

APPENDIX A — CATALOGUE OF SOURCES

The following catalogue lists, in categories, all the published papyri, ostraka and wax tablets which contain mathematical material in Greek. Excluded, however, are (a) those texts which are solely tables of numbers (although those which also contain exercises are included), and (b) those which appear to be astronomical texts. For texts in both of these groups, see Pack²; for the former, a valuable up-to-date catalogue of these (which appears to be comprehensive) can be found in Fowler (1999: 268-76) supplemented by Fowler (1995); for the latter, note particularly the new collection edited by Jones (1999).

Within each category, sources are arranged chronologically; dates are AD unless otherwise indicated. Where a source contains material which belongs in more than one classification, it has been listed under both. For further details of the publication of these editions, see the bibliography below.

A Tables of numbers accompanied by exercises

PHamb 139	i-ii cent.	On fractional numbers
PMich III.145	ii cent.	Table of fractions and arithmetical problems
PMich III.147	ii cent.	Table of fractions: possibly a school copy, see p. 24 above
PRyl III.526	Fayûm, iii cent.	Mathematical or astronomical table
Bodl. Gr. Inscr. inv. 3019	late iii cent.	[Wooden tablets:] Division tables with exercises
PMich III.146	Fayûm, iv cent.	Mathematical tables (?for business reference)
Würzburg inv. K1013	iv-v cent.	[Wooden tablets:] School exercises with tables
PCair inv. 10758	Panopolis, vi cent.	Mathematical tables with exercises
PMichael 62	vi cent.	[Wooden tablets:] Tables of division and problems in arithmetic
Würzburg inv. K1014	vi-vii cent.	[Wooden tablets:] School exercises with tables
SB III.6219	vii cent.	[Wooden tablets:] Division tables and exercises

B Exercises and calculations (without tables)

(i) Arithmetic

PSI VII.763	i cent. BC	Manual of elementary arithmetic (fractions) and geometry (areas)
PLond II.265	i cent.	Conversions of units of volume
MPER XV.178	ii cent.	[(a-e) are listed below under (iii)] (f) conversions of areal units

PBodl I.7	late Byzantine	Practical school mathematics problem concerning the length of a rope and the depth of a well
(ii) 'Algebra'		
PMich III.144	early ii cent.	Algebraic problems: two problems concerning drachmai
(iii) Geometry¹		
PSI VII.763	i cent. BC	Manual of elementary arithmetic (fractions) and geometry (areas)
PRain I.1	Dimêh, Fayum, i cent.	Calculation of volumes of solids: 38 examples; diagrams
MPER XV.179	i cent.	Calculation of the height of a statue progressively diminished by the weather
PChic 3	Hawara?, i-ii cent.	Calculation of areas - measurement of land(?); diagrams
PBerl inv. 21188v	Hermoupolis, ii cent.	Misidentified as a theoretical treatise: this very fragmentary text (10 fr.) seems to be geometrical exercises (see p. 31 above)
MPER XV.172	ii cent.	Area of a triangle; diagram
MPER XV.173	ii cent.	Area of a circle from its perimeter; diagram
MPER XV.174	ii cent.	Area left once four touching identical circles are removed from a square
MPER XV.175	ii cent.	Areal calculation?
MPER XV.176	ii cent.	Areal calculation?
MPER XV.177	ii cent.	Areal calculation?
MPER XV.178	ii cent.	Areal calculation problems all with diagrams: (a) meniscus/lune; (b) circle of given perimeter; (c) circle of given diameter; (d) semicircle; (e) semicircle set on a rectangle
PGen 124	ii cent.	Three examples of Pythagoras' theorem in practice; diagrams
PBerl inv. 11529	ii cent.	Problems in geometry; diagrams
OMM inv. 163	Narmuthis, ii/iii cent.	[Ostraka:] Practical problem in geometry
PHarris 50	iii cent.	School geometrical exercise/demonstration; diagram

¹ All these texts appear to be practice exercises rather actual calculations: for the latter, land surveys are good examples (see, e.g., Crawford (1971)).

PCornell inv. 69	?early iv cent.	Elementary geometry; diagram {my dating, unedited}
TVarie 71	?Oxyrhynchus, ?v cent.	[Wax tablet:] Calculation of area/volume
TVarie 72	?Oxyrhynchus, ?v cent.	[Wax tablet:] Calculation of area/volume
TVarie 73	?Oxyrhynchus, ?v cent.	[Wax tablet:] Calculation of area/volume
TVarie 74	?Oxyrhynchus, ?v cent.	[Wax tablet:] Calculation of area/volume
TVarie 75	?Oxyrhynchus, ?v cent.	[Wax tablet:] Calculation of volume/price
TVarie 76	?Oxyrhynchus, ?v cent.	[Wax tablet:] ?Calculation
TVarie 77	?Oxyrhynchus, ?v cent.	[Wax tablet:] Calculation of area
PSI III.186	Oxyrhynchus, iv cent.	Possibly a school exercise, to find the number of spectators in a theatre, and the number of artabs in a vase; illustrated (see p. 33 above)
TVarie 20	vi cent.	[Wax tablet:] Calculation of area/volume
BM Add MS 41203	vi cent.	[Wooden tablet:] Problems in arithmetic: practical measurement of well, paved court, heap of grain and an arch

C Geometrical treatises

OBerl inv. 12609	Elephantine, iii cent. BC	[Ostrakon:] Construction of a regular icosahedron
OBerl inv. 12002	Elephantine, iii cent. BC	[Ostrakon:] Construction of a regular ?dodecahedron
OBerl inv. 11999	Elephantine, iii cent. BC	[Ostrakon:] Construction of a regular ?dodecahedron; diagram
OBerl inv. 12008	Elephantine, iii cent. BC	[Ostrakon:] Construction of a regular ?dodecahedron
OBerl inv. 12007	Elephantine, iii cent. BC	[Ostrakon:] ?Construction of a regular solid
OBerl inv. 12611	Elephantine, iii cent. BC	[Ostrakon:] diagram
PHerc 1061	Herculaneum, i cent. BC	Appears to be a philosophical text which adduces theoretical geometrical arguments in support of the argument: quotes Euclid <i>Elements</i> I def. 5, I.3, I.9 with diagram and I.10 also with diagram
POxy inv. 75/13(a)	i cent. BC/i cent.	Theoretical treatise: the geometry of circles?
POxy I.29	Oxyrhynchus, i-ii cent.	Euclid, <i>Elements</i> II.5 (part); diagrams
PBerl inv. 17469	ii cent.	Euclid, <i>Elements</i> I.8 (part), 9, and 10 (part); diagrams
PFay 9	Fayûm, later ii cent.	Euclid, <i>Elements</i> I.39 & 41

PBerl inv. 21153v	Hermoupolis, ii cent.	Very fragmentary (28 fr.): theoretical treatise (see p. 38 above)
PMich III.143	iii cent.	Euclid, <i>Elements</i> I, definitions 1-10
POxy inv. 105/24	iii cent.	recto: Euclid, <i>Elements</i> XIII.17 corollary (part); diagram verso: Euclid, <i>Elements</i> XIII.18 (part)
PRyl III.525	iv cent.	[Codex] exiguous mathematical treatise

SELECT BIBLIOGRAPHY

Abbreviations:

Archiv = *Archiv für Papyrusforschung*

BKT = Berliner Klassikertexte aus den Staatlichen Museen zu Berlin

*GMAW*² = Turner, E.G., (ed. Parsons, P.J.), *Greek Manuscripts of the Ancient World* BICS Suppl. 46 (London, 1987²)

JEA = *Journal of Egyptian Archaeology*

Pack² = Pack, R.A., *The Greek and Latin Literary Texts from Greco-Roman Egypt* (Ann Arbor, 1965²)

ZPE = *Zeitung für Papyrologie und Epigraphik*

Ancient and mediaeval texts:

Euclid, *Elementa* ed. Stamatis, E.S. post Heiberg, I.L. 4 voll. (Teubner: Leipzig, 1969-73)

al Nairîzî, (ed. Curtze, M.), *Anaritii in decem libros priores Elementorum Euclidis commentarii ex interpretatione Gherardi Cremonensis* (Teubner: Leipzig, 1894)

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Thomas, I. (ed.), *Greek Mathematical Works* 2 voll. (Loeb: Harvard, 1941)

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Berggren, J.L., 'The history of Greek mathematics: a survey of recent research', *Historia Mathematica* 11 (1984), pp. 394-410

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Jones, A., *Astronomical Papyri from Oxyrhynchus (POxy 4133-4300a)* *Memoirs of the American Philosophical Society* 233 (Philadelphia, 1999)

Kenyon, F., *Palaeography of Greek Papyri* (Oxford, 1899)

Knorr, W.R., *Ancient Tradition of Geometric Problems* (1986)

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McNamee, K., *Marginalia and Commentaries in Greek Literary Papyri* (Diss. Duke University, 1977)

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- Montevecchi, O., *La Papirologia* (Turin, 1973)
- Neugebauer, O., *The Exact Sciences in Antiquity* (Rhode Island, 1957²)
- Oates, J.F. et al., *Checklist of Editions of Greek and Latin Papyri, Ostraka and Tablets* (Atlanta, 1992⁴)
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<u>Ref.</u>	<u>Pack²</u>	<u>Published editions</u>
MPER XV.172	—	Harrauer, H. & Sijpesteijn, P.J., <i>Neue Texte aus dem antiken Unterricht</i> Mitteilungen der Papyrussammlung Erzherzog Rainer (N.S.) 15 (Vienna, 1985), p. 166; plate 80
MPER XV.173	—	<i>op. cit.</i> , p. 167; plate 80
MPER XV.174	—	<i>op. cit.</i> , p. 167; plate 80
MPER XV.175	—	<i>op. cit.</i> , p. 168; plate 80
MPER XV.176	—	<i>op. cit.</i> , p. 168; plate 80
MPER XV.177	—	<i>op. cit.</i> , p. 168-9; plate 80
MPER XV.178	—	<i>op. cit.</i> , p. 169-72; plate 81
MPER XV.179	—	<i>op. cit.</i> , p. 172-3; plate 80
PBerl inv. 9780	339	Didymos, <i>Kommentar zu Demosthenes</i> BKT 1 (1904) Didymus, <i>de Demosthene commenta</i> ed. Diels, H. & Schubart, W. (Teubner: Leipzig, 1904)
PBerl inv. 9767	1310	Schubart, W. & von Wilamovitz-Moellendorff, U. (edd.), <i>Griechische Dichterfragmente</i> BKT 5 (Berlin, 1907), pp. 115-22
PBerl inv. 9775	1925	Schubart, W. & von Wilamovitz-Moellendorff, U. (edd.), <i>Griechische Dichterfragmente</i> BKT 5 (Berlin, 1907), pp. 131-39
PBerl inv.11529	2319	<i>Archiv</i> 7 (1924), p. 254

² In most cases only one edition is listed: further publications of or about the same piece are only listed if they are not to be found in Pack², if they are referred to in the main text above or if a photograph has been published. In all cases where a photograph has been published, this is indicated.

Where an edition has been cited in the main text in the form given in the left hand column above alone, this refers to the first publication listed.

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- PCair inv.10758 2306 *Hermathena* 19 (1920-2), pp. 105-14
- PChic 3 2318 Goodspeed, E.J. (ed.), *Chicago Literary Papyri III* (Chicago, 1908)
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- PFay 9 367 *Archiv* 2 (1903), p. 380
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- PGen 124 — Rudhart, J. (ed.) in Schubert, P. (ed.), *Les Papyrus de Genève* vol. III (Geneva, 1996), pp. 49-53
- PHamb 139 2313 Snell, B. (ed.), *Griechische Papyri II* (Hamburg, 1954)
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a photograph and drawing of part appear in Fowler (1999: plate 1)
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- POxy IV.659 1371 Grenfell, B.P. & Hunt, A.S. (edd.), *The Oxyrhynchus Papyri Vol. IV* (London, 1904)

POxy IV.663	252	<i>op. cit.</i>
POxy IV.686	630	<i>op. cit.</i>
POxy IV.687	691	<i>op. cit.</i>
POxy IV.688	874	<i>op. cit.</i>
POxy VI.856	138	Grenfell, B.P. & Hunt, A.S. (edd.), <i>The Oxyrhynchus Papyri</i> Vol. VI (London, 1908)
POxy VIII.1086	1173	Hunt, A.S. (ed.), <i>The Oxyrhynchus Papyri</i> Vol. VIII (London, 1911)
POxy XV.1797	93	Grenfell, B.P. & Hunt, A.S. (edd.), <i>The Oxyrhynchus Papyri</i> Vol. XV (London, 1922)
POxy XXI.2306	74	Lobel, E. (ed.), <i>The Oxyrhynchus Papyri</i> Vol. XXI (London, 1951)
POxy inv.105/24	—	Publication forthcoming in <i>The Oxyrhynchus Papyri</i> ?Vol. LXIX (London, ?2001) the original is available for inspection in the papyrology rooms of the Ashmolean Museum, Oxford.
PRain I.1	2322	Gerstinger, H., Oellacher, H. & Vogel, K. (edd.), <i>Griechische literarische Papyri</i> Vol. I (Vienna, 1932) a detailed discussion of part of this appears in Fowler (1999: 253-262) together with a revised dating a photograph of fragment 6(F) of this appears in Boardman, J., Griffin, J. & Murray, O. (edd.), <i>The Oxford History of the Classical World</i> (Oxford, 1986), p. 382 a photograph of fragment C appears in Fowler (1999: plate 11)
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PRyl III.526	2314	<i>op. cit.</i>
PSI III.186	2320	<i>Papiri Greci e Latini</i> III (Florence, 1914), pp. 44-5 <i>Hermathena</i> 19 (1920-22), pp. 105-14 <i>Akten des VIII. internationalen Kongresses für Papyrologie, Wien 1955</i> Mitteilungen aus der Papyrussammlung der Österreichischen Nationalbibliothek N.S. 5 (Vienna, 1956), p. 141
PSI VII.763	2315	<i>Papiri Greci e Latini</i> VII (Florence, 1925), p. 49 a plate appears in Norsa, M., <i>La scrittura letteraria greca dal secolo IV A.C. all' VIII D.C.</i> (Florence, 1939), plate 5a
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OMM inv. 163	—	Pintaudi, R. & Sijpestein, P.J. (edd.), 'Ostraka di contenuto scolastico provenienti da Narmuthis', <i>ZPE</i> 76 (1989), p. 87 and plate IX
OBERl inv.11999	2323	Mau, J. & Müller, W., 'Mathematische Ostraka aus der Berliner Sammlung', <i>Archiv</i> 17 (1982), pp. 1-10
OBERl inv.12002	"	<i>op. cit.</i>
OBERl inv.12007	"	<i>op. cit.</i>
OBERl inv.12008	"	<i>op. cit.</i>
OBERl inv.12609	"	<i>op. cit.</i> ; plates 1 & 2
OBERl inv.12611	"	<i>op. cit.</i>

OBodl II.1847 — Tait, J.G & Préaux, C., *Greek Ostraca in the Bodleian Library at Oxford*
Vol. II, Ostraca of the Roman and Byzantine periods (London, 1955), p. 308
a photograph appears in Fowler (1999: plate 8)

Published editions of **wooden** and **wax tablets** (cf. Oates (1992)) referred to with catalogue nos. from Pack² where appropriate:

- | | | |
|-------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BM Add.
MS 41203 | 2316 | Skeat, T.C., 'A Greek Mathematical Tablet', <i>Mizraim</i> 3 (1936), pp. 18-22 |
| Bodl. Gr. Inscr.
inv. 3019 | <i>F14</i> * | Parsons, P.J. (ed.), 'A school book from the Sayce Collection', <i>ZPE</i> 6 (1970), pp. 142-3 |
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| Würzburg
inv. K1014 | <i>F43</i> | <i>op. cit.</i> |
| TVarie 20 | — | Pintaudi, R. & Sijpesteijn, P.J., 'Tavolette Vaticane' in <i>idem</i> , <i>Tavolette lignee e cerate da varie collezioni Papyrologica Florentina XVIII</i> (Florence, 1989), pp. 86-7; photograph at plate 29 |
| TVarie 71 | — | Bagnall, R.S. 'Wax tablets in the Pierpont Morgan Library' in Pintaudi, R. & Sijpesteijn, P.J., <i>Tavolette lignee e cerate da varie collezioni Papyrologica Florentina XVIII</i> (Florence, 1989), pp. 155-64; photographs at plates 82-3 |
| TVarie 72 | — | <i>op. cit.</i> ; photograph at plate 84 |
| TVarie 73 | — | <i>op. cit.</i> ; photograph at plate 85 |
| TVarie 74 | — | <i>op. cit.</i> ; photograph at plate 86 |
| TVarie 75 | — | <i>op. cit.</i> ; photograph at plate 87 |
| TVarie 76 | — | <i>op. cit.</i> ; photograph at plate 88 |
| TVarie 77 | — | <i>op. cit.</i> ; photograph at plate 89 |
| SB III.6219 | <i>F45</i> | Plaumann, G., <i>Antike Schultafeln aus Ägypten Amtliche Berichte aus den Königlichen Kunstsammlungen</i> 34 no. 11 (Berlin, 1913), pp. 210-23. |

* The F-numbers in italics are those from the catalogue in Fowler (1999), where further references can be found.