

PREPARED UNDER THE DIRECTION OF DAVID EUGENE SMITH, LL.D., BY THE EDUCATIONAL MUSEUM OF TEACHERS COLLEGE, COLUMBIA UNIVERSITY, N.Y.

MS 294 box 1, slide boxes 1-2

1. First trace of Egyptian mathematics, a pottery inscription of the first dynasty. C. 3000 B.C.
2. Page from the Ahmes papyrus, c. 1700 B.C., the oldest extant textbook on mathematics
3. Page from the Akhmim papyrus, possibly of the 8<sup>th</sup> century A.D., showing the same primitive treatment of fractions as in Ahmes.
4. Nana Ghat inscriptions. See Encyclopaedia Britannica, under "Numerals."
5. Same [as slide four] in detail.
6. Page from a MS. Of Boethius of 1286, showing forms of numerals
7. From a MS. Of Rollandus of 1420, showing forms of numerals.
8. From a MS. Of Sacrobosco's "Algorismus" of 1444, showing forms of numerals.
9. From a MS. Of the 15<sup>th</sup> century, showing forms of numerals.
10. Table from Treutlein's "Zahlzeichen," showing the change in the numeral system from ancient to modern times.
11. Page from Borghi's arithmetic of 1488, showing one of the early uses of "million" in print.
12. The Roman numerals in practical use in 1514, from Kobel's Arithmetic.
13. The same, showing the curious use of Roman numerals with Arab fraction forms.
14. Page from an "Algorithmus Linealis" of c. 1490, showing the reckoning with counters.
15. Page from Licht's "Algorismus" of 1501, showing addition by means of counters.
16. Picture from the "Margarita Philosophica" (1503), showing the old (counter) and new (algorisms) reckoning.
17. Title page of one of Adam Riese's arithmetics (1538), showing merchants reckoning "on the line."
18. The same, from Gemma Frisius (1565 edition).
19. The same, from Recorde's "Ground of Artes" (1558 edition).
20. Addition by counters, from Recorde's "Ground of Artes" (1558 edition).
21. Chinese swanpan, Russian tschotii, and Korean rods, the modern relics of the counter reckoning.
22. Machines for adding, multiplying, and dividing
23. The ancient finger reckoning as illustrated in the "Abacus" of Aventinus (1532).
24. The same, from Recorde's "Ground of Artes" (1558 edition).
25. Early use of the symbol =, before it was used for equality, from an anonymous MS. Of c. 1450.
26. Earliest use of a decimal point (Pellos, 1492), about a century before decimal fractions were understood.
27. First printed page containing the signs + and - (Widman, 1489), as symbols of excess and deficiency.
28. Early use of the same as algebraic symbols (Stifel, 1545).
29. Symbols of addition and subtraction from Curtius (1619), with curious processes of multiplication.
30. Numeration by the catechism method, from Willichius (1540).

31. Addition, from Hylles (1579), showing curious rhyming rule, and the catechism method of teaching arithmetic.
32. Subtraction (substraction), from Baker's "Well Spring of Sciences" (1580).
33. Multiplication. Elaborate specimen of the gelosia method, from a MS. of c. 1450.
34. Multiplication per scachiero and per quadrato, from a 15<sup>th</sup>-century MS.
35. Multiplication per gelosia, from Feliciano's arithmetic of 1545.
36. The old complementary multiplication, from Huswirt's "Enchiridion" of 1501.
37. Multiplication, with curious illustration, from a student's MS. of 1501.
38. Multiplication and division as performed in the first printed arithmetic (Treviso, 1478).
39. Division by the gallery method and multiplication by the common (scachiero) plan, from a MS. of the 16<sup>th</sup> century.
40. Division by the galley method, showing the galley, from a Venetian MS. of c. 1550.
41. Division by the galley method, from a MS. of c. 1600.
42. A very early specimen of the modern form of division, from a MS. of c. 1450.
43. The first printed example of our modern (a danda) form of division, from Calandri (1491).
44. Modern division, with curious forms of the numerals, from a MS. of c. 1550.
45. Division of fractions, with curious symbols and proofs, from a MS. of 1545.
46. Cube root by the galley method, from the first arithmetic printed in England (Tonstall's "De Arte Supputandi," 1522).
47. MEDIAEVAL PROPORTION From a MS. of Boethius, written in 1286, giving the arithmetical, geometric, and harmonic proportion.
48. The same, with musical proportion, from the first printed edition of Boethius (1488).
49. Proportion as the Rule of Three. Examples from Fisher (1775 edition).
50. The first printed mention of a slate (Prosdocimo de Beldamandi, 1488).
51. Curious illustration from a MS. of Sacrobosco, written in 1444, showing master teaching the new numerals.
52. Title page of Boschenstein's arithmetic of 1514, showing merchants using the blackboard.
53. A class in arithmetic in the Middle Ages, from an old engraving.
54. A mediaeval school, from an old engraving.
55. The seven liberal arts, from an old engraving. [...]
56. The sciences illustrated (Arithmetic with the counters), from an old engraving.
57. From a MS. of Boethius of 1286, showing figurate numbers.
58. From the first printed edition of Boethius (1488), showing other figurate numbers.
59. From an anonymous chapter on Rithmimachia (1496), showing this famous mediaeval number game.
60. The first printed Magic Square, from Durer's "Melancholia."
61. Title page of Paciolo's great work of 1494, giving a list of the important topics.
62. The problem of the Venetian clock, from Kobel's arithmetic (1540 edition).
63. Old treatment of Partnership, from Masterson's arithmetic of 1592.
64. Barter, from Daboll's arithmetic (4<sup>th</sup> edition).
65. Early American problems, from Pike (1788).
66. Problems of the Civil War, from Johnson's arithmetic (Raleigh, N. C., 1864).

67. The problems of the jealous husband [...] jugs, from a 14<sup>th</sup>-century MS.
68. The chessboard problem of the grains of wheat, from a 14<sup>th</sup>-century MS.
69. From Sacrobosco's "Sphaera" (Venice, 1488), showing mediaeval theory of the apparent rotundity of the sea.
70. From the first printed arithmetic having illustrations. Calandri's book of 1491.
71. From Widman's arithmetic of 1489, showing illustration in exchange.
72. From Kobel's arithmetic (1544 edition), showing one of the problems of the couriers.
73. From the same, showing the problem of the market women.
74. Humorous illustrations from Crowquill's arithmetic (1843).
75. Last page of the first printed arithmetic (Treviso, 1478).
76. First page of the rare "Ars Numerandi" (c. 1485, but possibly as early as the Treviso).
77. Last page of the first German arithmetic (1482).
78. Last page of the second German arithmetic (1483).
79. Last page of Calandri's arithmetic (1491).
80. First page of Paciuolo's great treatise of 1494 (1523 edition).
81. First page of the part on arithmetic in Capella's work (1499).
82. Last page (colophon) of Tzwifel's arithmetic (1507).
83. Title page of Bonini's arithmetic (1517), with De Morgan's autograph.
84. Title page of Feliciano's arithmetic of 1526 (1536 edition).
85. From the Rollandus MS. (c. 1420), showing the names for the powers of the unknown, and a multiplication table of such powers.
86. Introduction to algebra, from an Italian MS. of c. 1450.
87. From the same MS., with a reference to the work of Leonardo of Pisa.
88. From the MS. of Scheubel's algebra, 16<sup>th</sup> century, showing his symbolism for surds.
89. The first printed solution of the cubic equation, Cardan's "Ars Magna" (1545).
90. From Masterson's work of 1592, showing the Renaissance symbolism for the unknowns.
91. From a MS. of c. 1620, showing the extraction of the square root of a binomial surd.
92. GEOMETRY. Page from the Campanus translation of Euclid, showing the Pythagorean theorem. Original MS. of c. 1260, in the Plimpton library.
93. Page from a later Campanus MS. of Euclid, c. 1288.
94. Illustration of Geometria, with quadrans, from the "Margarita Philosophica" (1503).
95. From Foeniseca's "Opera" (1515), showing the construction of the Platonic bodies.
96. From Recorde's "Castle of Knowledge" (1596 edition), showing the geocentric idea of the universe.
97. From the "Portomathesis" of Finaeus (1532), showing the two forms of the quadrans.
98. From Beutel's "Lustgarten" (1600), showing the use of primitive instruments in mensuration.
99. Pythagoras, from Calandri's arithmetic (1491).
100. Euclid, from an old engraving.
101. Ptolemy and Boethius, from a drawing by Raphael.
102. Claude Ptolemy, from the "Margarita Philosophica."
103. Leonardo of Pisa, from an engraving.

104. Adam Riese, the most influential German textbook writer in the 16<sup>th</sup> century, from an old lithograph.
105. Gemma Frisius, the most successful writer of a Latin arithmetic in the 16<sup>th</sup> century, from a contemporary engraving.
106. Calvius, one of the first writers of a practical textbook on algebra, from a contemporary engraving.
107. Cardan, from a contemporary engraving.
108. Tartaglia, from a contemporary engraving.
109. Napier, from a rare lithograph.
110. Bachet de Meziriac, editor of Diophantus, and the first to compile a noteworthy collection of mathematical recreations.
111. Descartes, from an engraving after the Hals painting.
112. Fermat.
113. Pascal.
114. Newton.
115. Leibnitz.
116. Euler.
117. Cocker, the greatest writer of arithmetics in England in the 17<sup>th</sup> century.
118. Dilworth, Cocker's successor in the 18<sup>th</sup> century.
119. A collection of autographs, including Hermite, Euler, Legedre, Monge, Johann Bernoulli, Lagrange, Sylvester, Laplace, and others.

D. M. Horkmans. Maker, Kansas University. MS 294 box 1 slide box 3 (partial)

1. First printed page containing =. Record 1557
2. Vieta's Notation [Isagage?] – 1591
3. Theoreue with Demonstation Whitehead & Russell's Principles
4. Equations – Ahmes 1700 B.C. Bhaskara 1150 A. D.
5. Examples of Hindu Notation 3<sup>rd</sup> to 7<sup>th</sup> Cent.
6. Signs in Rhind Papyrus
7. Chuquet's Notation 1484
8. Vieta's use of Brackets
9. Notation of Diophantos U. S. M.
10. Newton's Notation – 1685
11. States in Development of Algebra. – Nesselman 1842 U. S. M.
12. Stevin's Notation. 1585.
13. Dives et Pauper. Earliest English illustrated title page. 1496.
14. Harriot & Oughtred 1631

MS 294 box 3 slide box 9 (partial)

1. 732C. FLOUR. Outline showing steps in manufacture [Flower milling process].

L. M. Peace, Lawrence, Kansas

2. Development of Decimal Fractions Notation
3. Egyptian Hieratic Numbers [...]
4. The Arabic Numerical Symbols
5. Historical Sketch of the Symbol 5
6. Nos. in Egyptian Hieroglyphics

BINGHAM, DEPT. KU

7. Mammona iniquitatis. Luc. [...]
8. Reckoning Table at Basle (p. 231)
9. Reckoning Table at Basle (p. 231)
10. Reckoning Table at Nuremberg (p. 231)
11. Reckoning-Cloth at Munich (p. 232)
12. Reckoning-Cloth at Munich (p. 232)
13. Dutch Jetton Cylinders (p. 240)
14. [coins]
15. Unidentified
16. [coins]
17. [Private Tallies, Stocks and Foils]
18. [Private Tallies, Stocks and Foils]
19. [Private Tallies, Stocks and Foils]
20. [Private Tallies, Stocks and Foils]
21. Napier's Rods. Cylindrical Form.
22. Napier's Rods.
23. Numerals – Devanagari, Gobar Arabic, missal, European probably Italian etc.
24. Unidentified