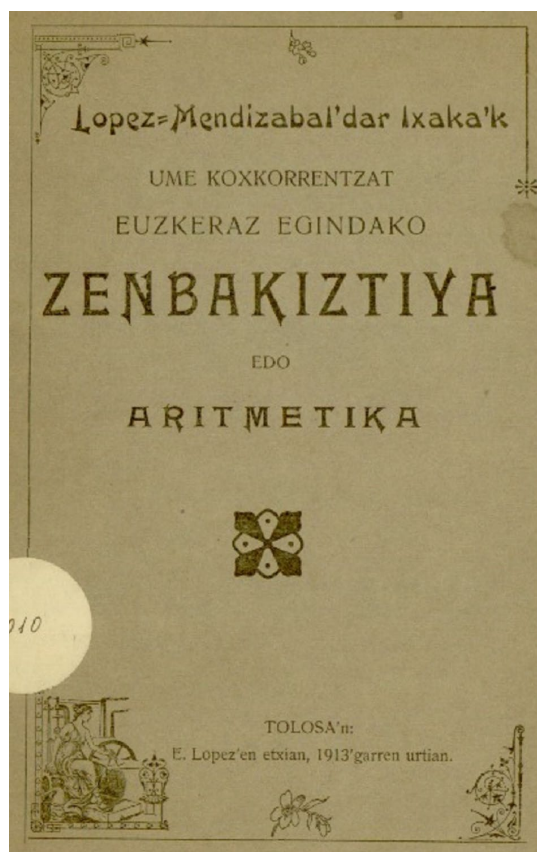
Remainder problem Ta-yen “If you want to know how much money your fellow has in his purse, so try it” (*ho meg akarod ...*)

(from China, Sun Tzu (3rd c.); later Christoff Rudolff, *Künstliche Rechnung mit der Ziffer und mit den Zahlenpfennigen*, Wien 1526, N7^v, under the heading *Schimpfrechnung*; edition by Kaunzner/Röttel 2006, p. 318, 402; cf. Tropfke 1980, p. 636–640)

Calculating with the counters: four species

Basque

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.



Information: The earliest mathematics book in Basque is: Lopez-Mendizabal, Ixaka (1879–1977): *Ume koxkorrentzat euzkeraz egindako Zenbakiztiya edo Aritmetika*. Toulouse: E. Lopez'en etxian [house] 1913; 32 p. <http://w390w.gipuzkoa.net/WAS/CORP/DBKVisorBibliotecaWEB/visor.do?ver&amicus=10635>

The title could be translated like this: A [book] of “Zenbakiztiya” or Arithmetic for children in Basque language. It was for use at primary schools. “Zenbakiztiya” is a Basque native form for “Arithmetic”.

The author was a Basque intellectual and publisher. He published this book in his own publishing house. His name, written in a standard way, is: Ixaka Lopez Mendizabal in Basque language, and Isaac López Mendizábal in Spanish spelling (s. English Wikipedia).

Reference: Azkue Biblioteka eta Artxiboa [archive], Euskaltzaindia (Real Academia de la Lengua Vasca), Bilbao
Date: November 2020

Armenian (Grabar)

Anonym

*Arhest hamarogowt'ean
ambogj ew katareal*

[The art of arithmetic]

Marseille: Saint Edjmiatzine,
Saint Serge 1675-08-25

146 p.

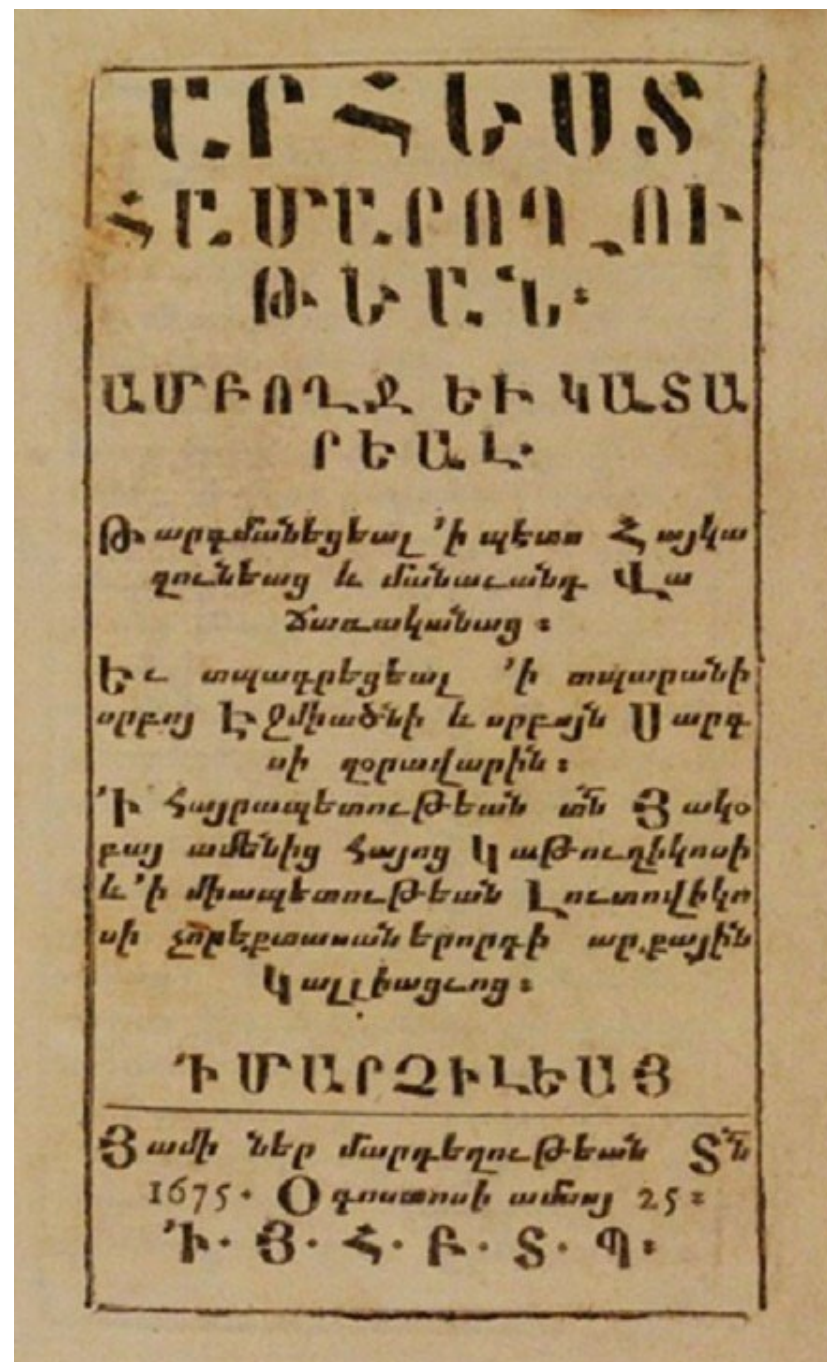
C/V: Hooek II/-9

D: [greenstone.flib.sci.am/gsd/cgi-
bin/library.cgi](http://greenstone.flib.sci.am/gsd/cgi-bin/library.cgi)

L: Armenia NL (armunicat.nla.am)

S: Kévonian, Kéram: Marchands arméniens
au 17e siècle. In: Cahiers du monde russe
et soviétique 1975 / 16, 199–244

Aslanian, Sebouh D: Port cities and prin-
ters. In: Book History 17 (2014) 51–93



Armenian

Anonym

Arhest hamarogowt'ean

Marseille: Saint Edjmiatzine,
Saint Serge 1675

Romanized translation
of the title page
from Grabar into New Armenian

The book is partly copied from *Epitome
arithmeticae practicae*, Köln 1584, by
Christoph Clavius (1538–1612),
mathematician, astronomer and calendar
reformer from Bamberg.

Ambochdschakan

jew

katarjal

(twabanutjan dasagirq).

Targmanvac haj azgi jew

manawand

watscharakanneri kariqneri hamar.

Tpagrvac Surb Edschmiacni jew

Surb Sargis Zorawari tparanum.

Ter Hakob Amenajn Hajoc

katoghikosi hajrapetutjan jew

fransiacinneri Ljudowikos 14-rd

arqaji miapetutjan oroq.

Marsel

Yami ner mardeghut'ean T[yearr]n

1675, ogostosi 25.

T' Y H B T P

Armenian

Anonym

Arhest hamarogowt'ean
Marseille: Saint Edjmiatzine,
Saint Serge 1675

Translation of the title page

*The art of
arithmetic
complete and
perfect*

*Translated for the Armenian people,
especially for the needs
of merchants.*

*Published in the printing house
St. Etchmiadzin and
St. Sargis Zoravar.*

*During the patriarchate
of the Katholikos of all Armenians
Pater Hakob and
the monarchy
of the French king Louis XIV.*

Marseille

*The era of mankind
1675, August 25th*

Armenian

Anonym

Arhest hamarogowt'ean

Marseille: Saint Edjmiatzine,
Saint Serge 1675

Content overview

(according to the section headings)

- 1 Numeration for integers
 - 2 Addition for integers
 - 3 Subtraction for integers
 - 4 Multiplication (multiplication table) for integers
 - 5 Division (division table) for integers
- For the four basic operations: checks by seven (table of multiples of 7) and nine (calculation cross for both) and check by inverse operation

- 1 Basic arithmetic operations for decimal fractions (80–96)
 - Division of “cut” numbers – compound amounts consisting of higher and lower currency units in a system of 1|20|12 units (96–105)
- 2 Regula de tri; regula quinque (106–115)
 - Regula societatis (115–120)
- 3 Trade and merchants (121–139):
Multiplications of decimal fractions, divisions with remainder, numbers with trailing zeroes

Kurdish

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

Information: WorldCat records as earliest Kurdish textbooks a set of 12 volumes of primary school textbooks on a variety of subjects (arithmetic, physics, hygiene) and grades printed by the Iraqi Ministry of Education in the 1950s.

It is held by University of Pennsylvania Libraries, Van Pelt L (OCLC 3175 60865)

Reference: WorldCat

Date: April 2021

Persian

Bahā' al-Dīn Muḥammad

bin al-Ḥusain al-‘Āmilī

بهاء الدين محمد بن الحسين العاملي

b. 1546/47 Baalbek/Amul, Syria

d. 1621/22 Isfahan

Studies in Qazvin, Jerusalem, Herat

High Shiite theologian

(Encyclopaedia Britannica, Iranica)

Hulāṣat al-ḥisāb (خُلَاصَةُ الْحِسَابِ)

[The Essential of Arithmetic]

Calcutta/Kolkata: P. Pereira,

Hindustani Press 1812

Maulewi Ruschen Ali: *Persian translation and commentary*

512 p.

D/L: München BSB

E/V: Nesselmann, G. H. F. 1843

The earliest printed Persian arithmetic book seems to be the translation of the Arabic on the left (see Arabic).

Later exclusively Persian arithmetic books are:

Bhāscara [II] Āchārya / Bhāscarācārya (1114–1185)

Shaikh Abu-al-Faid Ibn-Mubārak (pen name

Faidī/Faizī/Feizi; 1547–1595) (translator)

The Līlāvātī – a treatise on arithmetic

(translated into Persian from Sanskrit)

Calcutta/Kolkata: The Education Press 1827/28

158 p.

D: München BSB (OCLC 1659 22017)

L: München BSB, London Univ College UCL (OCLC 2654 26145)

Uṣūl-i ‘ilm-i ḥisāb ba-zabān-i fārsī –

An elementary treatise on arithmetic in Persian

Calcutta/Kolkata: Calcutta School Book Society 1830

86 p.

L: Berlin SB (OCLC 2512 47612)

Persian – Supplement

Bhāscara *The Līlavatī* 1827/28

THE
LILAVATI,
A
Treatise on Arithmetic,
TRANSLATED INTO
PERSIAN,
FROM THE SANSKRIT WORK
OF
BHASCARA ACHARYA,
BY THE CELEBRATED
FEIZI.
Calcutta:
PRINTED AT THE EDUCATION PRESS.
1827.

این نسخه لیلواتی

بها سکر اچاری که ابوالفیض فیضی

آنرا ترجمه نموده بود

در عهد نواب مستطاب معالی القاب

ارل امهرست اف ارکان

گورنر جنرل بهادر دادم اقباله

در سنه ۱۸۲۸ عیسوی

در مطبع صاحبان مدارس متعلقه فورت ولیم

بقالب طبع درآمده

Urdu

Anonym

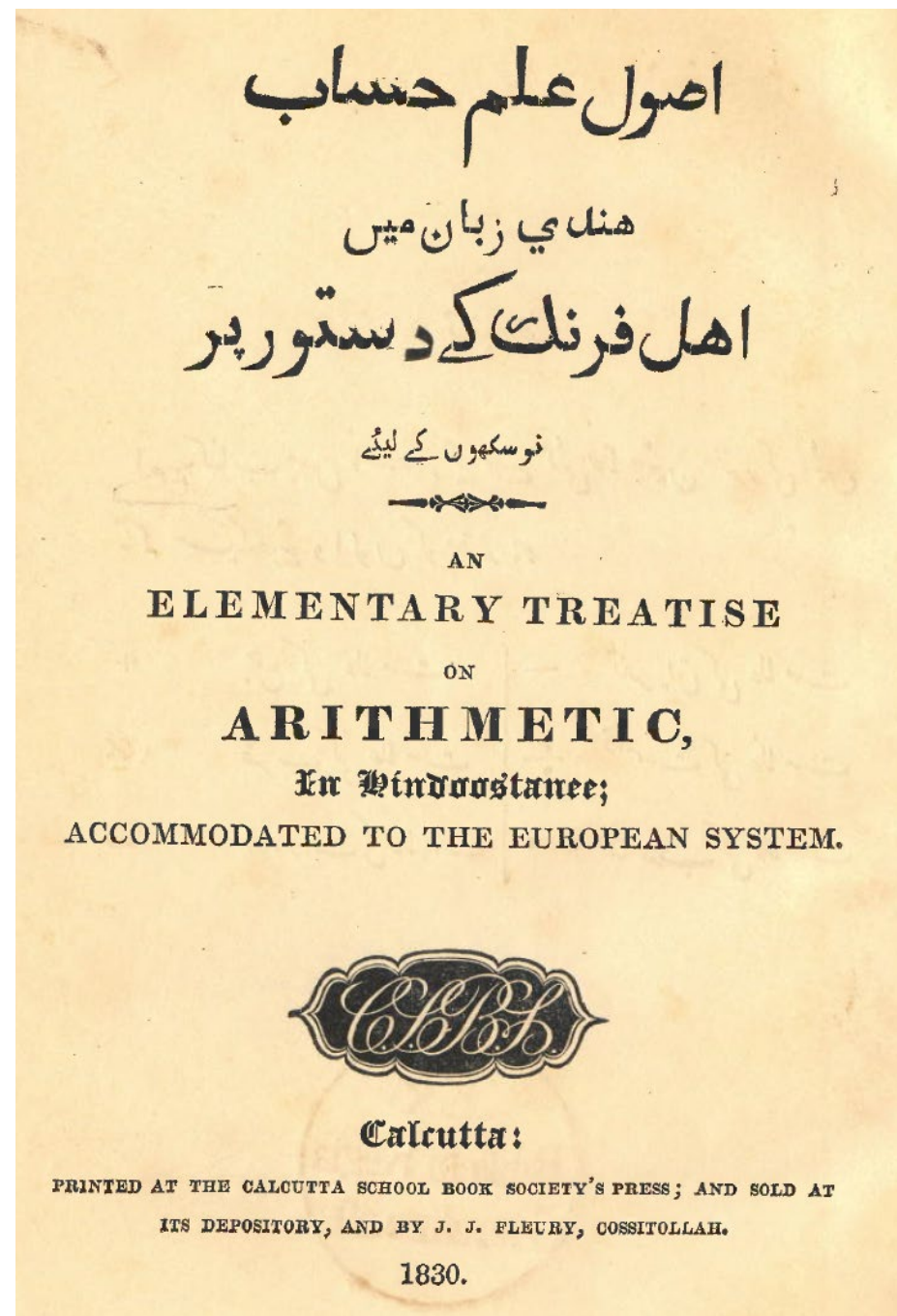
*Uṣūl 'ilm ḥisāb
hindī zabān mīn –
An elementary treatise on
arithmetic in Hindoostanee
Calcutta/Kolkata: Calcutta
School Book Society 1830*

78, 10 p.

D: –

L: Berlin SB, Jena ULB
(OCLC 2512 47618)

S: Gupta, Abhijit: The Calcutta School
Book Society. In: English Studies in
Africa 2014 (57, 1) 57–67



Urdu

Anonym

*Uṣūl ‘ilm ḥisāb
hindī zabān mīn*

Calcutta/Kolkata: Calcutta
School Book Society 1830

Transcription and translation
of the title page

*Uṣūl ‘ilm ḥisāb
hindī zabān mīn
[...]*

*Principles of the science of arithmetic
in the Hindi language
according to the rules of the Europeans [“Franks”]
for disciples [“Sikhs”]*

*An
elementary treatise
on
arithmetic,
In Hindoostanee;
accommodated to the European system.*

*CSBS [Calcutta School Book Society]
Calcutta:
Printed at the Calcutta School Book Society’s Press; and sold at
its depository, and by J. J. Fleury, Cossitollah.
1830.*

Urdu

Anonym

Uṣūl 'ilm ḥisāb hindī zabān mīn
Calcutta/Kolkata 1830

Content overview

(according to the table of contents)

۵۳	کسور عام کی تحویل	۱	اعداد
۵۱	کسور عام کی جمع کا عمل	۳	جمع کا عمل
۵۱	کسور عام کی تفریق کا عمل	۵	تفریق کا عمل
۵۹	کسور عام کے ضرب کا عمل	۸	ضرب کا عمل
۵۹	کسور عام کی قسمت کا عمل	۱۵	قسمت کا عمل
۶۰	کسور اعشاریہ کی تعریف	۲۶	تحویل کا حساب
۶۳	عام کسور کی تحویل	۲۶	جمع مرکب
۶۳	کسور اعشاریہ کی جمع کا عمل	۲۷	تفریق مرکب
۶۴	کسور اعشاریہ کی تفریق کا عمل	۲۸	ضرب مرکب
۶۴	کسور اعشاریہ کے ضرب کا عمل	۳۲	قسمت مرکب
۶۵	کسور اعشاریہ کی قسمت کا عمل	۳۵	قانون مثلثی
	لوگارٹم یعنی اعداد متنا سبہ	۳۸	قانون عدد مثلثی کا الت کر
۶۶	کی گنتی		عدد مثلثی کے دگنا کرنے کا
۷۰	لوگارٹم کی اعمال	۳۹	قانون
۷۳	ضرب کا عمل حساب لوگارٹم سے	۴۰	صعود کا حساب
۷۴	قسمت کا عمل حساب لوگارٹم سے	۴۱	نزول کا حساب
۷۵	صعود کا عمل حساب لوگارٹم سے	۴۴	سلسلہ جمع اور تفریق کا حساب
۷۷	نزول کا عمل حساب لوگارٹم سے	۴۷	سلسلہ ضرب اور تقسیم کا حساب
		۵۱	عام کسور کی تعریف

Numeration, addition, subtraction, multiplication, division

Four species for denominate (compound) numbers

Regula de tri

Regula de tri inversa, regula quinque

Exponentiation and root extraction

Arithmetic progressions

Geometric progressions

Description of common fractions

Four species for common fractions

Four species for decimal fractions

Logarithms

Operations with logarithms

Multiplication and division with logarithms

Exponentiation and root extraction with logarithms

Sindhi

Prītamdās(u) Qismatrā'e/i
Tolārāmāṇī

No biographic data

Other books by the same author recorded
in *Catalogue of the L of the India Office*
Vol. ii Part iii, 1902

Lekhe jī pīṛha

Karachi: Ta'līm Khāto ⁴1871

84 p.

D: –

L: London BL (OCLC 4997 51695;
1873: 4997 51809)

C/V: WorldCat

Same title (author Udhārām Thānvardās?):

Bombay 1866 and Karachi 1871

32 p.

L: London BL (OCLC 5002 72815,
5002 72526)

Hindustani / Hindi

Matthew Thomson Adam

b. ca. 1790

1819 Ordained in London

1820 Moved to Calcutta, then to Benares

London Missionary Society

1830 Moved back to England, then to USA
(Karttunen, whowaswho-indology.info)

*Gaṇitāṅka kā pustaka –
Arithmetic [book], for the use
of schools*

**Calcutta/Kolkata: Calcutta
School Book Society 1827**

2nd edition 1834

157 p.

D: –

L: Cambridge Harvard U (OCLC 7023
37333); London Univ College UCL
(OCLC 9270 47838, 1170 392246)

Based on
works of
**John Thomas
Graves**



b. 1806 Dublin

d. 1870 Cheltenham

Irish jurist and
mathematician

(English Wikipedia)

गणिताङ्कका पुस्तक ।

पाठशालाके लिये ।

ARITHMETIC,

FOR

THE USE OF SCHOOLS.

BY

REV. M. T. ADAM.



Calcutta:

PRINTED AT THE SCHOOL-BOOK SOCIETY'S PRESS, CIRCULAR ROAD.

1827.

Hindustani / Hindi

Matthew Thomson Adam

*Gaṇitāṅka kā pustaka –
Arithmetic [book], for the use
of schools*

Calcutta/Kolkata: Calcutta
School Book Society 1827

Transcription of the title page

S: Aggarwal, Abhilasha: Mathematical
books for and in India in the 19th century.
In: BSHM Bulletin: Journal of the British
Society for the History of Mathematics
22 (2007) 11–21
[contains information for several Indo-
Aryan languages],
dx.doi.org/10.1080/17498430601148671

*Book of Gaṇita [Arithmetic]
for schools*

*Arithmetic,
for
the use of schools.*

*By
Rev. M. T. Adam*

*CSBS [Calcutta School Book Society]
Calcutta:*

Printed at the School-Book Society's Press, Circular Road.

1827.

Panjabi / Punjabi

Bihārī Lāla

No biographic data

Gaṇitamañjarī [Flower of
Gaṇita [Arithmetic]]

(by Gaṇeśa)

Ludhiana [Punjab] 1869

144 p.

D: –

L: – (OCLC 1818 96576)

C/V: WorldCat

By the same author:

Bījaganita [Algebra]

Lahore 1878

96 p.

D: –

L: – (OCLC 1818 96575)

C/V: WorldCat

Gaṇeśa

Indian astronomer of the 16th century;

wrote a commentary to the *Līlāvati* [Arithmetic] and the *Bījaganita* [Algebra] by

Bhāscara [II] Āchārya / Bhāscarācārya (1114–1185)

Gujarati

George Ritso Jervis

b. 1794 Madras

d. 1851 Boulogne-sur-Mer, France

Lieutenant Colonel of the Engineers,
Bombay Company

Founder of the Engineering School at
Bombay in 1823

Member of the Institution of Civil
Engineers

(Grace's Guide to British Industrial
History: gracesguide.co.uk)

*A course of mathematics in the
Goojratee language*

*Vol. 1: Arithmetic and book-
keeping*

Bombay/Mumbai:

P. D. Ramos 1828

465 p.

Translated from works by

Charles Hutton

b. 1737 Newcastle upon Tyne

d. 1823 Charlton, Kent

Professor of mathematics at the
Royal Military Academy, Woolwich
(English Wikipedia)

John Bonnycastle

b. ca. 1750 Buckinghamshire

d. 1821 Woolwich, London

Professor of mathematics at the
Royal Military Academy, Woolwich
(English Wikipedia)



*Vol. 2: Algebra, logarithms, geometry, application
of algebra to geometry, plane trigonometry,
mensuration with tables of logarithms*

*Vol. 3: Geometry and application of algebra to
geometry*

Gujarati

G. R. Jervis: *Arithmetic* 1828

શિક્ષામાલા
ગુજરાતી ભાષામાં
પ્રથમ પુસ્તક
જેમાં
ગણિત
વેદ્યારની પડી
અને
નાણાઓની તપાસણીનું વર્તમાન.
અને તેમાં સૂચવેલ સૂત્રોનો સારો સંગ્રહ તેમનો કવિ
ડાક્ટર ચાર્લ્સ હટ્ટન અને બાણિય કાંસ્ટેલ સાહેબ
તે પુસ્તકોનું ભાષાંતર
કાપ્ટન જાર્જ જાર્વિસ સાહેબ ઇંજનેર
એણે
જગન્નાથ શાસ્ત્રી ક્રમવંત એઓની સહાયતાથી
ગુજરાતી ભાષામાં કર્યું
શિક્ષા છાપણપર છાપ્યું
મુંબઈ
૧૮૨૮

A
COURSE
OF
MATHEMATICS
IN THE
GOOJRATEE LANGUAGE,
VOL: I
=====
CONSISTING OF
ARITHMETIC
AND
BOOK-KEEPING
BY
SINGLE AND DOUBLE ENTRY,
WITH AN ASSAY TABLE &c.
=====
TRANSLATED
from the works of
DR. CHARLES HUTTON, AND MR. BONNYCASTLE,
BY
CAPTAIN GEORGE RITSO JERVIS,
Bombay Engineers.
=====
LITHOGRAPHED IN BOMBAY,
BY
F. D. RAMOS.
1828.

Gujarati

George Ritso Jervis (translator)

Charles Hutton

John Bonnycastle

*A course of mathematics in the
Goojratee language*

*Vol. 1: Arithmetic and book-
keeping*

Bombay: P. D. Ramos 1828

Transcription

of the English title page

L: vol. 1 – London Univ College UCL
(OCLC 9268 84300, 9268 75291,
1170 456057, 1170 290341); vol. 2 –
Dresden SUB (OCLC 3123 35807)

C/V: WorldCat

*A
course
of
mathematics
in the
Goojratee language,
vol: I*

*Consisting of
arithmetic
and
book-keeping
by
single and double entry
with an assay table &c.*

*Translated
from the works of
Dr. Charles Hutton, and Mr. Bonnycastle,
by
Captain George Ritso Jervis,
Bombay Engineers.*

*Lithographed in Bombay,
by
P. D. Ramos.
1828.*

Gujarati

George Ritso Jarvis (translator)

Charles Hutton

John Bonnycastle

*A course of mathematics in the
Goojratee language*

*Vol. 1: Arithmetic and book-
keeping*

Bombay: P. D. Ramos 1828

Content overview

(according to the table of contents)

Notation and numeration

Four species (for integers)

Reduction and tables of money, weights etc.

Four species for denominate (*compound*) numbers

Regula de tri (*Golden rule or rule of three*)

Regula quinque (*compound proportion*)

Chain rule of three

Common (*vulgar*) fractions: reduction, four species

Decimal fractions: four species, reduction

Duo-decimals

Exponentiation (*involution*)

Extraction of roots (*evolution*)

To extract square, cube root, root whatever

Ratios, proportions and progressions

Arithmetical and geometrical proportion

Regula societatis (*single and double fellowship*)

Simple and compound interest

Alligations (*medial and alternate*)

Regula falsi (*single and double position*)

Book-keeping by single and double entry

Marathi

George Ritso Jervis (translator)

Charles Hutton

John Bonnycastle

Details see above: Gujarati

A course of mathematics in the Marat'ha language

Bombay: P. D. Ramos 1828

ca. 465 p. (vol. 1)

Title page and contents in English and Marathi

D: –

L: vol. 2 – London Univ College UCL (OCLC 1170 823639);

vol. 3 – Paris BNF (OCLC 4573 25026)

C/V: WorldCat

Vol. 1: Consisting of arithmetic and book-keeping by single and double entry

Vol. 2: Consisting of elements of algebra, logarithms, elements of geometry, application of algebra to geometry, plane trigonometry, mensuration with tables of logarithms

Vol. 3: Consisting of elements of geometry and application of algebra to geometry

Sinhalese

Church Missionary Society

*A Sinhalese arithmetic:
for the use of the native schools
belonging to the Church
Missionary Society*
Ceylon: Cotta Church Mission
Press ²1839

48 p.

D: –

L: Oxford U (OCLC 6363 57754)

C/V: WorldCat

Nepali (Gorkhali)

Arithmetic books in this language are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

Information: Raikhola et al. state that mathematics books entirely written in Nepali were only printed after the beginning of the 20th century; they present a list. The two earliest arithmetic books recorded by WorldCat are:

Raghunātha Panta: *Gaṇitacandra Candrikā. Pahilā bhāga – Arithmetic in Gorkhali*. 1932 (1922?)
(OCLC 5025 05751)

Bhāscara [II] Āchārya / Bhāscarācārya (1114–1185)
Ṭīkārām(a) Dhananjaya (Śarmā) (commentator):
The Līlāvātī (Nepali and Sanskrit). 1936
Held by the L of Congress (OCLC 2330 29435)

References: Raikhola, Sher Singh, et al.: Contributions of Nepalese mathematics during Shah and Rana era. In: *Advances in historical studies* 9 (2020) 130–141, doi.org/10.4236/ahs.2020.93012; WorldCat

Date: April 2021

Bengali

John Harle

b. 1789 County of Northumberland

d. 1824 Calcutta

Baptist missionary

London Missionary Society

(Missionary register for 1824, London
1824, p. 417)

Arithmetic or Ganitanka

Calcutta/Kolkata: Calcutta

School Book Society 1818

Hugli Chuchura/Chinsurah:

Calcutta School Book Society 1819

Further editions 1821, 1846, 1871, 1878

124 p.

D: Google books

L: Berlin SB, Cambridge Harvard U,
Oxford U (1819: OCLC 5326 7180)

C/V: WorldCat

HARLE'S ARITHMETIC.

FOR THE USE OF BENGALEE SCHOOLS.

Harle

COMPRISING.

The five fundamental Rules:

Tables of Money, Weights, and Measures.

Reduction. Single Rule of Three, Direct and Inverse.

Land Measure &c. Bengal, and Madras, Factory, and Bazar Weights.

Native contracted Rules for calculating the value of Goods,

Admeasurement of Boats, Grain

Gold and Brass Weights,

Batta, Wages &c. &c.

গণিতাঙ্ক.

পাঠশালার নিমিত্তে.

কলিকাতা স্কুল বুক সোসাইটি দ্বারা ছাপা হইল.

পাঠশালার ছাপাখানাতে.

টুটুড়া.

ইং ১৮১৯.



CHINSURAH.

Printed for the CALCUTTA SCHOOL BOOK SOCIETY.

At the SCHOOL PRESS.

1819.

Bengali

John Harle

Arithmetic

Calcutta 1818, Chinsurah 1819

Transcription and translation
of the title page
with content overview

S: Raj, Kapil: Relocating modern science.
Circulation and the construction of
knowledge in South Asia and Europe
1650–1900. London 2007, p. 174
Gupta, Abhijit: The Calcutta School Book
Society. In: English Studies in Africa
2014 (57, 1) 57–67

Harle's Arithmetic.
For the use of Bengalee schools.

Comprising.
The five fundamental Rules.
Tables of Money, Weight, and Measures.
Reduction. Single Rule of Three, Direct and Inverse.
Land Measure etc. Bengal, and Madras, Factory, and Bazar Weights.
Native contracted Rules for calculating the value of Goods,
Admeasurement of Boats, Grain
Gold and Brass Weights,
Batta [that is extra pay, allowance], Wages etc. etc.

Mathematics
for school
Printed by Calcutta School Book Society
in the School Printing Press
1819.

CSBS [Calcutta School Book Society]
[Hooghly-]Chinsurah [West Bengal].
Printed for the Calcutta School Book Society.
At the School Press.
1819.

Bengali

John Harle

Arithmetic

Calcutta 1818, Chinsurah 1819

৫ + ৫ = ১০

৫ - ৪ = ১

৫ × ৫ = ২৫

৪ ÷ ২ = ২

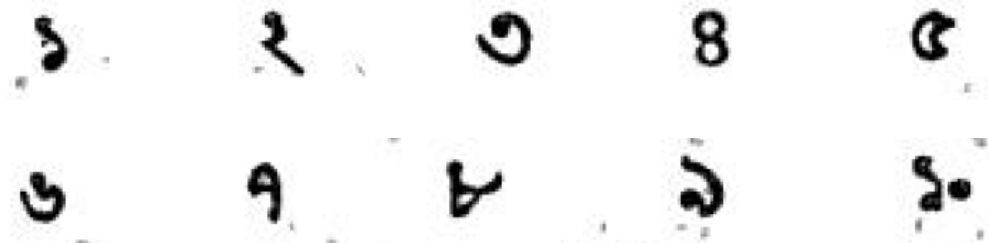
5 + 5 = 10

5 - 4 = 1

5 · 5 = 25

8 : 2 = 4

Digit symbols:

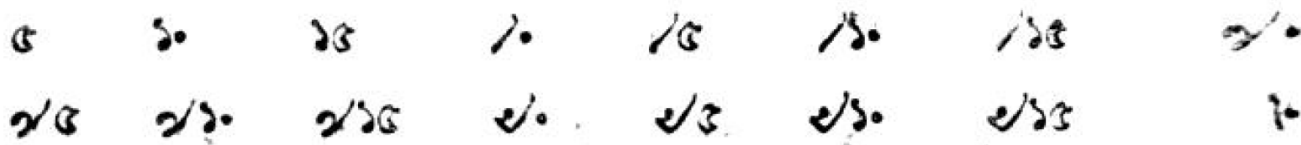


Quarter symbols:



Special symbols for multiples of 20:

5	10	15	20	25	30	35	40
45	50	55	60	65	70	75	80



Bengali – Supplement

Popular competing textbook

Robert May

Gonito, being a collection of arithmetical tables with rules for their application to business.

Calcutta: Calcutta School Book Society 1817

No copy of the 1817 edition found
(Raj 2007)

L: Hartford Trinity College L
(²1819: OCLC 5326 6862); ³1821

Both textbooks refer to local ways of reasoning and teaching (Raj 2007)

Assamese

Eliza W. Brown, née Ballard

Married 1830

d. 1871

Work partner and husband

Rev. Nathan Brown (1807–1886),
American Baptist missionary to India and
Japan, famous for his works on the
Assamese language

(English Wikipedia; onlinesivasagar.com;
Karttunen, whowaswho-indology.info)

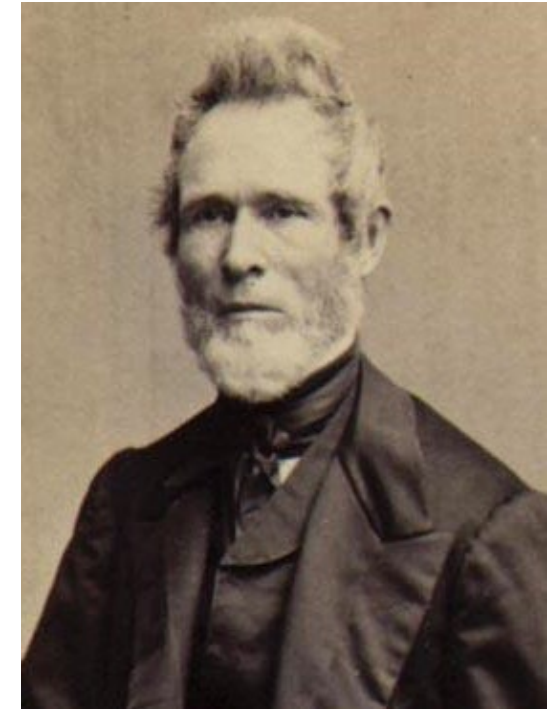
First arithmetic in Assamese Sivasagar/Sibsagor 1845

48 p.

L: Cambridge Harvard U

(OCLC 3499 0749)

C/V: WorldCat



Georgian

Leontij Filippovič Magnickij
(*Arifmëtika*. Moskva 1703; see Russian)

Translated by Mikheil Elvidze

Corrected by Vakhtang VI
(1675–1737), king of Georgia under
Persian government; established the first
printing house in Tiflis in 1709

დიდი არითმეტიკა
(*didi aripmetica*) [Great arithmetic]
Tiflis 1731

V/S: Chichinadze, Z.: The Russian Patrio-
tic 1812 War, Peter Bagrationi and Selim
Pasha Khimshiashvili. Tiflis: Electric
printer “Sorapani” Madatov Island 1912,
p. 16 [openlibrary.org/bitstream/123456789/
6553/3/Rusetis SamamulisSvilo omi
1912.pdf](https://openlibrary.org/bitstream/123456789/6553/3/Rusetis_SamamulisSvilo_omi_1912.pdf))

The National Parliamentary L of Georgia
does not hold any copy of this book.
It is not known whether any other copy survived.

Georgian – Supplement

A. Vogel (*Arifmetika*)

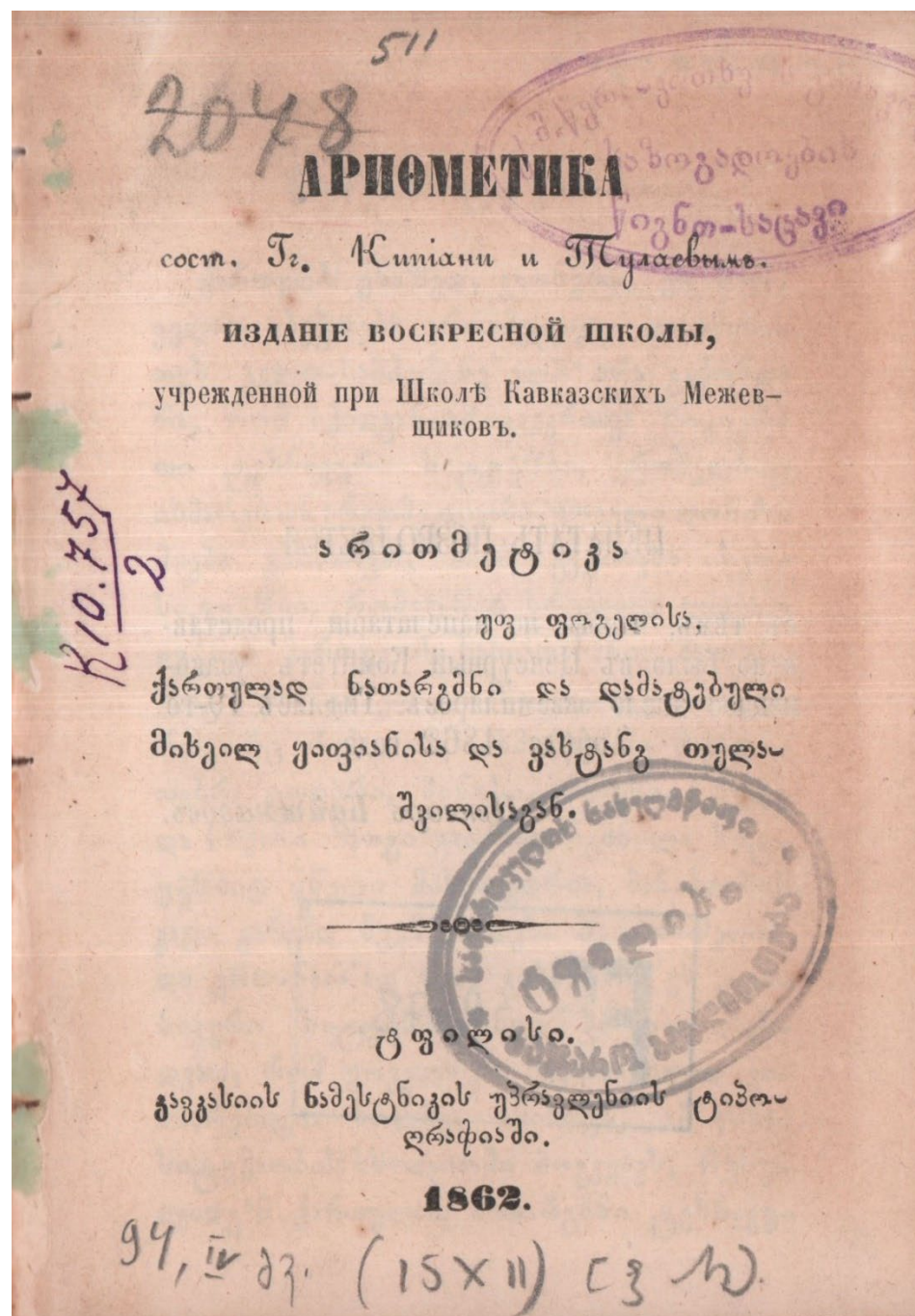
Translated by Mikhail Kipiani
and Vakhtang Tulashvili

არიფმეტიკა (*aripmetica*)

Sankt-Peterburg: K. Wulf 1861,
Tiflis 1862

This is the earliest Georgian arithmetic book held by the National Parliamentary Library of Georgia.

The translators thought it was the first arithmetic book in Georgian and created new arithmetic terms listed at the end of the preface.



Arabic

Bahā' al-Dīn Muḥammad
bin al-Ḥusain al-Āmilī
بهاء الدين مُحَمَّد بن الحسين العاملي

b. 1546/47 Baalbek/Amul, Syria

d. 1621/22 Isfahan

Studies in Qazvin, Jerusalem, Herat

High Shiite theologian

(Encyclopaedia Britannica, Iranica)

Hulāṣat al-ḥisāb (خُلَاصَةُ الْحِسَابِ)

[The Essential of Arithmetic]

Calcutta/Kolkata: P. Pereira,

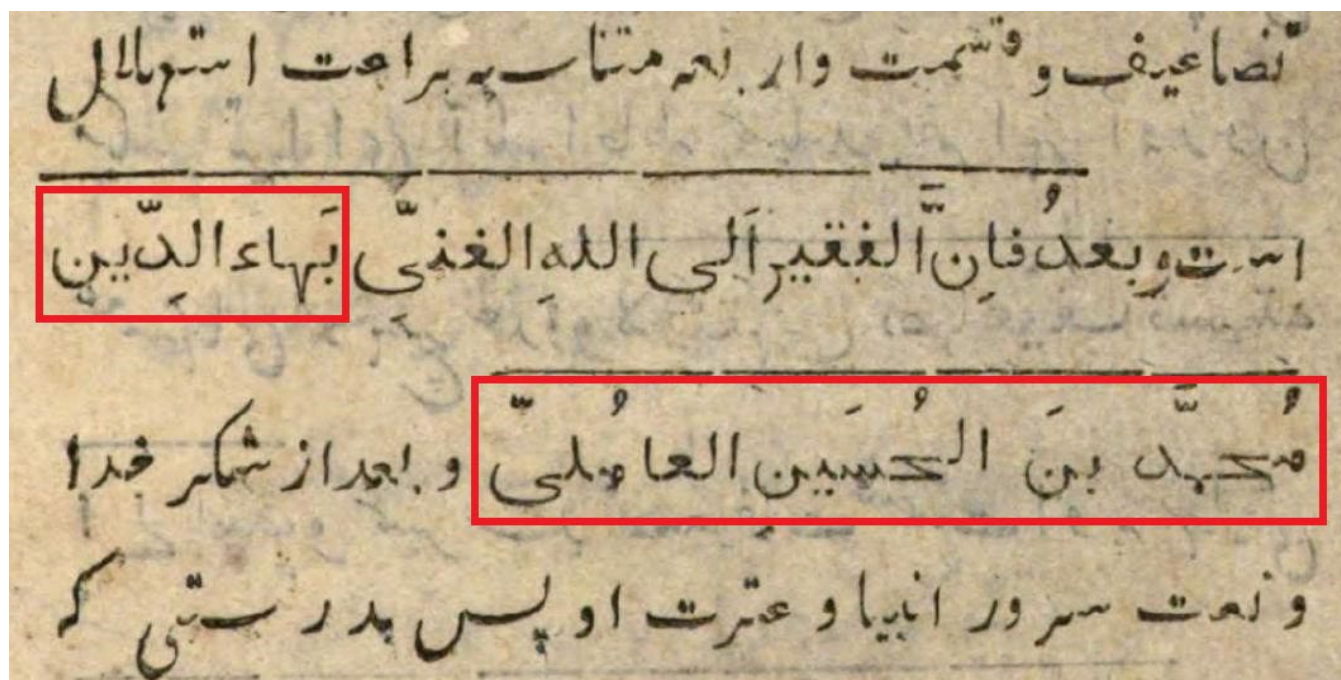
Hindustani Press 1812

Maulewi Ruschen Ali: *Persian
translation and commentary*

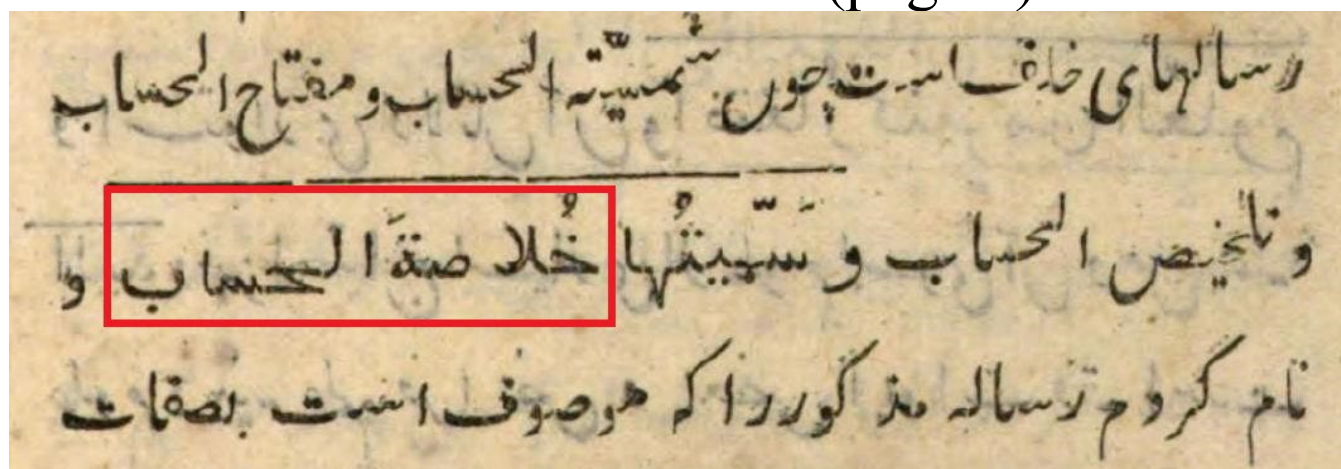
512 p.

D/L: München BSB

E/V: Nesselmann, G. H. F. 1843



The author's name (page 2)



Title (page 4)

(Arabic original text marked with a line above)

Arabic

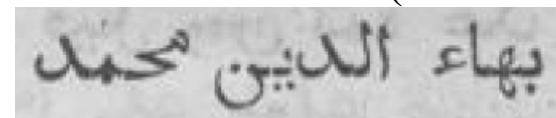
Bahā' al-Dīn al-‘Āmilī

Hulāṣat al-ḥisāb

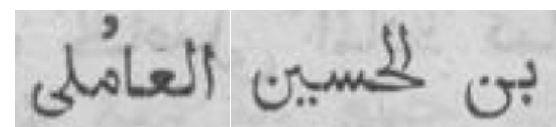
Calcutta: Pereira 1812

Beginning of the text
in Nesselmann's translation 1843

The author's name (Nesselmann's edition):



Bahā' al-Dīn Muḥammad



bin al-Ḥusain al-‘Āmilī

Title (Nesselmann's edition):



Im Namen Gottes, des Barmherzigen, des Erbarmers.

Wir preisen Dich, dessen Gnadensumme keine Zahl begrenzt, und dessen ohne Ende wiederholte Theilungen zu keinem Ende führen; wir beten für unsern Herrn Mohammed, den Auserwählten, und für seine Verwandtschaft, vorzüglich die vier unter einander Verbundenen ¹⁾, die Inhaber des Herrschermantels ²⁾. Ist das geschehen, so (darf sich nennen) der Arme in Vergleich zu Gott dem reichen, Beha-eddin Mohammed, Sohn des Alhosain, aus Amul, den Gott der Erhab'ne möge sprechen lassen, was sich als wahr erweist am Tage, da Rechnung gelegt wird.

Er sagt: „Was die Rechenkunst anlangt, so ist es nicht unbekannt, wie erhaben ihr Wesen, wie hoch ihr Rang, wie zierlich ihre Aufgaben, wie fest ihre Beweise sind, noch das viele Wissenschaften ihrer bedürfen und eine unzählige Menge von Geschäften von ihr Gebrauch macht. Dieses ist eine Abhandlung, welche das Nothwendigste von ihren Elementen umfaßt, und das Wichtigste aus ihren Kapiteln und Abschnitten vereinigt, und von ihr aufgenommen hat zierliche Kunstgriffe, welche die Essenz der Bücher älterer Auctoren ausmachen, und ist daraus gearbeitet auf ausgezeichneten Grundlagen, welche das Mark der Abhandlungen künftiger Schriftsteller sein werden ³⁾. Ich habe sie genannt Essenz der Rechenkunst, und habe sie angeordnet in eine Einleitung und zehn Kapitel.

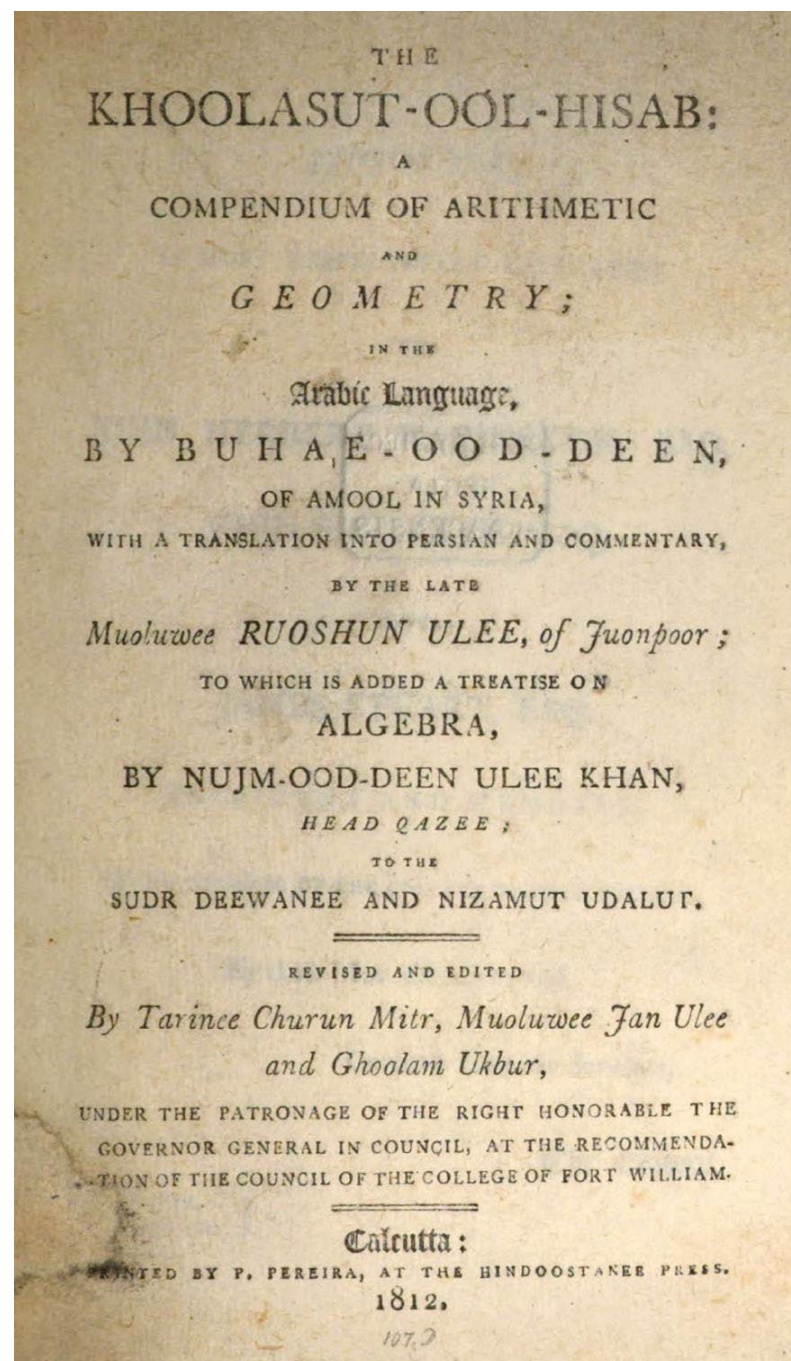
Arabic

Bahā' al-Dīn al-Āmilī

Hulāṣat al-ḥisāb

Calcutta: Pereira 1812

English title page



Arabic

Bahā' al-Dīn al-‘Āmilī

Hulāṣat al-ḥisāb

Calcutta: Pereira 1812

Transcription
of the English title page

The
Khoolasut-ool-hisab:
a
compendium of arithmetic
and
geometry;
in the
Arabic Language,
by Buhae-ood-Deen,
of Amool in Syria,
with a translation into Persian and commentary,
by the late
Muoluwee Ruoshun Ulee, of Juonpoor;
to which is added a treatise on
algebra,
by Nujm-ood-Deen Ulee Khan,
Head Qazee;
to the
Sudr Deewanee and Nizamut Udalut.
Revised and edited
By Tarinee Churun Mitr, Muoluwee Jan Ulee
and Goolam Ukbur,
under the patronage of the right honorable the
Governor General in Council, at the recommenda-
tion of the Council of the College of Fort William.
Calcutta:
printed by F. Pereira at the Hindoostanee Press.
1812.

Arabic

Bahā' al-Dīn al-Āmilī

Hulāṣat al-ḥisāb

Calcutta: Pereira 1812

Content overview

(according to Nesselmann 1843)

- 1 Calculating with integers
- 2 Calculating with fractions
- 3 Identifying the unknown using a proportion
- 4 Identifying the unknown using regula falsi duplicis positionis
- 5 Identifying the unknown using the inversion method
- 6 The art of measuring, surveying
- 7 Applying the art of measuring to leveling in order to lay water mains and to examining the height of tall objects, the breadth of rivers and the depth of wells
- 8 Identifying the unknown using the algebraic method
- 9 Excellent rules and subtle tricks which the arithmetician can neither avoid nor miss
- 10 Miscellaneous problems – using various methods – which sharpen and strengthen the learner's mind regarding the identification of the unknown

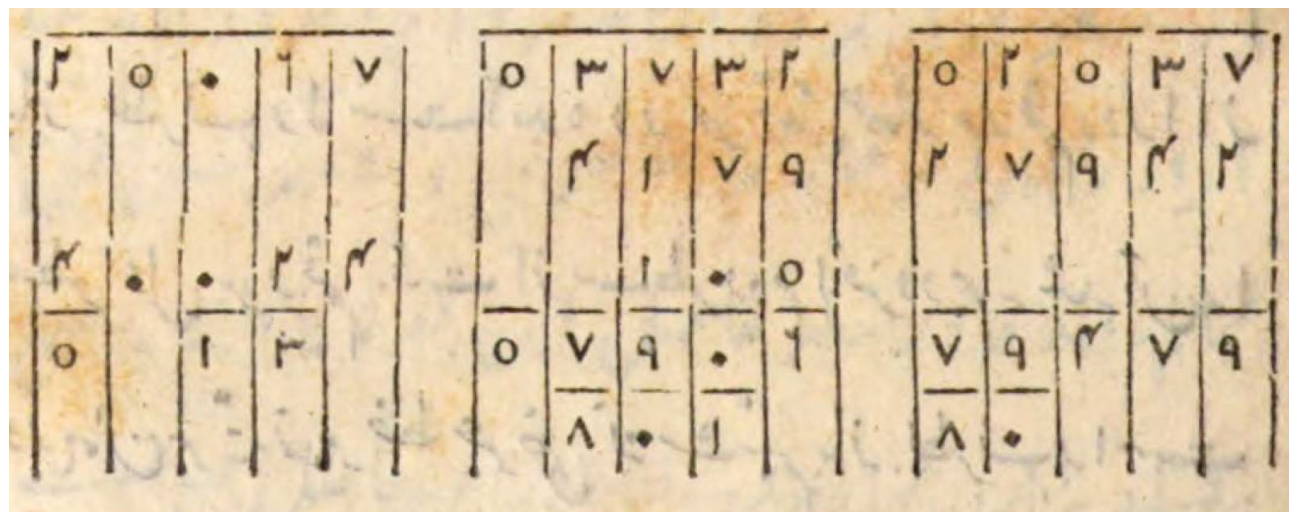
Arabic

Bahā' al-Dīn al-Āmilī

Hulāṣat al-ḥisāb

Calcutta: Pereira 1812

Addition and duplication
(Nesselmann 1843, p. 6)



(Original: duplication on the left, addition on the right)

Addition zweier Zahlen.	Addition mehrerer Zahlen.	Verdoppelung.																																																												
<table border="1"><tr><td>5</td><td>2</td><td>5</td><td>3</td><td>7</td></tr><tr><td>2</td><td>7</td><td>9</td><td>4</td><td>2</td></tr><tr><td>7</td><td>9</td><td>4</td><td>7</td><td>9</td></tr><tr><td>8</td><td>0</td><td></td><td></td><td></td></tr></table>	5	2	5	3	7	2	7	9	4	2	7	9	4	7	9	8	0				<table border="1"><tr><td>5</td><td>3</td><td>7</td><td>3</td><td>2</td></tr><tr><td>4</td><td>1</td><td>7</td><td>9</td><td></td></tr><tr><td></td><td>1</td><td>0</td><td>5</td><td></td></tr><tr><td>5</td><td>7</td><td>9</td><td>0</td><td>6</td></tr><tr><td></td><td>8</td><td>0</td><td>1</td><td></td></tr></table>	5	3	7	3	2	4	1	7	9			1	0	5		5	7	9	0	6		8	0	1		<table border="1"><tr><td>2</td><td>5</td><td>0</td><td>6</td><td>7</td></tr><tr><td>4</td><td>0</td><td>0</td><td>2</td><td>4</td></tr><tr><td>5</td><td></td><td>1</td><td>3</td><td></td></tr></table>	2	5	0	6	7	4	0	0	2	4	5		1	3	
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2	5	0	6	7																																																										
4	0	0	2	4																																																										
5		1	3																																																											

Hebrew 1

Elijah Mizrahi

b. ca. 1450 (jewishencyclopedia.com)

d. 1525/26

Turkish rabbi and mathematician

1495 Grand rabbi of the Ottoman empire

Mathematical, rabbinical, exegetical works

Sēfer ha-mispār

Konstantinopolis: Girolamo

Soncino / Gershom Sontsin 1533

Edited by Mizrahi's son Ísrael

222 p.; C/V: –

D: reader.digitale-sammlungen.de

L: München BSB

E: Wertheim, Gustav: Die Arithmetik
des Elia Misrachi. Frankfurt ¹1893,
Braunschweig ²1896

S: Steinschneider, Moritz: Mathematik bei
den Juden (1893–1901). Hildesheim 1964
jewishencyclopedia.com



Hebrew 1

Elijah Mizrahi

Sēfer ha-mispār

Konstantinopolis: Soncino 1533

Transcription of the title page

The year of publication is not indicated explicitly, only as twelfth year of the reign of Sultan Suleiman I. (see next page).

This would lead to 1532/33 CE.

According to the NL of Israel, the year of publication is Hebrew 5294. This (subtracting 3761/3760) corresponds to 1533-09-20–1534-09-09 CE.

ספר המספר

להחכם האלהי מוהר"ר [מורנו ורבינו הרב רבי]

אליה המזרחי ז"ל

בקוסטנטינא

קרית אדוננו המלך הגדול והאדיר

שולטאן שולימאן

ירום הודו ויתנשא : בשנת שתים עשרה למלכו:

בבית זעיר המחוקקים קטון התלמידים

[מחוקק מלשון חקוק, בית מחוקקים = בית דפוס (קלצ'קין)]

גרשם בן הח"ר [החכם רבי] **משה בן החכם המופלג**

הר"ר [הרבי רבי]

ישראל נתן שונצין בן שמואל בן הר' משה ז"ל

והוא נלחם בעיר פירט נגד פרא יואן

די קאפיסטראנו וגרש אותו עם כל חילו משם:

והוא היה דור חמישי למה"ר [מורינו הרב] **משה משפירה הנזכר**

בתוספות מטוך: שנת כי גר הייתי בארץ נכריה

Hebrew 1

Elijah Mizrahi

Sēfer ha-mispār

Konstantinopolis: Soncino 1533

Romanization of the title page

Suleiman/Süleyman I. the Magnificent
(1494/96–1566), Sultan of the Ottoman
empire from 1520-09-21 on

Johannes Capistranus, San Giovanni da
Capestrano (1386–1456), Franciscan friar,
preacher, inquisitor, crusader, “scourge of
the Jews”

Firt/Furth/Pfirt/Ferrette, Alsace
(Italian Wikipedia, Soncino)

Sēfer ha-mispār
le-ha-ḥakam ha-elohi m.w.h.r.r [moreinu
we-rabeinu ha-rab rabi; moharar]
Elijah ha-Mizrahi z.l.
be Qoṣṭantina
qiriat adonenu ha-meleḵ ha-gadol we ha-adir
Šulṭan Šuliman
yarum hodo we-itnaše: bešnat šteim ‘ašar le-malko

Be-beit za ‘ir ha-meḥoqeqim qaṭon ha-talmidim
Geršom ben h.ḥ.r. [ha-ḥakam rabi] *Moše ben ha-ḥakam*
ha-muflag h.r.r. [ha-rabi rabi]
Išrael Natan Šonšin ben Šmuel ben ha-r. Moše z.l.
We-hu nilḥam b-‘ir Firt neḡed pere Yowan
di Qapistrano we-gereš oto ‘im kol ḥeilo mišam:
We-hu haya dor ḥamiši le-m.h.r. [moreinu ha-rab; mahar]
Moše Mišapira ha-nizkar
be-tosafot Maṭoḵ: šnat ki ger haiti be-ereš nokria

Hebrew 1

Eliyah Mizraḥi

Sēfer ha-mispār

Konstantinopolis: Soncino 1533

Translation of the title page

For transcriptions, Romanizations and translations, I am very indebted to Dr. Stela Segev, Herzog College, Jerusalem, author of a Hebrew dissertation on this arithmetic book (Jerusalem 2010).

*Book of the Number
by the divine sage
Eliyah Mizraḥi our teacher and rabbi of blessed memory
in Constantinople,
the city of our sovereign, the great and mighty king
Sultan Süleyman,
may his majesty rise and rise,
in the twelfth year of his reign.*

*In a tiny printing house a humble student
Ghershom, son of the wise rabbi Moshe, son of the very wise rabbi
Israel Natan Sonšin, son of Shmuel, son of rabbi Moshe, of blessed
memory.*

*And he fought in the town Firth against the savage Giovanni
di Capestrano and expelled with all his army away:
And he was the fifth generation to our teacher and rabbi Moshe
Mishapira mentioned
in Tosafot [commentaries on the Talmud] Matokh [???]:
I was a stranger in a foreign land.*

Hebrew 1

Eliyah Mizraḥi

Sēfer ha-mispār

Konstantinopolis: Soncino 1533

Content overview

Divided into three books,
each divided into “gates” (*še’ar*),
subdivided into chapters (*pereq*)
(Wertheim 1896, p. 14–15)

- 1.1 Integers: addition, multiplication, subtraction, division
- 1.2 Fractions: multiplication, addition, subtraction, division
- 1.3 Mixed fractions: addition, multiplication, subtraction, division

- 2.1 Astronomical fractions ($1/60$ etc.): addition, multiplication, subtraction, division
- 2.2 Extraction of square and cube roots
- 2.3 Proportions: arithmetic, geometric, harmonic

- 3.1 Arithmetical problems
 - 3.1.1 Problems (40) solved with the regula de tri
 - 3.1.2 Problems (40) solved without the regula de tri
- 3.2 Geometrical problems
 - 3.1.1 Problems (11) solved with the regula de tri
 - 3.1.2 Problems (9) solved without the regula de tri

Hebrew 1

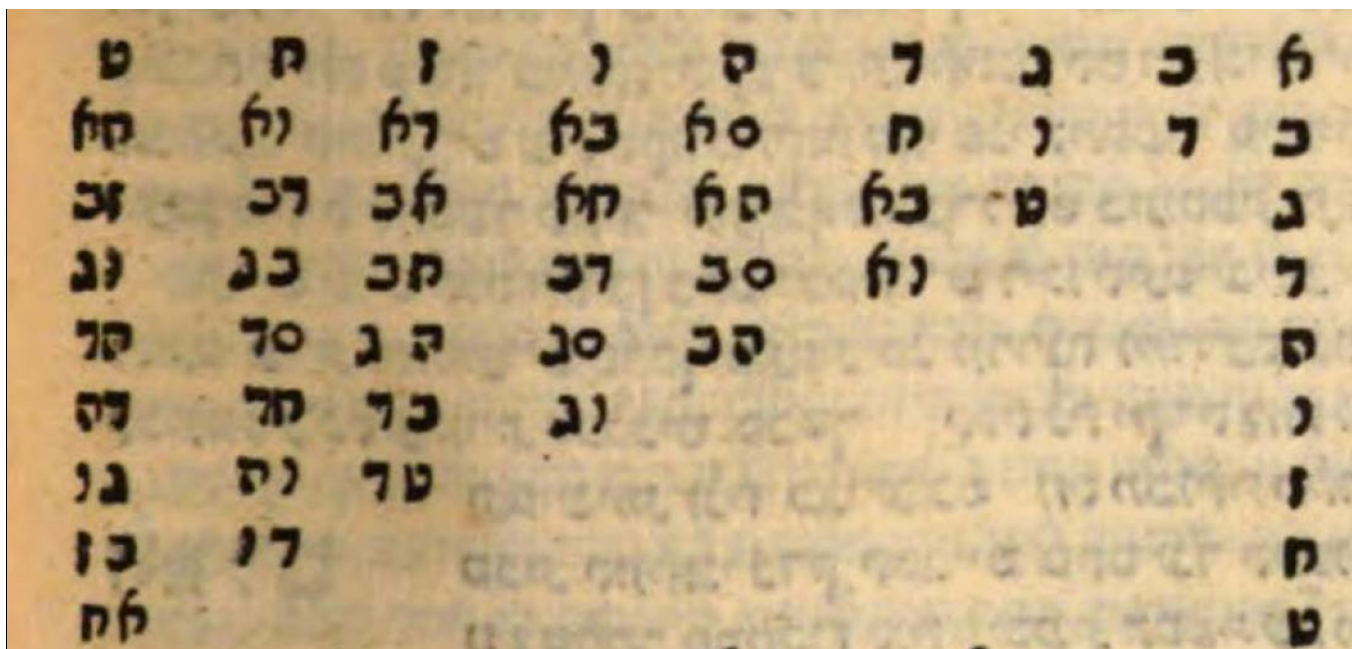
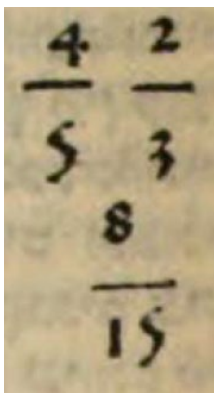
Elijah Mizrahi

Sēfer ha-mispār

Konstantinopolis: Soncino 1533

Mizrahi calculates mainly with the Indo-Arabic number system, uses fractions with fraction bar, e.g. in the multiplication

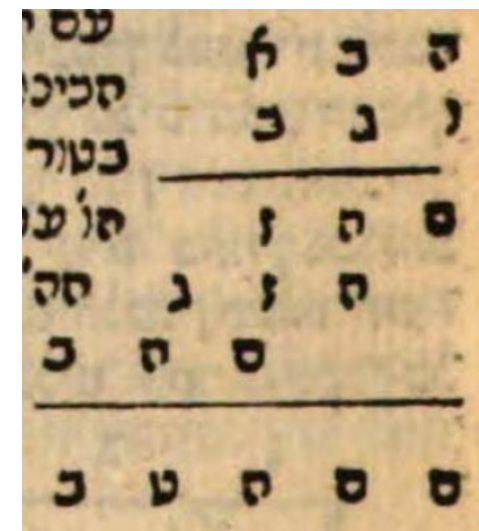
$$4/5 \cdot 2/3 = 8/15$$



Multiplication table with numerals consisting of Hebrew letters

In the beginning of the book, there are a few calculations with the Hebrew letter system, e.g. the multiplication

$$\begin{aligned} &125 \cdot 236 \\ &= 750 + 3750 + 25000 \\ &= 29500 \end{aligned}$$



Hebrew 1 – Supplement

Elijah Mizrahi

*Qišur ha-meleket mispār.
Arithmetica secundum omnes species
suas. Compendium arithmetices
Basel: Heinrich Petri 1546*

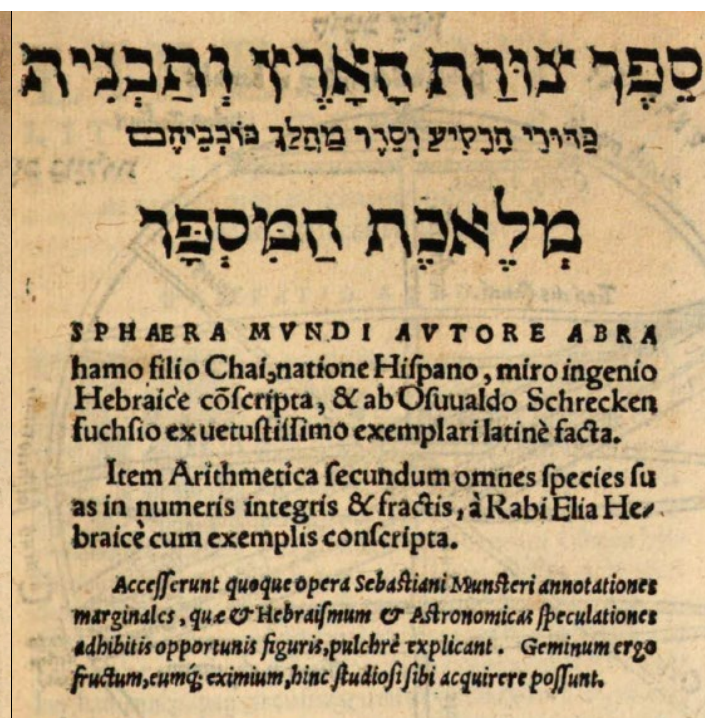
Hebrew 352 p.: Ḥiyya 211 p., Mizrahi 141 p.
Latin 207 p.: Ḥiyya 110 p., Mizrahi 97 p.

Abridgment of the first two parts of *Sēfer ha-mispār* and of Abraham bar Ḥiyya's (Savasorda; ca. 1065–ca. 1136) *Sēfer šurat ha-areš* (Book on the form of the earth), made by Sebastian Münster (Nieder-Ingelheim 1488–1552 Basel; cosmographer, humanist, Hebraist).

With a Latin translation by Erasmus Oswald Schreckenfuchs (Merckenstein 1511–1575 Freiburg; mathematician, astronomer, humanist, Hebraist).

D/L: München BSB

R: Amsterdam: B. R. Grüner 1968



Hebrew 2

Menahēm Šiyōn/Šijjōn/Tzion
(Emanuel) Porat [from Porto?]
Kōhēn Rofeh [physician]

b. ca. 1595 Trieste (jewishencyclopedia.com)

d. ca. 1660 Padova

Math., astronomer, rabbi in Trieste, Padova

Name possibly derived from Porto (near
Verona, Italy) or Furth/Firth (Alsace)

Sēfer 'ōbēr la-sōhēr

Venezia: Giovanni Calleone
(for Pietro, Aluise and Lorenzo
Bragadini) 1627 (Hebrew [5]387)

42 p.

C/V: Hoock II/M17

D: www.hebrewbooks.org/11814

L: Basel U, Michigan U

S: Heller, Marvin J.: The 17th century

Hebrew book. Leiden 2010



Hebrew 2

Menahēm Šiyōn (Emanuel)

Porat Kōhēn Rofeh

Sēfer 'ōbēr la-sōḥēr

Venezia: Calleone 1627

Transcription of the title page

The Title *'ōbēr la-sōḥēr* is taken from Abraham's purchase of Makhpelah from Ephron the Hittite (Genesis 23,16) (Heller 2010, p. 461)

The Hebrew year [5]387 (subtracting 3761/3760) corresponds to 1626/27 CE.

ספר

עובר לסוחר

והוא ספר המספר מהחכם

השלם כמוהרר [כבוד מורנו הרב רבי] מנחם ציון

פורט כהן רפא גרו

[בְּטָרִיהַ, בְּתִמְנָא וּפְרָקִיהַ (ישמרהו הרחמן ויצילהו)]

נדפס בויניציא בבית

יואני קאליוני

שפז

בחנות השרים המעולים

פייטרו אלויסי ולורינצו

בראגאדיני

Hebrew 2

Menahēm Šiyōn (Emanuel)

Porat Kōhēn Rofeh

Sēfer 'ōbēr la-sōḥēr

Venezia: Calleone 1627

Romanization of the title page

Sēfer

'ōbēr la-sōḥēr

*we-hu sēfer ha-mispār me-he-ḥakam
ha-šalem k.m.w.h.r.r [kḥod moreinu we-rabeinu
ha-rab rabi; moharar] Menahēm Šiyon
Porat Kohen Rofeh n.r.o.*

Nidpas be-Winišia be-beit

Yowani Qalioni

š.p.z [(5)387]

Be-ḥanut ha-šarim ha-me'ulim

Piyetro Aluisi we-Lorinšo

Bragadini

Appresso gli Illustris(simi) Sig(nori)

Pietro, Aluise, & Lorenzo

Bragadini.

Hebrew 2

Menahēm Şiyōn (Emanuel)

Porat Kōhēn Rofeh

Sēfer 'ōbēr la-sōḥēr

Venezia: Calleone 1627

Translation of the title page

For transcriptions, Romanizations and translations, I am very indebted to Dr. Stela Segev, Herzog College, Jerusalem.

Book

*“money current among the merchants”
it is the book of the number by the wise (scholar),
the perfect honorable, our teacher and rabbi*

Menahem Şiyon

*Porat Kohen Rofeh [physician],
the Merciful will preserve him and save him.*

Printed in Venice in the house

Giovanni Calleone

1627

In the store of the noble gentlemen

Pietro, Aluise and Lorenzo

Bragadini

With the illustrious Messrs.

Pietro, Aluise and Lorenzo

Bragadini

Hebrew 2

Menahēm Šiyōn (Emanuel)

Porat Kōhēn Rofeh

Sēfer 'ōbēr la-sōhēr

Venezia: Calleone 1627

Content overview

הקדמת תלמידו של הרב
המחבר נרו

1 פרק א קבוץ השלמים

2 פרק ב חסור בשלמים

3 פרק ג הכאה בשלמים

4 פרק ד במין החלוק

5 פרק ה בשברים

6 פרק ו קבוץ בשברים

7 פרק ז חסור בשברים

8 פרק ח הכאה בשברים

9 פרק ט חלוק בשברים

10 פרק י הוט המשולש

11 פרק יא בשאלות

12 פרק יב קשור בספים

בריך רחמנא דסייען והניענו עד כען

Hebrew 2

Menahēm Šiyōn (Emanuel)

Porat Kōhēn Rofeh

Sēfer 'ōbēr la-sōḥēr

Venezia: Calleone 1627

Content overview

(according to the section headings)

In the introduction, the author mentions predecessors, particularly Eliyah Mizraḥi's *Sēfer ha-mispār*, calls it a deep and difficult work, and emphasizes that he has made this book more accessible to the reader (partly from Heller 2010, p. 461).

Verses encouraging purchase of the book

Introduction (*haqdama*)

Second introduction (*haqdama*) by Gershom ben Kalonymous

Hefez, a student of the author, who was responsible for publishing the book

Chapters (*pereq*)

1 Addition of integers (*qibuš ha-šlemim*) 1–7

2 Subtraction of integers (*ḥisur be-šlemim*) 1–11

3 Multiplication of integers (*hakaah be-šlemim*) 1–10

4 Division of integers (*bmin ha-ḥiluq*) 1–11

5 Fractions (*be-šebarim*) 1–3

6 Addition of fractions (*qibuš be-šebarim*) 1–11

7 Subtraction of fractions (*ḥisur be-šebarim*) 1–5

8 Multiplication of fractions (*hakaah be-šebarim*) 1–8

9 Division of fractions (*ḥiluq be-šebarim*) 1–16

10 Regula de tri (*ho<ṭ>[q] ha-mešulaš*) 1–4

11 Problems (*be-šeilot*) 1–21

12 Problems dealing with money (*qašur be-safim*) 1–13

Blessed be God who helped us. [Aramaic blessing]

And we have arrived now.

Hebrew 2

Menahēm Šiyōn (Emanuel)

Porat Kōhēn Rofeh

Sēfer 'ōḇēr la-sōḥēr

Venezia: Calleone 1627

Subtraction

$$3534 - 1232$$

$$= 2302$$

ד	ג	ה	ג	נ
כ	נ	כ	א	א
כ	ו	ס	ג	כ

Addition

of fractions

$$3/8 + 2/7$$

$$= 21/56 + 16/56$$

$$= 37/56$$

כ	ג
ז	ח
א	אב
ז	ז
ז	ז
ז	ז

א	ב	ג	ד	ה	ו	ז	ח	ט
כ	ד	ו	ח	ס	א	ב	א	א
ג	ו	ט	א	ה	א	א	ב	ז
ה	ח	א	ו	א	ס	ב	ח	ו
ה	ס	א	ה	ב	ס	ה	כ	ד
ו	א	א	ב	כ	ו	כ	ד	ד
ז	א	א	ב	ה	כ	ט	ו	ו
ח	ו	א	ב	כ	ד	ו	ז	ז
ט	א	ז	ו	ד	ה	ו	ז	א

Multiplication table with numerals consisting of Hebrew letters

המתחיל

בחימה זאת צריך סידע הסומנים אשר בהם משתמשים סהם
 אי בי ג ד ה ו ז ח ט י ס • אן אלא מספרים
 א' 2 3 4 5 6 7 8 9 10 • מן א' ער ט' מקום ומקום לפי מנהגו אולם
 אופק הוראתם על איכות המספרים ימטך חזר מושבותם כי אם יהיה סימן אחר בלבד

The only reference to the not used Indo-Arabic digits

Other Afro-Asiatic languages

Arithmetic books in these languages are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

WorldCat records the following years for the earliest arithmetic books in these languages:

Semitic

[Amharic](#) 1921 (OCLC 8048 0745, 4597 45574)

[Tigrinya](#) 1943/44 (OCLC 6548 33842)

Cushitic

[Somali](#) 1971 (OCLC 3237 9049)

Chadic

[Hausa](#) 1951 (OCLC 3785 4970)

No records for Berber languages

Reference: WorldCat, London SAOS University

Date: April/May 2021

(Southern) Sotho, Sesotho

Charles Adolphe Mabile

b. 1836 Baulmes, Vaud, Switzerland

d. 1894 Moria

Paris Evangelical Missionary Society

1860– in Lesotho

Bukanyana ea arithmetic:

Lipalo

[Booklet of arithmetic: numbers]

Moria [Limpopo province]:

[Mission Press] 1876

69 p.

D: –

L: Pretoria NL of South Africa

(OCLC 1017 263350)

C/V: WorldCat



(USC Digital L)

Sotho translation of the Bible
Sesuto-English dictionary
Sesotho Book Depot
First newspaper in Sotho
(Boston University, School of
Theology bu.edu/missiology;
Dictionary of African
Christian Biography dacb.org;
Historical Dictionary of
Lesotho books.google.com)

Swahili

Anonym

*Chuo cha Kwanza cha kufanyia
hesabu*

[First course of practicing
arithmetic]

Zanzibar: [publisher not
identified] 1882

42 p.

D: –

L: Edinburgh NL of Scotland
(OCLC 3148 46825)

C/V: WorldCat

Tswana (Western Sotho)

John Tom Brown

b. 1860

d. 1925

London Missionary Society

Author of liturgical and cultural books,

a Secwana dictionary and grammar book

Lokwalo loa arithmetic:

ke go re loa dipalo

[Arithmetic textbook:

that is, about numbers]

Kuruman [Northern Cape

province]: Mission Press 1883

124 p.

D: –

L: Hennopsmeer Kimberley Africana L

(OCLC 4166 31015, 4166 30995)

C/V: WorldCat

(Guide to the London Missionary Society Archive,
SOAS (London) Digital Collections, p. 94)

Zulu

James Churchill Bryant

b. 1812 Easton, Mass.

d. 1850 Ifafa, KwaZulu-Natal, South Africa
Congregationalist reverend, missionary,
Zulu scholar

Incwadi yokubala

[Book about calculation]

**Port Natal: American Mission
Press; Smithsonian Institution
1849**

48 p.

D: –

L: Yale U, Washington LoC, South Africa
NL (OCLC 4197 7712); London BL
(OCLC 5615 75919, 7714 87559)

C/V: WorldCat

(viaf.org/viaf/54021753;

Savage, Thomas: Memoir of Rev. James C. Bryant, late missionary of Am. B. C. F. Missions [American Board of Commissioners for Foreign Missions] to South Africa. Boston: Massachusetts Sabbath School Society 1854 (Internet Archive)

Printed entirely in Zulu, except for a five page chart that includes Arabic numerals, Roman numerals, and the numbers written out in both Zulu and English, and a note on page 48 concerning Zulu orthography (WorldCat comment).

Other Niger-Congo languages

Arithmetic books in these languages are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

WorldCat records the following years for the earliest arithmetic books in these languages:

Bantu

[Chichewa/Chinyanja](#) 1932 (OCLC 4654 51334)

[Kongo](#) 1908 (OCLC 4541 08656)

[\(Kinya-\)Rwanda](#) 1900–1959 (OCLC 8448 3302)

[Swazi](#) 2003 (OCLC 1445 25574)

[Xhosa](#) 1963 (OCLC 8141 42694)

Volta-Niger

[Igbo](#) 1949 (OCLC 5627 09073)

[Yoruba](#) 1930 (OCLC 2174 8866)

Reference: WorldCat

Date: June 2021

(Ottoman) Turkish

Hoca İshak Efendi

b. Narta, 60 km south of Ioannina

(his father had converted from Judaism)

d. 1836 (1252 Hijra) Suez

1815–1824 Senior teacher at the

Mühendishâne-i Berrî-i Hümâyün

(military engineering academy)

1824–1828 Interpreter of Sultan Mahmud II.

1830 Chief instructor at Mühendishâne

(İhsanoğlu, Ekmeleddin 1999; p. 280)

Mecmua-i ulûm-u riyaziye

[Compendium of mathematical sciences]

Istanbul: Matbaa-i Amire

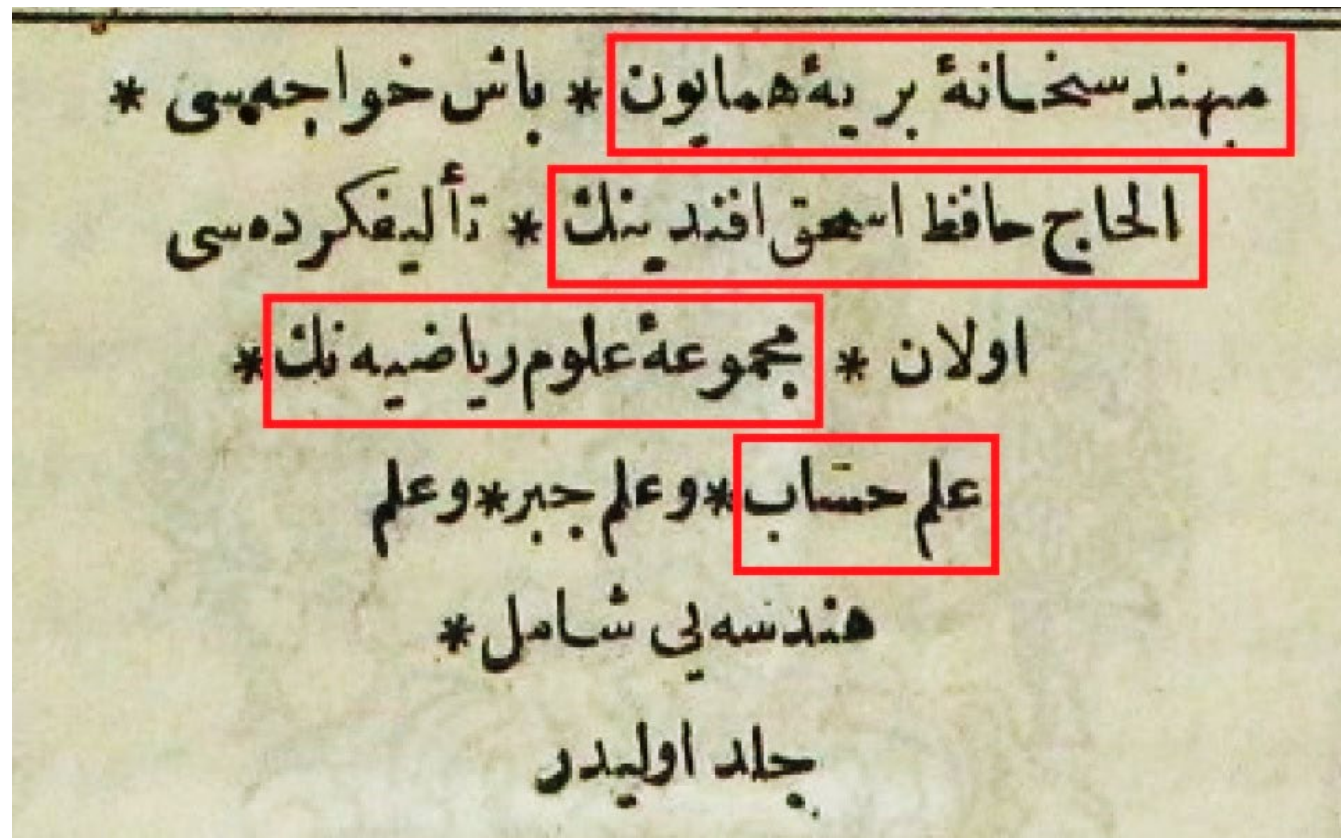
¹1831–1834 (1247–1250 Hijra)

Bulak, Trabzon ²1835–1845 (1251–1261)

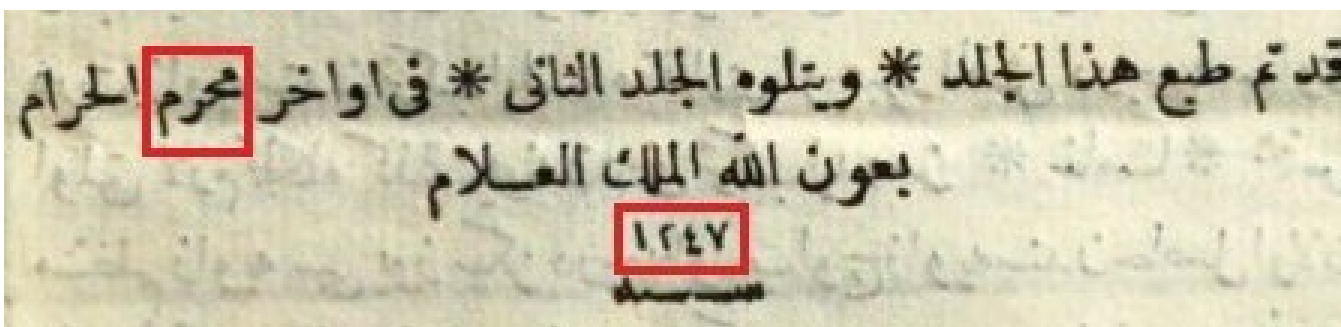
4 vol.; vol. 1: 10+512 p.

D/L: hdl.handle.net; hathitrust.org

L: U of California



Title page (school, author, title and word *arithmetic* marked)



Colophon (p. 512) (month Muharrem and year 1247 marked)

(Ottoman) Turkish

Hoca İshak Efendi

Mecmua-i ulûm-u riyaziye
Istanbul ¹1831–1834

Romanization of the title page
and the colophon

C/V: İhsanoğlu, Ekmeleddin et al.: Osmanlı matematik literatürü tarihi. İstanbul 1999; p. VIII: “maths books first printed in the 1st quarter of the 19th century”; p. 280 Hoca İshak Efendi

S: Abdeljaouad, Mahdi Mohamed: Teaching European mathematics in the Ottoman Empire during the 18th and 19th centuries. In: ZDM Mathematics Education 44 (2012) 483–498

Tezer, Cem: Başhoca İshak Efendi ve Mecmu'a-yi 'ulûm-i riyâziye. Dört Öge-Yıl 2012, 67–106

Mühendishâne-i Berrî-i Hümâyün * baş hocası *
el hac hafız İshak efendinin * te'lif gerdesi
olan * mecmua-i ulûm-u riyaziyyenin *
ilm-i hesab * ve ilm-i cebir * ve ilm-i
hendese-i şamil *
cild-i evvelidir.

[The colophon is in Arabic]

qad tamma ṭab‘un haḍa al-ğildi *
wa-yatlūhu al-ğildu at-ṭani *
fī awāḥiri muḥarrami al-ḥarāmi
bi-‘auni allahi al-maliki al-‘alāmi
1247

(Ottoman) Turkish

Hoca İshak Efendi

Mecmua-i ulûm-u riyaziye

Istanbul ¹1831–1834

Translation of the title page and
the colophon

This is the first book of
the Compendium of Mathematical Sciences,
including (the topics of)
arithmetic (*ilm-i hesab*), algebra (*ilm-i cebir*) and
geometry (*ilm-i hendese-i şamil*)
written by el-Haj Hafiz Ishaq Efendi
who is the chief instructor (*baş hoca*)
in the military engineering academy
(*Mühendishâne-i Berrî-i Hümâyün*).

[The title *el Haj hafiz* mostly shows
that the person became Muslim by choice later in his life.]

It was finished the print of this book
– and it will follow a second book –
at the end of the month of Muharram al-Haram
with the help of Allah, the king of the world
in 1247 (Hijra)

(Ottoman) Turkish

Hoca İshak Efendi

Mecmua-i ulûm-u riyaziye

Istanbul¹ 1831–1834

1st page of the table of contents

Section headings

1 Calculation: *‘İlm-i hesabdan* (p. 5)

1.1 Integers (p. 5)

1.2 Fractions (p. 46)

1.3 Commercial maths, profit-loss, interest (p. 105)

* فهرس جلد اول مجموعه علوم ریاضیه *

باب اول تعداد و ترقیم بیاننده در ۷	علم حسابدن اعداد صحاحی شامل مقاله اولی ۵	المدخل ۲
باب رابع عمل ضربك بیاننده در ۱۸	باب ثالث طرح وتفریقك بیاننده در ۱۳	باب ثانی اعدادك جعی بیاننده در ۱۰
باب اول كسوراتك رد و تحویلی بیاننده در ۵۵	علم حسابدن اعداد كسوری شامل مقاله ثانیه ۴۶	باب خامس تقسیم بیاننده در ۲۹
باب رابع كسوراتك ضربنی بیاننده در ۷۰	باب ثالث كسوراتك طرحی بیاننده در ۶۸	باب ثانی كسوراتك جعی بیاننده در ۶۷
باب سابع اجزای منساویه بی حاوی مقادیر و اوزانك ضربنی بیاننده در ۸۱	باب سادس برمقیاسدن اخذ اولنان مقادیر و اوزانك جمع و طرحلری بیاننده در ۷۷	باب خامس كسوراتك تقسیمی بیاننده در ۷۴
علم حسابدن مجهولات جدیده استخراجنه استعمال اولنان اربعة متناسبه قواعدینی شامل مقاله ثالثه ۱۰۵	باب تاسع كسورات اعشاریه بیاننده در ۹۲	باب ثامن اجزای منساویه بی حاوی مقادیرك تقسیمی بیاننده در ۹۱

(Ottoman) Turkish

Hoca İshak Efendi

Mecmua-i ulûm-u riyaziye
Istanbul ¹1831–1834

Content overview

(according to the table of contents)

For Romanizations and translations of the Ottoman texts, I am very indebted to Dr. Öğr. Üyesi İrem Aslan Seyhan, Bartın University, author of several papers on the history of Ottoman mathematics.

For Romanizations and translations of the Arabic texts, I am very indebted to Prof. Dr. Michael Zapf, Nuremberg Institute of Technology, Germany

Contents of vol. 1

- 1 Calculation (*‘İlm-i hesab*) (p. 5)
 - 1.1 Integers (p. 5)
 - 1.2 Fractions (p. 46)
 - 1.3 Commercial maths, profit-loss, interest (p. 105)
- 2 Algebra (*‘İlm-i cebir*) (p. 136)
 - 2.1 Equations, operations, irrational numbers (p. 136)
 - 2.2 Arithmetic, geometric progressions, logarithms (p. 214)
 - 2.3 First, second and higher order equations (p. 282)
- 3 Geometry (*‘İlm-i hendese*) (p. 378)
 - 3.1 Geometry of lines (p. 378)
 - 3.2 Geometry of the plane (p. 422)
 - 3.3 Geometric proportions (p. 454)
 - 3.4 Geometry of solids (p. 494)

Contents of vol. 2–4

- 4 Conic sections (*Hendese-yi ‘âlâ veya ‘ilm-i mahrûtiyât*)
- 5 Differentiation and integration (*‘İlm-i hesâb-ı tamâmî ve tefâzulî*)
- 6 Natural sciences (*Usûl-i hikmet-i tabi’î*)
- 7 Mechanics (*‘İlm-i cerr-i aksal*)
- 8 Optics (*‘İlm-i menâzır*)
- 9 Heat and electricity of the objects (*‘İlm-i bahs-i ecsâm-ı nâriyye ve elektrik*)
- 10 Spherical triangles (*Usûl-i müsellesât-ı kürevîye*)
- 11 Astronomy (*‘İlm-i hey‘et*)
- 12 Special discussions about natural sciences (*‘İlm-i hikmet-i tabi‘iyye-yi mahsus*)

Other Turkic languages

Arithmetic books in these languages are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

WorldCat records the following years for the earliest arithmetic books in these languages:

[Azerbaijani](#) 1929 (OCLC 1389 0312)

[Kazakh](#) 1930 (OCLC 4594 6370)

[Kirghiz](#) 1925 (OCLC 2034 2165, 2051 7139)

[Tatar](#) 1928 (OCLC 8432 5892)

[Uighur](#) 1981 (OCLC 5153 9315)

No records for Turkmen and Uzbek

Reference: WorldCat

Date: May 2021

Mongolian

Aleksandr Fëdorovič Popov

1815–1878/79 (kazan.ws/eng/)

Studied mathematics and physics in Kazan

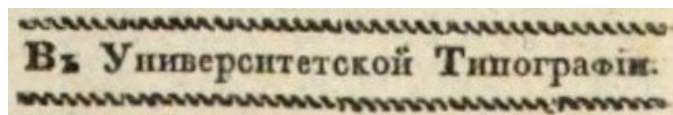
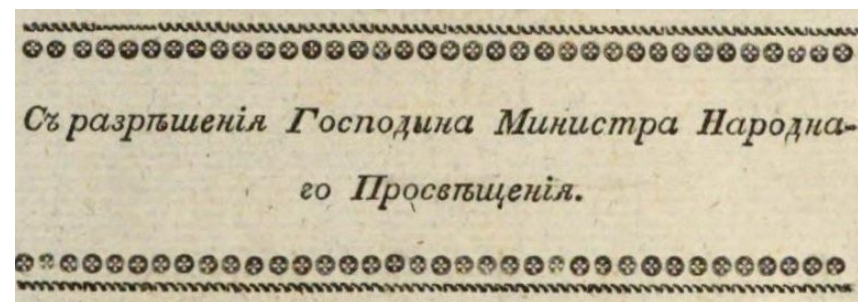
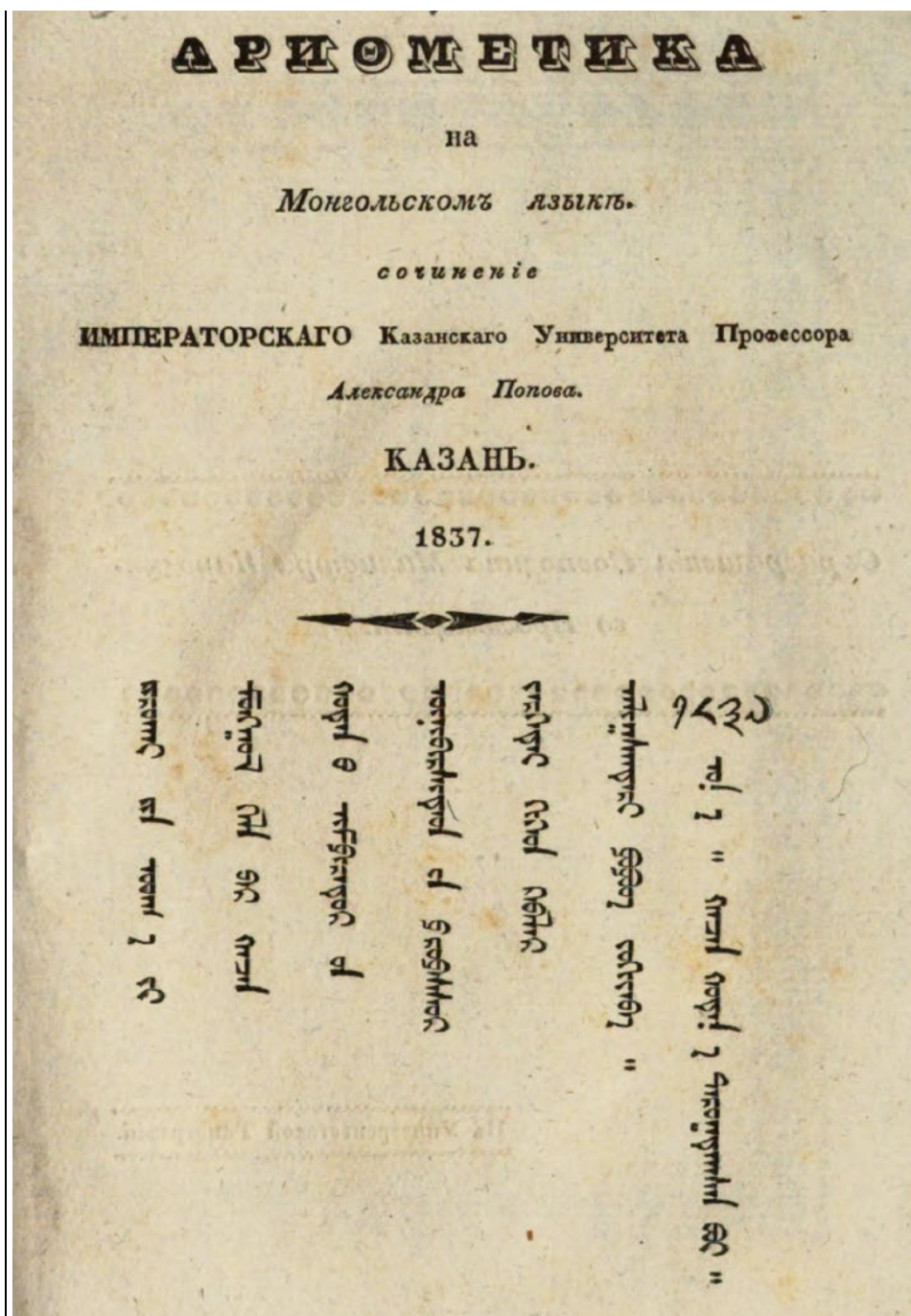
1846 Successor of Lobačevskij in Kazan

Arifmetika na Mongol'skom' âzykë. Kazan: University Printing House 1837

221 p.

D: Hathi Trust

L: London BL (OCLC 6674 2018)



Mongolian

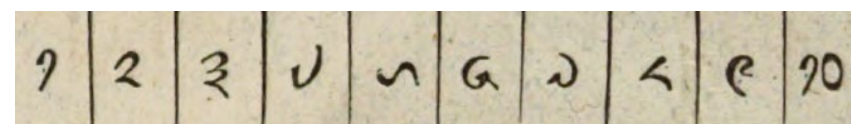
Aleksandr Fëdorovič Popov

*Arifmetika na Mongol'skom''
âzykě*

Kazan: University Printing
House 1837

Romanization
of the Russian title page

Digits:



*Arifmetika
na
Mongol'skom'' âzykě.
sočinenie
Imperatorskago Kazanskago Universiteta
Professora
Aleksandra Popova.
Kazan'.
1837.*

*S'' razprěšenîâ Gospodyna Ministra Narodna-
go Prosvěšenîâ.*

V'' Universitetskoj Tipografii.

Mongolian

Aleksandr Fëdorovič Popov

Arifmetika na Mongol'skom
âzykě

Kazan: University Printing
House 1837

Translation
of the Russian title page

Content overview:

Four species for integers and
common fractions

Arithmetic
in
the Mongolian language.

Work of
Alexander Popov,
Professor
at the Imperial University of Kazan.
Kazan
1837

With the permission of Mr. Minister of National
Education.

In the University Printing House

Kannada / Kanarese

Benjamin Holt Rice

b. 1814 London

d. 1887 Bangalore

1836 London Missionary Society

Canarese scholar; published also

Elements in geography in Canarese

Ganita vidyavu –

Canarese arithmetic

Bangalore / Bengaluru [state

Karnataka]: Wesleyan

[Methodist] Mission Press 1846

97 p.

D: Tübingen U (OCLC 1077 761705)

L: Tübingen U (OCLC 3112 97262)

C/V: WorldCat



(Lovett, Richard: History of the London Missionary Society 1795–1895. London 1899, p. 107–113;

Rice, Edward P.:

Benjamin Rice or Fifty

years in the Master's service. London 1888;

English Wikipedia – Rice Memorial Church, Bangalore)

CANARESE ARITHMETIC.

PART I. (No. 1.)

BY THE REV. B. RICE.

ಕಣಿತ ವಿದ್ಯೆ.

೧. ಭಾಗ. (೧.)

ಶ್ರೀ ಎಸ್. ಎಂ. ಎಂ. ಸಾಹೇಬ್ ಪ್ರೆಸ್.

BANGALORE:

PRINTED FOR THE SCHOOL BOOK SOCIETY;

AT THE WESLEYAN MISSION PRESS.

1846.

Kannada / Kanarese

Benjamin Holt Rice

Ganita vidyavu –

Canarese arithmetic

Bangalore: Wesleyan Mission
Press 1846

Transcription of the title page

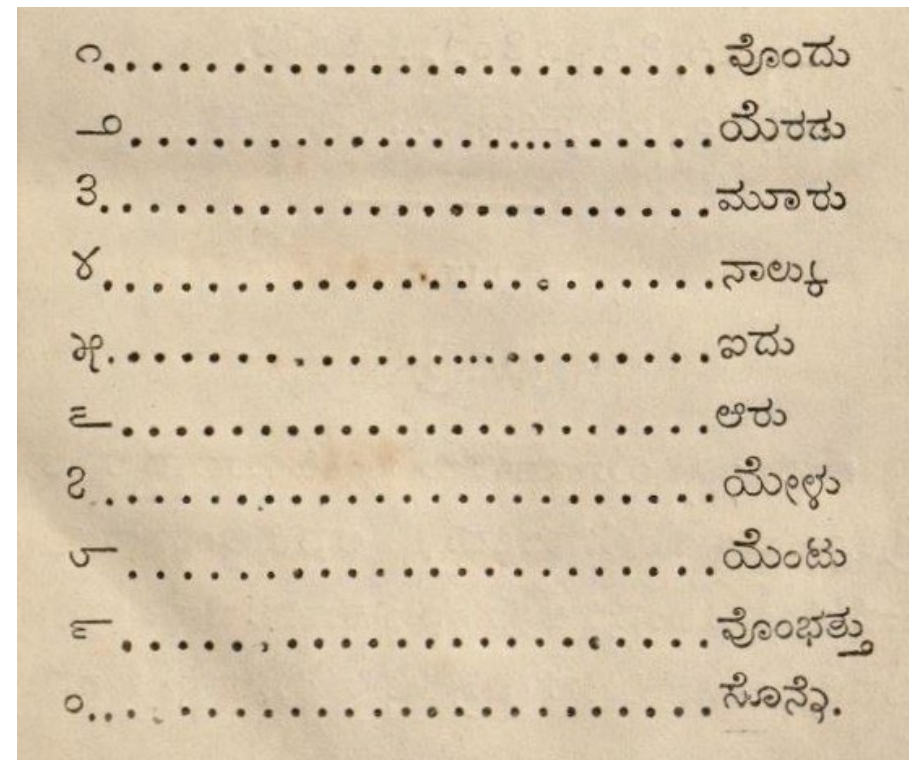
Digits

Canarese arithmetic.

Part I. (No. 1.)

By the Rev. B. Rice.

Bangalore: printed for the School Book Society;
at the Wesleyan Mission Press.
1846.



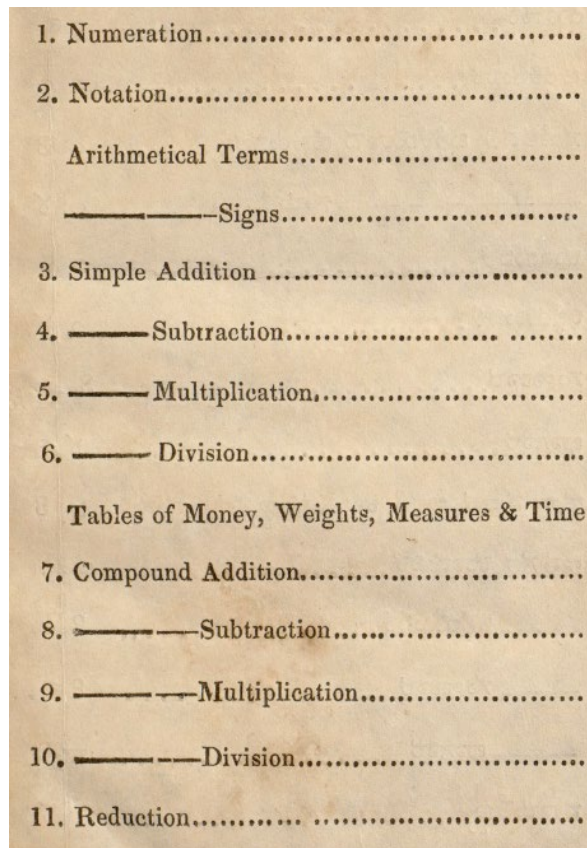
Kannada / Kanarese

Benjamin Holt Rice

Canarese arithmetic 1846

Content overview

(according to the table of contents)



1.	Numeration.....
2.	Notation.....
	Arithmetical Terms.....
	-----Signs.....
3.	Simple Addition
4.	-----Subtraction.....
5.	-----Multiplication.....
6.	-----Division.....
	Tables of Money, Weights, Measures & Time
7.	Compound Addition.....
8.	-----Subtraction.....
9.	-----Multiplication.....
10.	-----Division.....
11.	Reduction.....

- 1 Numeration
- 2 Notation
 - Arithmetical Terms
 - Arithmetical Signs
- 3 Simple Addition
- 4 Simple Subtraction
- 5 Simple Multiplication
- 6 Simple Division
 - Tables of Money, Weights, Measures & Time
- 7 Compound Addition [denominate numbers]
- 8 Compound Subtraction
- 9 Compound Multiplication
- 10 Compound Division
- 11 Reduction

Kannada Supplement

John William Colenso

*Colenso's Arithmetic in
Canarese: Translated and
adapted to the vernacular
schools of the Madras
Presidency*

**Mangalore / Mangaluru [state
Karnataka] 1862**

? p.

D/L: – (OCLC 6044 84916)

C/V: WorldCat

John William Colenso

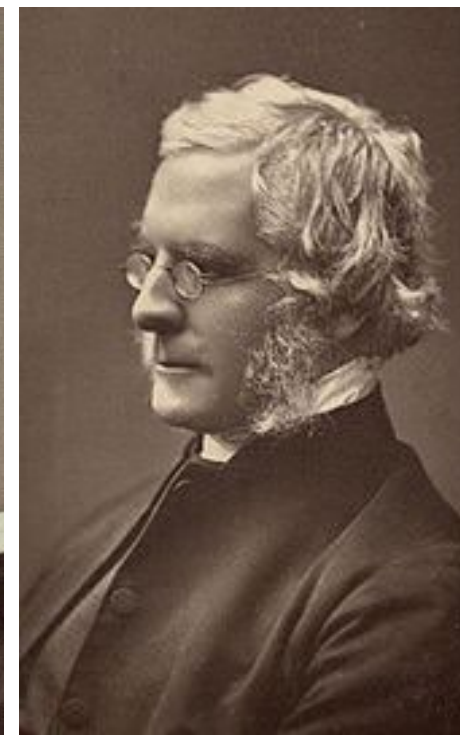
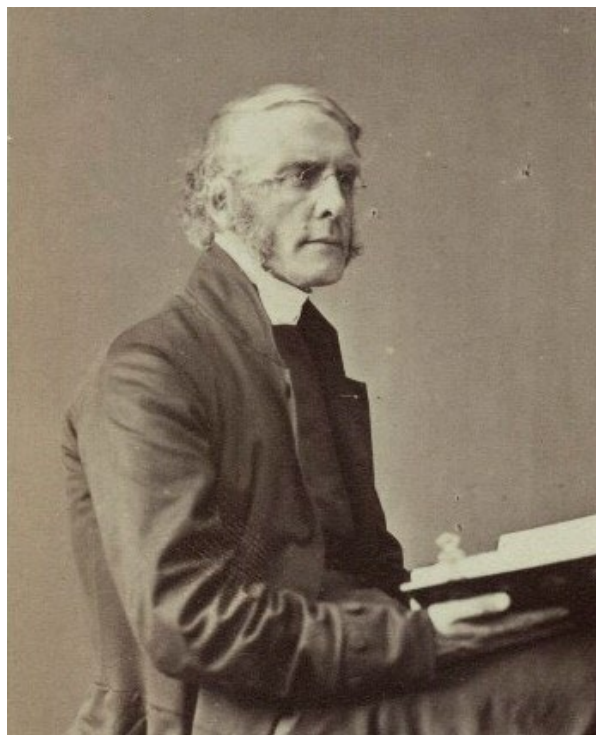
b. 1814 St Austell, Cornwall

d. 1883 Durban, Natal Colony

Cornish cleric and mathematician, since 1853 the first bishop of Natal (South Africa), scholar of the Zulu language

Books on arithmetic, algebra, geometry and trigonometry from 1846 on (Cambridge 1841 (OCLC 5577 2313), later London: Longman & Co.)

(English Wikipedia, WorldCat)



Malayalam

John William Colenso

[see Kannada]

Colenso's Arithmetic [in Malayalam]: adapted to the use of schools in the Madras Presidency by order of the Director of Public Instruction Mangalore / Mangaluru [state Karnataka]: Plebst & Stolz 1866

243 p.

D: –

L: Strasbourg BNU (OCLC 4941 25108),
– (OCLC 8365 30390)

C/V: WorldCat

Tamil

Anonym

An elementary arithmetic
Jaffna [Sri Lanka] 1849

? p.
D: –
L: Yale U (OCLC 4467 3062)

*Pallikkutankalir payirruvikka
ventiya Tamilk kanakkup
puttakam*
Madras / Chennai: Christian
Knowledge Society's Press 1849

51 p.
D: –
L: London BL (OCLC 5255 6285)
C/V: WorldCat

John William Colenso

[see Kannada]

Aṅka kaṇitac curukkam [Tamil translation of John
William Colenso's Arithmetic]
Madras: Public Instruction Press 1858–

Part I (105 p.), Part II *Vulgar and decimal fractions* (226 p.)
D/L: – (OCLC 5255 6080–6082)
C/V: WorldCat

Telugu

Davulury Venkata Subba
Rao / Row

Problems in Arithmetic

Madras / Chennai:

Graves Cookson & Co. 1880

41 p.

D/L: – (OCLC 8084 1215)

C/V: WorldCat

John William Colenso

[see Kannada]

Colenso's Arithmetic –

Kolensōgāri aṅkagaṇitamū

Madras / Chennai:

Kalaratnakar Press ¹⁰1884

vol. 1–2

D/L: – (OCLC 7740 7676)

C/V: WorldCat

Thai

Wāen Dai

Tamrā khīt lēk lēm ton:
rīak wā tamrā čhōt talāt
samdēng hai rū nai withī thang
with-būak lā lop khūn hān
[Phranakhōn?] ¹1873, ²1892
(Phra Nakhon: central district of Bangkok)

74 p.

D: omnia.ie (U of Michigan);

catalog.hathitrust.org/Record/000397533

L: U of Michigan, William J. Gedney
Collection (OCLC 2349 0954)

C/V: WorldCat;

London BL, Asian and African studies
blog, contains the information that the
earliest Thai books were printed in 1835

ตำราชีวิต เล่ม ต้น

เรียก ว่า ตำรา โทษย์ ตลาด

สำแดง ให้ ใน วิธี ทั้ง วิธี บวก แด ดบ

คุณ หาร
Wāen Dai

Tamra khit lek lem ton

หมอบ แวนไตก็ ไต่แต่ง หนังสือ เล่ม นี้

เมื่อ คริสต์ศักราช ๑๘๗๓

2nd. Edition 2000 Copies.

เล่ม นี้ ได้พิมพ์ ครั้งที่ สอง

คริสต์ศักราช

๑๘๙๒

Thai

Wān Dai

Tamrā khīt lēk lēm ton

[Phranakhōn?] ¹1873, ²1892

Translation of the title page

Beginners' book for calculation:
textbook in general arithmetic in Thailand.
Practice in plus, minus,
multiply, divide

Doctor Wān Dai composed this book
in the year 1873

2nd edition 2000 copies

This book was published a second time
in the year
1892

For help with translations, I am indebted
to NL of Thailand nlt.go.th.

Thai

Wān Dai

Tamrā khīt lēk lēm ton

[Phranakhōn?] ¹1873, ²1892

Content overview:

designation of numbers and
the four basic arithmetic operations
without operation signs

Digits:

๑ ๒ ๓ ๔ ๕

๖ ๗ ๘ ๙ ๐

๙ กับ ๐ เป็น ๙

$$9 + 0 = 9$$

๗ กับ ๗ เหลือ ๐

๗ ๗ ๘ ๗ ๑

$$-7 + 7 = 0; \quad -7 + 8 = 1$$

๖ หน ๑ เป็น ๖

$$6 \cdot 1 = 6$$

๕ หาว ๘๒๔ ได้ ๑๖๔—๔

$$: 5 \cdot 824 = 164 \text{ remainder } 4$$

Other Kra-Dai languages

Arithmetic books in these languages are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

WorldCat records the following years for the earliest arithmetic books in these languages:

[Lao](#) 1983 (OCLC 1621 05653)

Reference: WorldCat

Date: May 2021

Austroasiatic / Mon-Khmer languages

Arithmetic books in these languages are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

WorldCat records the following years for the earliest arithmetic books in these languages:

Khmer 1980 (OCLC 2172 58749, 6408 6598)
for maths in general 1971 (OCLC 1652 21228)

Vietnamese before 1956 (OCLC 6391 3854)
[École Française d'Extrême-Orient]

For maths in general 1909 (OCLC 6322 6767)

For more details cf. Tr'ân, Nghia; Gros, François (ed.): *Catalogue des livres en hán nôm*. 3 vols. Hanoi: Editions Sciences Sociales 1993 (Publications de l'Institut Hán Nôm et de l'École Française d'Extrême-Orient).

For Vietnamese mathematical manuscripts cf.: Volkov, Alexei: *An Early Japanese Work on Chinese Mathematics in Vietnam: Yoshio Mikami's Study of the Vietnamese Mathematical Treatise Chi Minh Toan Phap*. In: Knobloch, Eberhard et al. (ed.): *Seki, founder of modern mathematics in Japan*. Berlin 2015, p. 149–172.

Reference: WorldCat

Date: May 2021

Malagasy

London Missionary Society

*Faninsana: fampianariny ny
fombany ny isa*

[Arithmetic (means of
numbering): instructions
on the nature of numbers]

Antananarivo: Press of the
London Missionary Society
1836

52 p.

D: –

L: Auckland Libraries
(OCLC 1558 32555)

C/V: WorldCat

Malay

Thomas Beighton

b. 1790 Ednaston

d. 1844 Penang

London Missionary Society

Arismetik – Ilmu ḥisāb –

Science of arithmetic

Malacca: Mission Press 1824

68 p.

D: –

L: London BL Oriental and India Office
Collections (14620.b.13(5); lacks title
page)

London SOAS (School of African and
Oriental Studies) University – including
the Congregational Council for World
Mission Archive CCWM (D6/29)

V/S: Proudfoot, Ian: Early Malay printed
books. Kuala Lumpur: University of
Malaya 1993, p. 130, 266, 686, 810, 853

Indonesian

Anonym

*Kitab Malajoe akan mengadjar
permoelaän deri pada ilmoe
hitongan*

*[Kitab Melayu akan mengajar
permulaan dari pada ilmu*

*hitungan – The Malay book
will teach you the basics of
the science of arithmetic]*

*Batavia [Djakarta]: [publisher
not identified] 1834*

53 p.

D: –

L: Ithaca Cornell U (OCLC 6362 8959)

C/V: WorldCat

Indonesian is a standard variety of Malay

Sundanese

Anonym

*Kitab (elmu angka sareng)
elmu itungan*

[Book (of the science of
numbers and) of the science
of arithmetic]

Batavia [Djakarta]: Lands-
Drukkerij 1853

73 p.

D: –

L: London BL (OCLC 4999 61324),
Monash U (OCLC 9205 05169)

C/V: WorldCat

Javanese

Anonym

Uubuka ning kawruhan litung

[Book on the science of
arithmetic]

Batavia [Djakarta]: Lands-
Drukkerij 1852

122 p.

D: –

L: Sydney StateL of New South Wales
(OCLC 8174 82431)

C/V: WorldCat

Batak (Angkola, Mandailing)

W. F. [Friedrich Wilhelm] Betz

b. 1832

d. 1881

1859– Missionary (Ermelo Missionary Society) in the Batak area together with Gerrit van Asselt (Schmidt-Brücken, Daniel: Koloniallinguistik 2015;

according to Warneck, Johannes:

50 Jahre Batakmission 1911, p. 17–20)

Belongs perhaps to the family of Gerardus

Henri Betz (1816–1868), 1866 co-editor of

Tijdschrift voor Nederlandsch-Indië

(Nieuw Nederl. Biograf. Woordenboek)

Pamoekaän ni parbinotoän ni

etongani ima sada boekoe

etongan toe dakdanak di

bagasan hata Ankola

Batavia [Djakarta]:

Lands-Drukkerij 1871

Based on the 2nd print
of *Ilmoe hitoengan*
[1st print Batavia 1861, 51 p.
(OCLC 5684 9232);
2nd print Batavia 1863, 51 p.
(OCLC 8016 45558);

both in Malay]

by

Justus Rinia Petrus François
Gonggrijp

b. 1827 Sinderen, Netherlands

d. 1909 Wiesbaden, Germany

1849–1864 teacher in the Dutch East
Indies (Nederlandsch Zendeling
Genootschap)

1864– teacher for Malay and
Sundanese at the Indische
Instelling in Delft

(Dutch Wikipedia, Nieuw
Nederlandsch Biografisch
Woordenboek)



Gonggrijp

Batak (Angkola, Mandailing)

W. F. [Friedrich Wilhelm] Betz

J. R. P. F. Gonggrijp

*Pamoekaän ni parbinotoän ni
etongani ima sada boekoe
etongan toe dakdanak di
bagasan hata Ankola*

Batavia [Djakarta]:

Lands-Drukkerij 1871

48 p.

D: Google, Hathi Trust

L: Madrid U, Ithaca Cornell U

(OCLC 8802 27918)

C/V: WorldCat

PAMOEKAÄN

NI PARBINOTOÄN NI ETONGANI

IMA SADA

BOEKOE ETONGAN

TOE DAKDANAK DI BAGASAN HATA ANKOLA.

W. F. BETZ.

(Rekenboek in het Ankolaasch dialect, bewerkt naar den
2den druk van GONGGRIJP'S Ilmoe Hitoengan.)



BATAVIA,
LANDS-DRUKKERIJ.

1871.

Batak (Angkola, Mandailing)

W. F. [Friedrich Wilhelm] Betz

J. R. P. F. Gonggrijp

*Pamoekaän ni parbinotoän ni
etongani ima sada boekoe*

etongan toe dakdanak di

bagasan hata Ankola

Batavia [Djakarta]:

Lands-Drukkerij 1871

Transcription of the title page

*Pamoekaän
ni parbinotoän ni etongani
ima sada
boekoe etongan
toe dakdanak di bagasan hata Ankola.
W. F. Betz.*

*(Rekenboek in het Ankolaasch dialect, bewerkt naar den
2den druk van [J. R. P. J.] Gonggrijp's Ilmoe Hitoengan)*

*Batavia,
Lands-Drukkerij.
1871.*

Batak (Angkola, Mandailing)

W. F. [Friedrich Wilhelm] Betz

J. R. P. F. Gonggrijp

*Pamoekaän ni parbinotoän ni
etongani ima sada boekoe*

etongan toe dakdanak di

bagasan hata Ankola

Batavia [Djakarta]:

Lands-Drukkerij 1871

Translation of the title page

Content overview:

Four species for integers and
denominate numbers

For help with translations, I am indebted
to NL of Indonesia.

*Introduction
to arithmetic,
namely
an arithmetic book
for children in the Angkola language.*

W. F. Betz

*(Arithmetic book in the Angkola dialect, arranged
according to the 2nd print of [J. R. P. J.] Gonggrijp's
Ilmoe Hitoengan)*

Batavia [Djakarta]

National Printing House

1871

Tagalog (Filipino)

Rufino Baltazar Hernández

From Santa Cruz, prov. La Laguna, Luzón

*Aritmética redactada en tagalo
y castellano*

Manila: Imprenta del Colegio
de Santo Tomás 1868

Tagalog and Spanish in parallel columns

224 p.

D: Google books

L: Madrid BN, Madison U Wisconsin
(OCLC 4337 18883), Chicago
Newberry L (OCLC 8785 66810)



Tagalog

Rufino Baltazar Hernández

*Aritmética redactada en tagalo
y castellano*

Manila: Imprenta del Colegio
de Santo Tomás 1868

Transcription of the title page

*Aritmética
redactada en
tagalo y castellano
por*

*D. Rufino Baltazar Hernández
Natural y vecino del pueblo y cabecera de Sta.
Cruz de la provincia de la Laguna.*

*Con la aprobación de la Junta de Censura y
licencia del Superior Gobierno.*

Primera edición.

*Manila:
Imprenta del Colegio de Santo Tomás,
a cargo de D. B. Siló.
1868.*

Tagalog

Rufino Baltazar Hernández

*Aritmética redactada en tagalo
y castellano*

Manila: Imprenta del Colegio
de Santo Tomás 1868

Translation of the title page

*Arithmetic
composed in
Tagalog and Castilian
by*

*Mr. Rufino Baltazar Hernández
native and inhabitant of the town and capital Santa
Cruz in the province of La Laguna [isle of Luzón].*

*With the approval of the Censorship Board and
the license of the Superior Government.*

First edition

*Manila:
Printing house of the College of St. Thomas,
at the expense of Mr. B. Siló
1868*

Tagalog

Rufino Baltazar Hernández

Aritmética redactada en tagalo y castellano

Manila: Imprenta del Colegio de Santo Tomás 1868

Example page (about the digits) showing the dialog between teacher and pupil in Tagalog and Spanish in two columns

dia sa halaga ó saring bilang na tagloy nang isa, l, isa?
M: Ang lalong maluanog at mading icá-quilala, t, icá-talastas nang can-caninang bilang, sampuó nang cayari-an nilang isináng-sangap sa ibang hógay at parang ibig pag-sangapan, ay bahang mult, t, mult itong sasonod.

dad, ó valor que tienen cada uno?
M: Leer tantas veces, ó lo que es lo mismo, saber de memoria la tabla siguiente.

CARDINALES.			ORDINALES.		
Sa guarismo.	Sa letra sa castil.	Sa letra sa tagalog.	Sa guarismo.	Sa letra sa castil.	Sa letra sa tagalog.
1	Uno	Isá	1.º 1.º 1.º	Primº primº primº	Cúona-onáhan
2	Dos	Dalauá	2.º .. 2.º	Segundo. segunda	Icalauá.
3	Tres	Tatló	3.º .. 3.º	Tercero. tercera	Icattó.
4	Cuatro	Apat	4.º .. 4.º	Cuarto. . cuarta	Icápat.
5	Cinco	Limá	5.º .. 5.º	Quinto. . quinta	Icalimá.
6	Seis	Apim	6.º .. 6.º	Sesto. . . sexta	Icánim.
7	Siete	Pitó	7.º .. 7.º	Séptimo. séptima	Icápitó.
8	Ocho	Caló	8.º .. 8.º	Octavo. . octava	Icácaló.
9	Nueve	Siyam	9.º .. 9.º	Nono. . . nona	Icásiyam.
0	Cero	Ualá	0. 0	Cero. . .	Ualá.

ANG ICALAGA.
Ang paghása nang tucoy sa munti, t, malaquing halaga ó cantidad
M: Ná-quiquilala mo-ná bago Eduardo ang hausang nang sampuóng guarismo, bilang ó halagaang tagláy nang haus, t, isa?
D: Oo, Maestro, al iná-acalá-cong ualá-nong pagca-limol, sa uicáman ni sa gauá ang boong cayari-an nla.

LO SEGUNDO.
Modo de leer mayor y menor cantidad.
M: Estás enterado yá Eduardo de la propiedad de cada uno de los diez guarismos expresados?
D: Sí, Maestro, y erco nunca mo olvidaré, tanto en aral como escrito de sus circunstancias.

Tagalog

Rufino Baltazar Hernández

*Aritmética redactada en tagalo
y castellano*

Manila: Imprenta del Colegio
de Santo Tomás 1868

Content overview

(according to the table of contents)

Weights and measures

Four species for integers

Four species for fractions

Four species for mixed numbers

Four species for denominate numbers

Arithmetic and geometric progressions

Regula de tri

Simple interest calculation

Regula quinque, regula septem

Regula societatis simplex and temporum

Regula de tri inversa, quinque inversa, septem inversa

BarTERS

Regula falsi

Regula alligationis

Interest calculations, compound interest

Powers; square and cube roots

Halving of denominate numbers

Decimal fractions

Marshallese
(Bislama, Melanesian creole)

Edward Topping Doane,
Hezekiah Aea

Buk in bwinbwin
[Book of counting] –
Marshall Islands primary
arithmetic

Ebon [Marshall Islands]:
Mission Press 1862;
Honolulu 1863

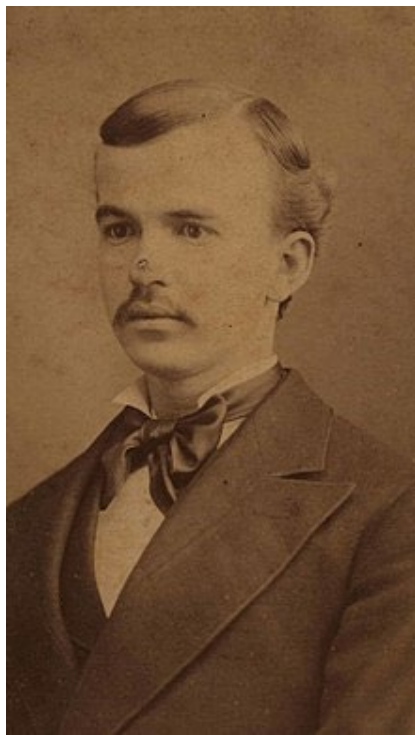
Further editions until 1900

24 p.

D: Auckland Council L

L: Hamburg SUB, Cambridge Harvard U,
Manoa U Hawaii (OCLC 1262 049672,
6636 52209, 8300 5584)

C/V: WorldCat



Edward Topping Doane

b. 1820 Tompkinsville, Staten Island

d. 1890 Honolulu

Protestant missionary, American Board of
Commissioners for Foreign Missions

Married to Clara Strong Doane

Numerous publications:

religion, linguistics, geography
(English Wikipedia)

Hezekiah Aea

Hawaiian missionary

working in the Marshall Islands

b. 1838 Puna, Hawaii

d. 1872 Hawaii

Married to Debora Kimiala

(Anderson, Gerald H: Biographical Dictionary
of Christian Missions 1999;

Hawaiian Historical Society, Annual Report
1947)

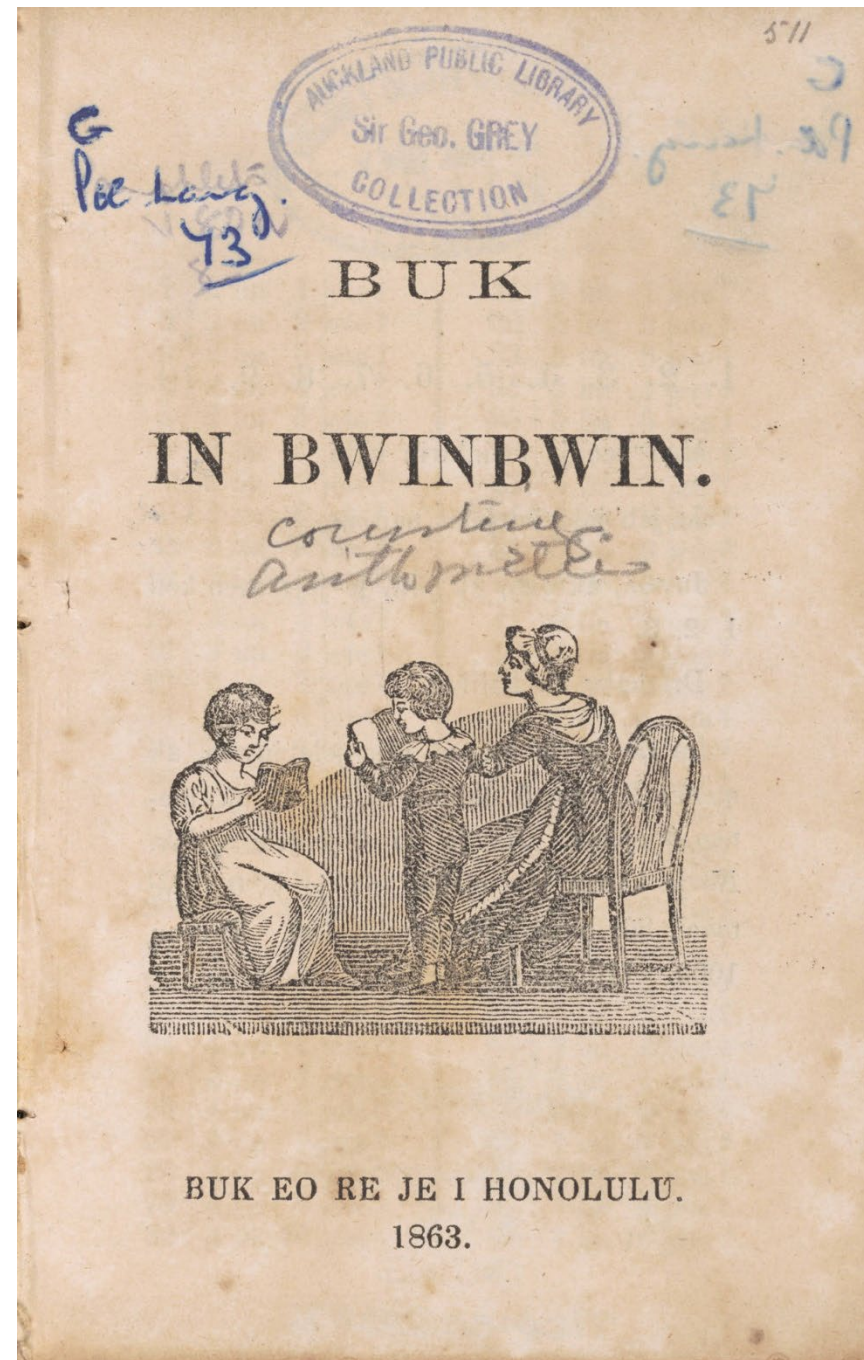
Marshallese
(Bislama, Melanesian creole)

Edward Topping Doane,
Hezekiah Aea

Buk in bwinbwin
[Book of counting] –
*Marshall Islands primary
arithmetic*

Ebon [Marshall Islands]:
Mission Press 1862;
Honolulu 1863

Title page



Gilbertese / Kiribati

Minerva Clarissa (Clara) Brewster Bingham

b. 1834 Northampton, Mass.

d. 1903 Honolulu

Married to Hiram Bingham II (1831–1908)

Publications: Bible texts, hymns,
geography in Gilbertese

Te boki n rei te ware-bai

[A primer in mathematics] –

Gilbert Islands arithmetic

Honolulu: Boreti Uean Awaii –
Hawaiian Board of Missions 1871

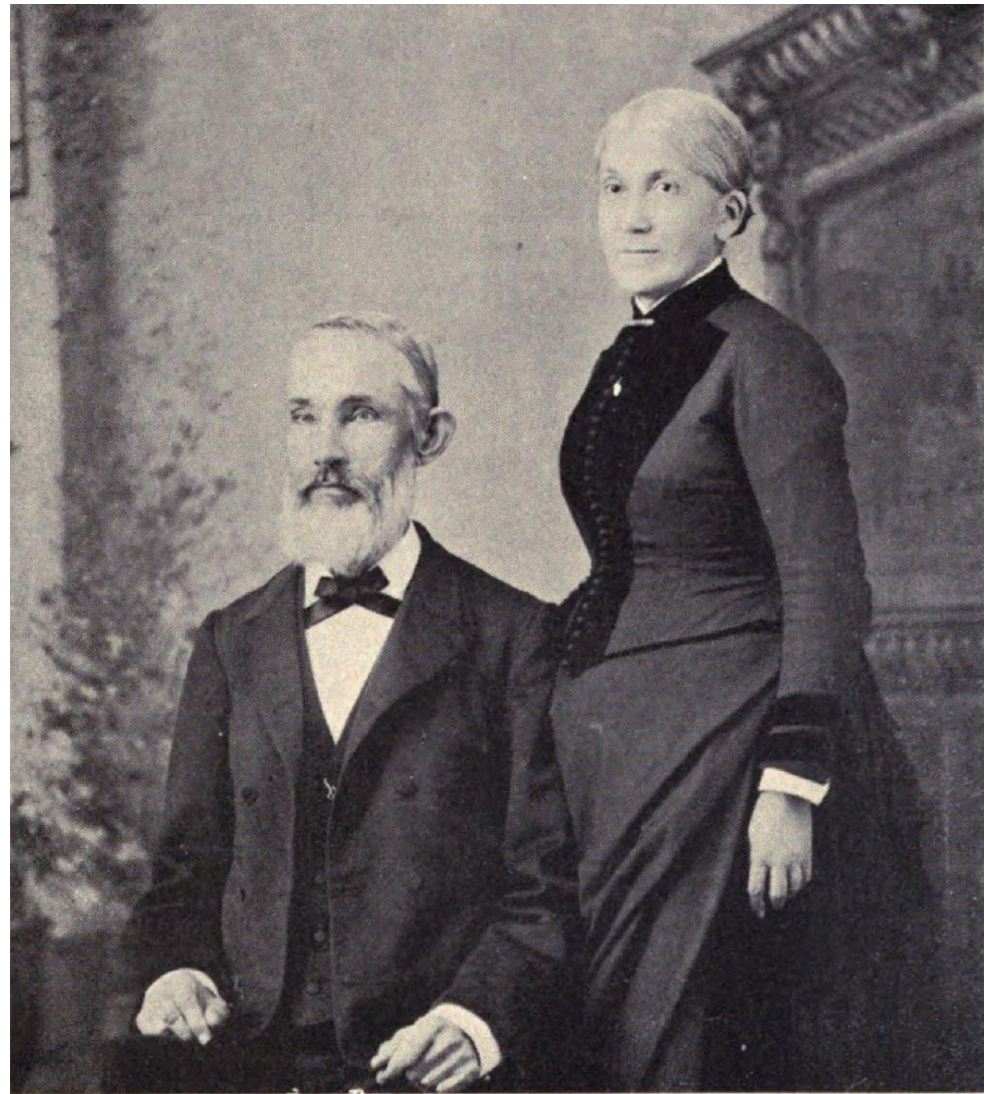
Further editions until 1903

64 p.

D: –

L: Manoa U Hawaii, Auckland Museum L
(OCLC 6634 00923)

C/V: WorldCat



Hiram Bingham II

Protestant missionary to Hawaii and the Gilbert Islands

Publications: the Bible, hymns, dictionaries in Kiribati

(English Wikipedia: Hiram Bingham II; L of Congress Authority file)

Fijian

Anonym

*A vu ni vika vakaviti, sa tabaki
me yaga e na veiwili-vola*
[The origin of the Fijian
number system –
a literacy guide]
[Levuka, Fiji] 1865?

12 p.

D: –

L: Auckland L
(OCLC 9183 81953)

C/V: WorldCat

For the translation of the Polynesian titles,
I am very indebted to Dr. Apo Aporosa,
University of Waikato, Hamilton, New
Zealand, and Polynesian colleagues of his.

Anonym

Ai vola ni fika
[A book of numbers]
Newtown [Fiji]: T. D. Hartwell 1871

It is not clear whether the book is about the Western number system
or the Taukei (indigenous Fijian) number system.

24 or 78 p.

D: –

L: Berlin Staatliche Museen, Canberra NL of Australia, Auckland L
(OCLC 1566 71571, 1566 71557, 8373 06154)

C/V: WorldCat

Samoan

Martin Dyson

b. 1830 Yorkshire

d. 1894

Wesleyan Methodist Missionary:

(competition with London Miss. Society)

1854 Tonga, 1857 Samoa, 1864 Tonga

Married to Sarah Anne Dyson

(Reeson, Margaret: Pacific Missionary

George Brown 2013, jstor.org;

Colwell, James B: A century in the Pacific)

'O le ulua'i tusifika mo ā'oga

[The first mathematics book
for school]

Sydney: Samuel Ella 1864

48 p.

D: –

L: NL New Zealand (OCLC 9467 30729);

Canberra NL Australia (OCLC 1663 14612)

C/V: WorldCat

Further sources about Martin Dyson:

The papers of Martin Dyson, containing autobiographic notes
(OCLC 6631 58012)

Methodist Hist. Society of Victoria: Heritage (periodical), No. 18,
October 1966: Ministerial index: the Methodist book of chronicles /
Rev. Robert Jackson p3.Martin Dyson (including portrait)

Other publications by Martin Dyson:

My story of Samoan Methodism 1875

Australian / Australasian Methodist ministerial general index 1889,
41908

WorldCat mentions an earlier anonymous edition:

O le aritemetika o le tusi lea e aoao ai i numela
[Arithmetic: a book teaching numbers]

Samoa: Mission Press 1843

43 p.

L: Auckland L (OCLC 2710 47165)

Tongan

Thomas West

Wesleyan Methodist Reverend

Among the constructors of the chapel in
Feltwell, Norfolk, in 1811

Publication: *Ten years in south-central
Polynesia* 1865

*Koe tohi lau fika faka-Toga, ke fai
i he gaahi lautohi i Toga katoa*

[The book of Tongan numbers
to use in all places of learning
in Tonga]

London: Sosaiete Misionale
faka-Ueseliana (Wesleyan
Mission Society) 1857

47 p.

D: –

L: Canberra NL Australia, Auckland L (OCLC 4519 98964)

C/V: WorldCat

Tahitian

John Davies

Aritemeti: oia te haapao raa o te taio e te faa au raa o te numera

[Arithmetic: That is to say how to count and to do right with numbers]

Huahine: Mission Press
(William Ellis) ¹1819

12 p.

D: –

L: Berkeley U, Canberra NL Australia
(OCLC 1555 7203)

C/V: WorldCat;

Harding, George L.: The Tahitian imprints of the London Missionary Society, 1810–1834, no. 78 (library comment OCLC 1551 6580)

b. 1772 Pendugwm, Montgomeryshire, Wales

d. 1855 Papara, Tahiti

Methodist missionary (London Missionary Society) and school teacher

Publications: Tahitian dictionary and grammar, translations of the Bible and catechisms, History of the Tahitian Mission (English Wikipedia; Dictionary of Welsh Biography)

Tahitian

John Davies

Aritemeti: oia te haapao raa o te taio e te faa au raa o te numera

[Arithmetic: That is to say how to count and to do right with numbers]

Tahiti: Windward Mission Press
²1822

16 p.

D: Google (OCLC 1228 823657)

L: London BL (OCLC 7710 77983);

Berkeley U, Canberra NL Australia
(OCLC 1551 6580)

C/V: WorldCat;

Harding, George L.: The Tahitian imprints of the London Missionary Society, 1810–1834, no. 78 (library comment)

ARITEMETI:

OIA TE

HAAPAO RAA OTETAIO

E TE

FAA AU RAA O TE NUMERA.

A revised reprint of the arithmetic prepared by John Davies and first printed at Huahine in 1819; cf. Harding, George L.: Tahitian imprints of the London Missionary Society, no. 24 (library comment OCLC 1551 6580)

Marquesan

Anonym

Patua e te papa Hawaii

[Written by the Hawaii group]

*He tetau toii. Oia te mea e
hakao atu ai i na toii, ma na ui
hakao omua o te aritemetita*

[For the children. Here's what
to teach the children, we must
first teach arithmetic]

Honolulu [Hawaii]:

Paiia e H. M. Wini 1869

46 p.

D: –

L: Cambridge Harvard U, Washington

L of Congress, Manoa U Hawaii

(OCLC 1099 773256)

C/V: WorldCat

Hawaiian

Artemas Bishop

b. 1795 Pompey NY

d. 1872 Honolulu

Presbyterian reverend (findagrave.com)

Father of Sereno Edwards Bishop
(1827–1909; English Wikipedia)

Aritemetika: oi aka hoike helu

[Arithmetic: That is the
explanation of numbers]

[Honolulu?]: [Mission Press]

1828

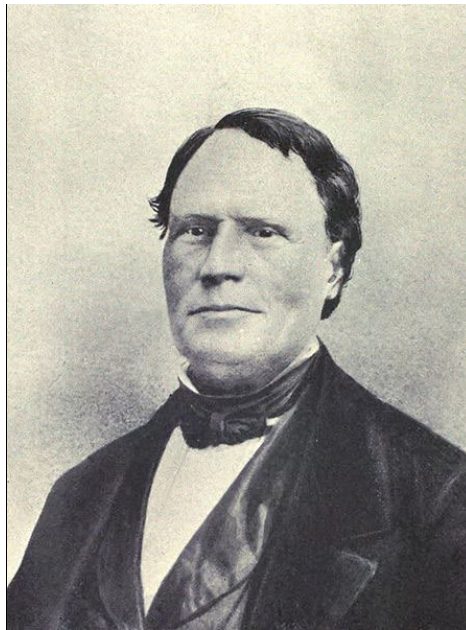
Later and larger editions in 1838, 1842,
1845, 1873, 1875 together with [Warren
Colburn](#)

8 p.

D: –

L: Manoa U Hawaii (OCLC 1966 5191)

C/V: WorldCat



Other Austronesian languages

Arithmetic books in these languages are not examined as none of them was published within the temporal focus of this catalog of brief descriptions.

WorldCat records the following year for the earliest arithmetic textbooks in these languages:

[Maori 2002](#) (OCLC 9866 01138)

Reference: WorldCat

Date: May 2021

Burmese

Lyman Stilson

b. 1805 Meredith NY, d. 1886 Jefferson IA
Baptist minister and missionary
(findagrave.com; ancestry.com)

*The youth's guide to arithmetic,
adapted to the use of schools in
the Arracan Tenasserim*

[Tanintharyi] provinces

**Mawlamyine / Maulmain: Ame-
rican Baptist Mission Press 1848**

Later editions: Rangoon 1849, 1866, 1876,
1877, 1879, 1884

421 p.

D: Google books

L: Paris BNF (FRBNF31408367;
OCLC 4590 79085); London BL
(OCLC 5004 93486, 1064 483349)

C/V: WorldCat

THE
YOUTH'S GUIDE
TO
ARITHMETIC.

ADAPTED TO THE USE OF SCHOOLS IN THE ARRACAN AND TENASSERIM PROVINCES.

BY L. STILSON.

အရိသမထိတိ

ဟူသော

ထွက်ပုံစာ။

MAULMAIN:
AMERICAN BAPTIST MISSION PRESS,
THOS. S. RANNEY, PRINTER.
1848.

Burmese

Lyman Stilson

*The youth's guide to arithmetic,
adapted to the use of schools in
the Arracan Tenasserim
provinces*

Mawlamyine: American Baptist
Mission Press 1848

Transcription and translation
of the title page

Digits:	၀	၆
	၂	၇
	၃	၈
	၄	၉
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*The
youth's guide
to
arithmetic.*

*Adapted to the use of schools in the Arracan
Tenasserim provinces.*

By L. Stilson.

...

...

calculation

*Maulmain [Mawlamyine, Myanmar]:
American Baptist Mission Press,
Thos S. Ranney, printer.
1848.*

Burmese

Lyman Stilson

*The youth's guide to arithmetic,
adapted to the use of schools in
the Arracan Tenasserim
provinces*

**Mawlamyine: American Baptist
Mission Press 1848**

Content overview

(according to the English section headings)

Numeration, the four species for integers

Definitions: integer, even, odd, prime, greatest common divisor, least common multiple, fractions, arithmetic signs

Definitions for fractions: proper, improper, compound fraction, mixed number, reduction, least common denominator

Four species for common fractions

Four species for decimal fractions

Conversion from common to decimal fractions

Money, weights and measures

Four species for denominate (*compound*) numbers

Reductio descendens, reductio ascendens

Conversion between common / decimal fractions and denominate numbers

Four species for repeating (*circulating*) decimals

Ratio, proportion

Regula de tri

Regula quinque (*compound proportion*), chain rule

Burmese

Lyman Stilson

*The youth's guide to arithmetic,
adapted to the use of schools in
the Arracan Tenasserim
provinces*

**Mawlamyine: American Baptist
Mission Press 1848**

Content overview

(according to the English section headings)

Percentage, commission, interest, discount, compound
interest, banking

Profit and loss, partnership, bankruptcy

Exponentiation (*involution*), extraction of roots
(*evolution*), square root, 2-dim. geometry, cube root

Arithmetic progressions (*equidifferent series*)

Geometric progressions (*continual proportionals*)

Annuities at compound interest

Permutations, combinations

Exchange, Great Britain, United States

Mensuration of surfaces, solids and capacities: circle,
sphere (*globe*), wedge, prism, cylinder, pyramid,
frustum, polygon

Mechanical powers: lever, wheel and axle, pulley,
inclined plane, wedge, screw

Miscellaneous questions

Appendix: Burmese method of calculating time,
Burmese calendar

Chinese

Anonym

Chiu Chang Suan Shu /
Jiuzhang Suanshu 九章算術
[Nine chapters on arithmetical
methods / mathematical art]

1084 (first print in the Northern Song
dynasty (Juškevič 1924, p. 23))

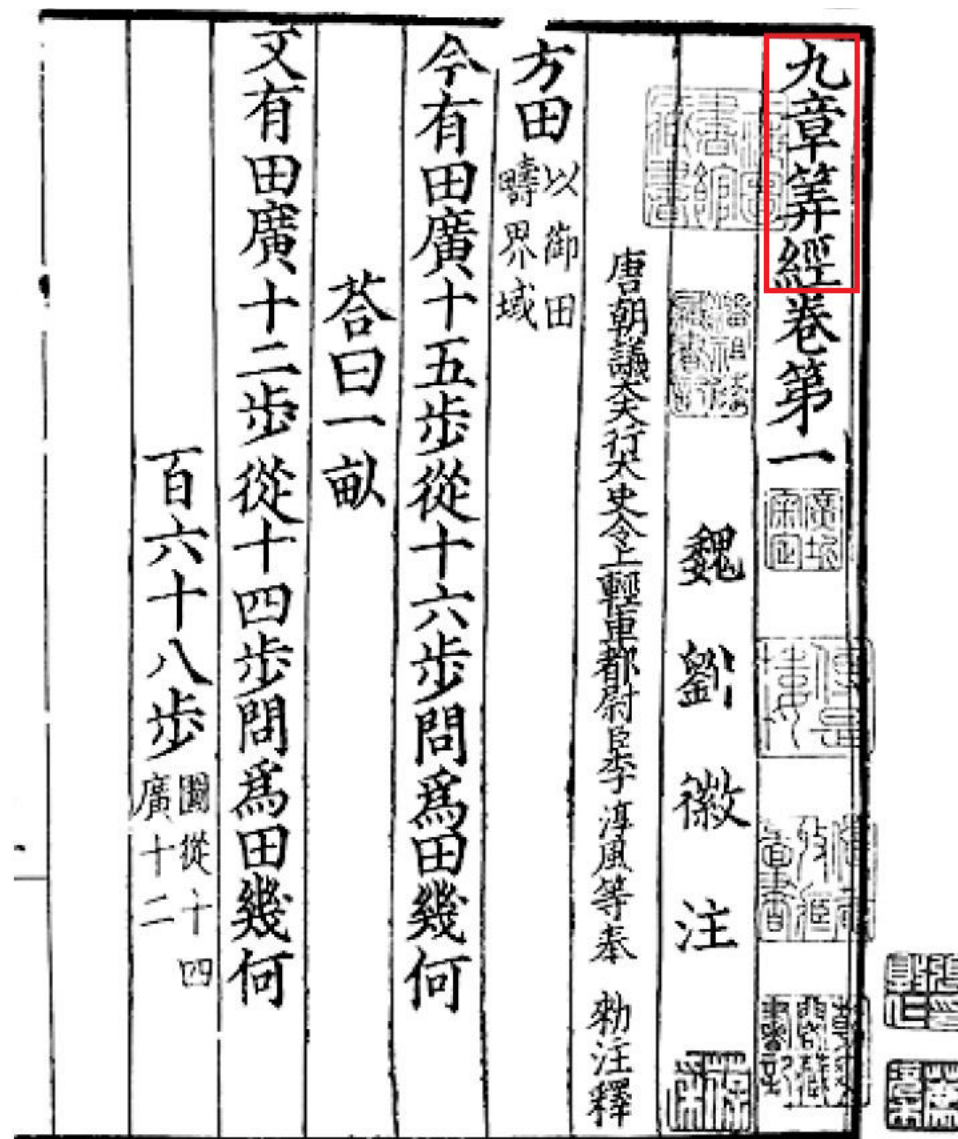
Has its origins before the beginning
of the Common Era (202 BCE – 9 CE).

Comments by Liu Hui 劉徽 in 263 CE.

New editions by Dai Zhen 戴震

(1724–1777) 1774, by Qu Zengfa 1776,
by Kong Jihan 1777 *Weiboxie, Ripple
Pavilion* – standard for modern versions
(Dauben 2013, p. 214–216)

No information about number of pages,
holding libraries and digital copies



Jiuzhang Suanjing 九章算經 (i.e. *Jiuzhang Suanshu*
(Martzloff 1997, p. 47)), first page of Chapter 1 with owner seals,
edition from Southern Song dynasty (1127–1279) (Guo 2015, p. 64)

Chinese

Anonym

Jiuzhang Suanshu 九章算術

References

Remark: “One should not forget that, in China itself, autochthonous mathematics was not rediscovered on a large scale prior to the last quarter of the 18th century” (Martzloff 1997, p. 4)

Remark: Movable type (10%) did not replace woodblock printing (90%) due to the expense of producing more than 200,000 individual pieces (English Wikipedia – History of printing)

E in German: Vogel, Kurt. Braunschweig 1968

E in Russian: Berëzkina/Beryozkina, Èl’vira Ivanovna: Matematika v devâti knigah. In: Istor. matem. Issledovanija 10 (1957) 423–584

S/V: Juškevič, Adolf-Andrei Pavlovič: Geschichte der Mathematik im Mittelalter. Leipzig 1924

Lǐ Yǎn; Dù Shíràn: Chinese math. A concise history. Oxford 1987

Martzloff, Jean-Claude: Histoire des mathématiques chinoises.

Paris 1987. A history of Chinese math. Berlin 1997, 2006, 127–136

Mikami, Yoshio: Development of mathematics in China and Japan.

New York 1913, 8–25

Needham, Joseph: Science and civilization in China. Vol. 3: Math. and the Sciences of the heavens and the earth. Cambridge 1959

S: Chemla, Karine; Guo, Shuchun: Les Neuf Chapitres, Le Classique mathématique de la Chine ancienne et ses commentaries. Paris 2004

Dauben, Joseph W: Jiu zhang suan shu. Appraisal of text, editions, translations. Sudhoffs Archiv 97,2 (2013) 199–235

Guo, Shuchun: The Nine Chapters on the mathematical procedures and Liu Hui’s mathematical theory. In: Knobloch, Eberhard et al. (ed.): Seki, founder of modern mathematics in Japan. Berlin 2015, 63–88

Shen, Kanshen; Crossley, John N; Lun, Anthony W-C: The nine chapters on the mathematical art: companion and commentary. Oxford 1999, 2008

Chinese

Anonym

Jiuzhang Suanshu 九章算術

Content overview

(according to Vogel 1968)

- 1 Measuring fields (*Fangtian*): measuring rectangular fields, calculation with common fractions, measuring other fields
- 2 Exchanging crops (*Sumi*): comparison of different types of millet and rice, prices per unit, mixtures of different goods
- 3 Proportional partition (*Chuifen*): regula societatis, regula de tri, regula quinque
- 4 Smaller breadth (*Shaoguang*): identifying the length of a rectangle from its surface, square side, square root, circle, cube side, cube root, sphere
- 5 Work performance (*Shanggong*): volumes of various solids (dam, ditch, rectangular solid, cylinder, pyramid frustum, cone frustum, pyramid, cone, wedge, roof) and the corresponding work, heaps of crops
- 6 Correct taxation (*Junshu*): proportional partition, transport, finished goods, pursuit, arithmetic progression, encounter, alligation, cistern (shared work), nesting
- 7 Surplus and deficiency (*Yingbuzu*): various problems to be solved with the double false position method, pursuit
- 8 Square table (*Fangcheng*): various problems yielding systems of linear equations in three to five unknowns to be solved with matrix calculation
- 9 Right-angled triangles (*Gougu*): various problems including land survey to be solved with the Theorem of Pythagoras

Japanese

Yoshida Mitsuyoshi / Kōyū
吉田光由

(In Japan, the family names are written first.)

b. 1598 Saga, Kyoto

d. 1672 Saga, Kyoto

Student of Mōri Shigeyoshi / Kambei

毛利 重能

Civil engineer for river conservation

One of the Three honorable mathematicians

Jinkōki 塵劫記

Kyoto ¹1627, ²1629, ³1631,
⁴1634, ⁵1641 (June), ⁶1641 (November)

Parts based on Chin. *Sanpō Tōsō* (*Suan-fa T'ung-tsung*) 算法統宗 [General source of arithmetic methods] 1593 by Ch'êng Dawei (Tai-wei; Te Taii) 程大位 (1533–1606) (Mikami 1913, p. 110, 157)



First page of Book 1 of some *Shinpen Jinkōki* 新編 塵劫記 with an enlarged detail containing the title

Japanese

Yoshida Mitsuyoshi 吉田光由

Jinkōki 塵劫記

[Treatise on eternal mathematical truths]

Kyoto ¹1627 etc.

References

220 p. (according to the English edition)

D: National Diet L Digital Collections
dl.ndl.go.jp/info:ndljp/pid/3508170/47

R: Tokyo: Iwanami Shoten 1977

L: National Diet L Japan

E of the June 1641 edition in English by
Osamu Takenouchi et al. Tokyo: Wasan
Institute (Wasan 和算 Kenkyujo) 2000

S/V: Horiuchi, Annick: Les mathématiques japonaises à l'époque d'Edo. Paris 1994

Mikami, Yoshio: Development of mathematics in China and Japan. Leipzig 1913, reprint New York 1974

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S: Fischer, Walther L. In: Toepell, Michael (ed.): Mathematik im Wandel. München 1998, 194–216

Isoda, Masami; Olfos, Raimundo: Teaching the multiplication table. In: Isoda; Olfos (ed.): Teaching multiplication with lesson study. Cham 2021, 133–154

Ken'ichi, Sato: The Jinkōki of Yoshida Mitsuyoshi. In: Knobloch, Eberhard et al. (ed.): Seki, founder of modern mathematics in Japan. Berlin 2015, 173–186

Kim, Yong Woon: A comparative study on traditional mathematics of Korea and Japan. In: Knobloch, Eberhard et al. (ed.): Seki, founder of modern mathematics in Japan. Berlin 2015, 93–104

Martzloff, Jean-Claude: Mathematics in Japan. In: Selin, Helaine (ed.): Encyclopedia of the history of science, technology and medicine in non-Western cultures. Dordrecht: Springer 2016

National Diet L ndl.go.jp/math/e/s2/1.html

Japanese

Yoshida Mitsuyoshi 吉田光由

Jinkōki 塵劫記

Kyoto ¹1627 etc.

Content overview (1627 edition)
(according to Ken'ichi 2015)

The larger table of contents of the June
1641 edition comprising 50 articles is
translated in the English edition 2000.

- 1 The designation of large numbers
- 2 The designation of numbers smaller than 1
- 3 Units of capacity
- 4 Units of area
- 5 Multiplication table
- 6 Phrases of the division table (1)
- 7 Phrases of the division table (2)
- 8 Multiplication instead of division
- 9 Trading rice
- 10 Exchange of gold currency (Edo) and silver currency (Kyoto)
- 11 Buying and selling the zeni [small currency]
- 12 Interest on a loan
- 13 Buying and selling silk
- 14 Purchasing foreign products
- 15 Freight by ship
- 16 The size of a masu (measurement device)
- 17 Land surveying
- 18 Amount of yield and tax
- 19 Trading of gold and silver foils
- 20 Problem of the volume of lumber
- 21 River construction
- 22 Various constructions
- 23 Estimating the height of a tree
- 24 Estimating the distance
- 25 Square root
- 26 Cube root

Japanese

Yoshida Mitsuyoshi 吉田光由

Jinkōki 塵劫記

Kyoto ¹1627 etc.

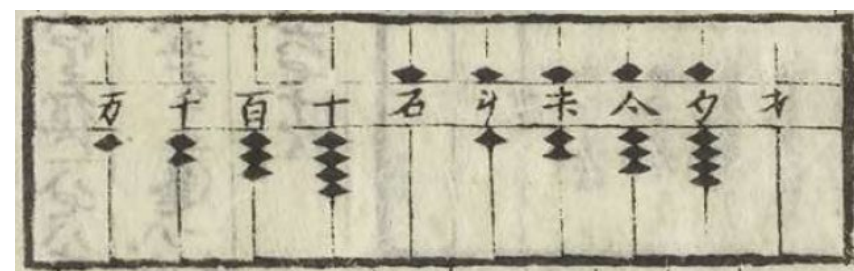
Multiplication rules

Commutated forms are not recorded.

There are two different symbols for 5.

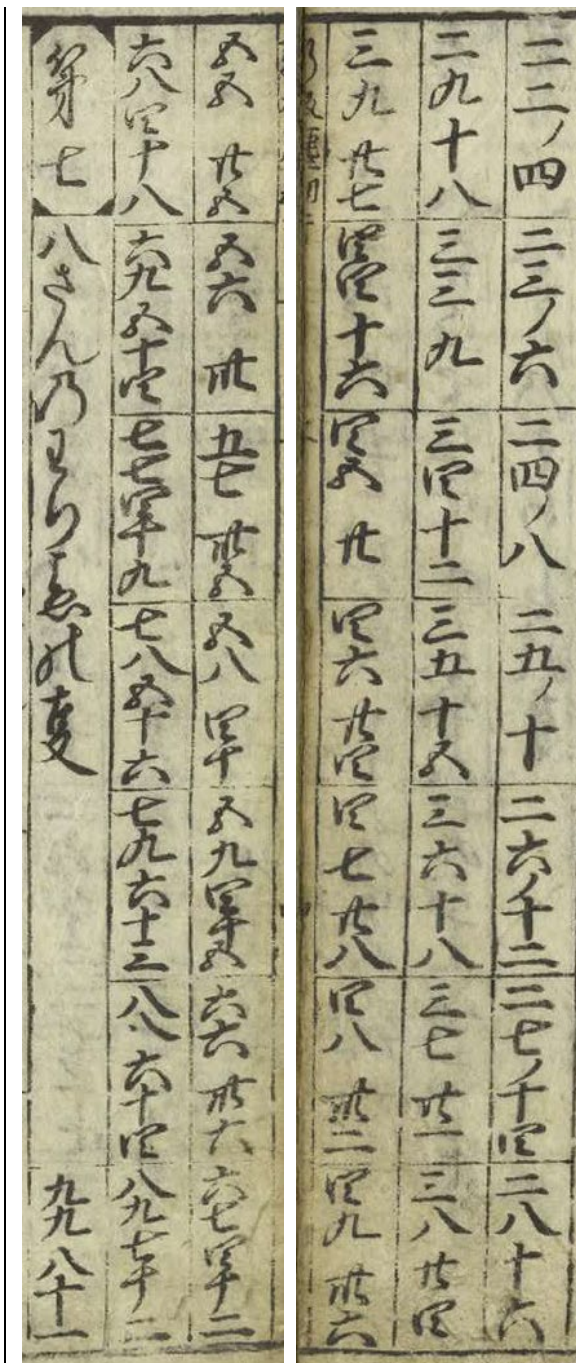
10, 20 and 30 are written with single digit symbols.

40, 50 etc. are written as 4 10, 5 10 etc.



The Japanese abacus (soroban; Chinese suan-pan), here with the rods 10^4 to 10^{-5} representing the value 12345,67890

Third column from the right	Second column from the right	First column from the right
3	2	2
9	9	2
27	18	4
4	3	2
4	3	3
16	9	6
4	3	2
5	4	4
20	12	8
4	3	2
6	5	5
24	15	10
4	3	2
7	6	6
28	18	12
4	3	2
8	7	7
32	21	14
4	3	2
9	8	8
36	24	16



Korean

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- S: Kim, Yong Woon: Mathematics in Korea. In: Selin, Helaine (ed.): Encyclopedia of the history of science, technology and medicine in non-Western cultures. Dordrecht: Springer 2016
- Kim, Yong Woon: A comparative study on traditional mathematics of Korea and Japan. In: Knobloch, Eberhard et al. (ed.): Seki, founder of modern mathematics in Japan. Berlin 2015, 93–104
- Kim, Yong Woon; Korea Institute of Advanced Study KIAS: Mathematics in the ancient and middle ages of Korea. kias.re.kr
- Kim, Yong Woon; Kim, Yong Guk: History of Korean mathematics. Seoul: Salim Math. Pub. Co. 2009
(Kankoku sugakusi – A history of Korean mathematics. Tokyo: Maki Shoten 1978)

Like Japanese arithmetic, Korean arithmetic was – among others – mostly influenced by two Chinese books:

- 1 *Jiuzhang Suanshu* 九章算術 [Nine Chapters], in Korean called *Gujang / Kujang* (Kim; KIAS p. 46)
- 2 *Sanbup-Tongjong* (*Sanpō Tōsō, Suan-fa T'ung-tsung*) 算法統宗 [General source of arithmetic methods] by Ch'êng Dawei 程大位 (Kim 2015, p. 103)

The two books are mentioned in the sections on Chinese and Japanese.

“Korean mathematicians made little effort to change fundamentally the mathematics which originated in China” (Kim 2016)

Writing system: Most of the mathematics books of the Chōson / Joseon period (1392–1897) were textbooks written in Chinese characters (Kim 2015, p. 99) although King Sejong the Great (1397–1450) had created the Korean alphabet Hangul.

Korean

Gyung Sun Jing /

Gyeong Seon Jing 慶善徵

b. 1616

Muk Sa Jib San Bub

默思集算法

Chinese characters

3 vol. 120 p., 130 p., 140 p.

D: jsgimage.aks.ac.kr/view?qCond=bookId&q=K3-414_001

L: Academy of Korean Studies

C/V: Sriraman, Bharath et al.: The first sourcebook on Asian research in mathematics education. Charlotte NC 2015, p. 862

默思集算法
目錄終

開方	差等	和答	下卷	引剩	測量	商功
解隱	均配	五換	五門	求總	高遠	修築
門三	門四	門附	九十八	門三	門九	門附
問十	問六	問一	問	問	問	問九

和取	五乘	約分	堆垛
互該	和合	解齊	開積
門十	門附	門五	門十
問	問八	問六	問

Korean

Ch'êng Dawei 程大位

1533–1606

Sinp'yŏn chikchi supŏp

t'ongjong 新編直指數法統宗

[sc. *Suan-fa T'ung-tsung*]

? 1855

Chinese characters

162 p.

D: Harvard L Viewer nrs.harvard.edu

L: Cambridge Harvard U

(OCLC 1252 377075)

C/V: Earliest Korean arithmetic textbook
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