

**EXERCISES IN  
ARITHMETIC, FOR THE  
USE OF SCHOOLS,  
ARTIZANS, AND OTHERS**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649579358

Exercises in Arithmetic, for the Use of Schools, Artizans, and Others by Robert Rawson

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Cover @ 2017

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**ROBERT RAWSON**

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IN  
ARITHMETIC,

FOR THE USE OF SCHOOLS,

ARTIZANS, AND OTHERS.



BY

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FIFTH EDITION, REVISED AND CORRECTED,  
WITH AN APPENDIX.

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LONDON:  
WHITTAKER AND CO., AVE MARIA LANE.

1868.

181. 9 28.

TO THE RIGHT HON. W. COWPER, M.P.

SIR,

My sense of the warm interest which you have invariably manifested in the promotion of education, and of your kind encouragement accorded to myself in the discharge of my duties as a teacher, prompts me most respectfully to inscribe to you the following pages. With an earnest hope that they may be useful in facilitating the acquisition of a subordinate, but very important, branch of mathematical science,

I have the honor to be,

Sir,

Your most obedient humble Servant,

ROBERT RAWSON.



PART THE FIRST.

ARITHMETICAL TABLES.

MULTIPLICATION TABLE.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

TROY WEIGHT.

- 24 grains ..... = 1 pennyweight.  
 20 pennyweights = 1 ounce  
 12 ounces ..... = 1 pound.  
 7,000 grains ..... = 1 pound avoirdupois.  
 5,760 grains ..... = 1 pound troy.  
 3 $\frac{1}{4}$  grains ..... = 1 carat of diamonds.  
 240 grains ..... = 1 carat of gold or silver.

By this weight gold, silver, and jewellery are weighed, and philosophical experiments estimated.

*n*

## AVOIRDUPOIS WEIGHT.

16 drams . . . . .	= 1 ounce.
16 ounces . . . . .	= 1 pound.
14 pounds . . . . .	= 1 stone.
28 pounds . . . . .	= 1 quarter.
4 quarters . . . . .	= 1 hundred weight.
112 pounds . . . . .	= 1 hundred weight.
20 hundred weight . . . . .	= 1 ton.

By this weight the common necessaries of life are measured.

56 pounds . . . . .	= 1 firkin of butter.
34 ounces . . . . .	= 1 great pound of silk.
240 pounds . . . . .	= 1 pack of wool.

## APOTHECARIES' WEIGHT.

20 grains . . . . .	= 1 scruple.
3 scruples . . . . .	= 1 dram.
8 drams . . . . .	= 1 ounce.
12 ounces . . . . .	= 1 pound.

Medical prescriptions are prepared by this weight.

## LONG MEASURE.

4 inches . . . . .	= 1 hand.
12 inches . . . . .	= 1 foot.
3 feet . . . . .	= 1 yard.
6 feet . . . . .	= 1 fathom.
5½ yards . . . . .	= 1 rod or pole.
40 rods or poles . . . . .	= 1 furlong = 220 yards.
8 furlongs . . . . .	= 1 mile.
3 miles . . . . .	= 1 league.
6080 feet . . . . .	= 1 knot or nautical mile.
1,760 yards = 5280 feet . . . . .	= 1 mile
¼ inch . . . . .	= 1 line.
½ inch . . . . .	= 1 barley corn.
9 inches . . . . .	= 1 span.
18 inches . . . . .	= 1 cubit.
5 feet . . . . .	= 1 pace.
69½ miles . . . . .	= 1 degree.



TABLES.

SQUARE MEASURE.

44 square inches . . .	= 1 square foot.
9 square feet . . .	= 1 square yard.
30½ square yards . . .	= 1 square rod, pole, or perch.
40 perches . . . . .	= 1 rood.
4 roods . . . . .	= 1 acre = 4,840 square yards.
640 square acres . . .	= 1 square mile.
22 yards = 100 links =	1 Gunter's chain.
10 chains long by } 1 chain wide }	= 1 acre.
30 acres . . . . .	= 1 yard of land.
100 acres . . . . .	= 1 hide of land.

SOLID MEASURE.

1,728 cubic inches . . .	= 1 cubic foot.
27 cubic feet . . . . .	= 1 cubic yard.

CLOTH MEASURE.

2½ inches . . . . .	= 1 nail.
4 nails . . . . .	= 1 quarter.
4 quarters . . . . .	= 1 yard.
5 quarters . . . . .	= 1 ell.
3 quarters . . . . .	= 1 Flemish ell.
6 quarters . . . . .	= 1 French ell.

CAPACITY.

4 gills or noggins . . .	= 1 pint.
2 pints . . . . .	= 1 quart.
2 quarts . . . . .	= 1 pottle.
4 quarts . . . . .	= 1 gallon.
2 gallons . . . . .	= 1 peck.
4 pecks . . . . .	= 1 bushel.
8 bushels . . . . .	= 1 quarter.
5 quarters . . . . .	= 1 load.

COAL MEASURE.

3 bushels . . . . .	= 1 sack.
12 sacks . . . . .	= 1 chaldron.

**TABLES.**

**BEER MEASURE.**

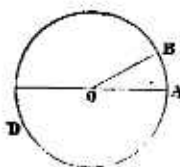
9 gallons . . . . .	= 1 firkin.
16 gallons . . . . .	= 1 kilderkin.
36 gallons . . . . .	= 1 barrel.
54 gallons . . . . .	= 1 hogshead.
108 gallons . . . . .	= 1 butt.
2 butts . . . . .	= 1 ton.

**WINE MEASURE.**

10 gallons . . . . .	= 1 anker
18 gallons . . . . .	= 1 runlet.
42 gallons . . . . .	= 1 tierce.
63 gallons . . . . .	= 1 hogshead.
84 gallons . . . . .	= 1 puncheon.
126 gallons . . . . .	= 1 pipe.

**ANGULAR MEASURE.**

60 seconds . . . . .	= 1 minute.
60 minutes . . . . .	= 1 degree.
15 degrees . . . . .	= $\frac{1}{4}$ sign of the zodiac.
30 degrees . . . . .	= 1 sign of the zodiac.
90 degrees . . . . .	= 1 quadrant, or $\frac{1}{4}$ part of a circle.
180 degrees . . . . .	= 1 semi-circumference.
360 degrees . . . . .	= 1 circumference of a circle, or 12 signs of the zodiac.



If the circumference of a circle, A B D, be divided into 360 equal parts, then A B, one of these parts, is called a degree.

The zodiac is a belt in the heavens which extends 8 degrees on each side of the ecliptic.

**NUMBER MEASURE.**

12 units . . . . .	= 1 dozen.
12 dozen . . . . .	= 1 gross.
12 gross . . . . .	= 1 great gross.
20 units . . . . .	= 1 score.
24 sheets . . . . .	= 1 quire of paper.
20 quires . . . . .	= 1 ream.
2 reams . . . . .	= 1 bundle.
12 skins of parchment . . . . .	= 1 roll.

TABLES.

PENCE TABLE.

4 farthings . . . . .	= 1 penny.
12 pennies . . . . .	= 1 shilling.
20 shillings . . . . .	= 1 pound or sovereign.
5 shillings . . . . .	= 1 crown.
21 shillings . . . . .	= 1 guinea.

	s.	d.		s.	d.
12 pence . . . . .	=	1 0	60 "	=	5 0
20 " . . . . .	=	1 8	70 " . . . . .	=	5 10
24 " . . . . .	=	2 0	72 " . . . . .	=	6 0
30 " . . . . .	=	2 6	80 " . . . . .	=	6 8
36 " . . . . .	=	3 0	84 " . . . . .	=	7 0
40 " . . . . .	=	3 4	90 " . . . . .	=	7 6
48 " . . . . .	=	4 0	96 " . . . . .	=	8 0
50 " . . . . .	=	4 2	100 " . . . . .	=	8 4

OLD ENGLISH COINS.

s.	d.		s.	d.	
13 4 . . . . .	=	1 mark.	27 0 . . . . .	=	1 moidore.
6 8 . . . . .	=	1 noble.	10 0 . . . . .	=	1 angel.
0 6 . . . . .	=	1 tester.	23 0 . . . . .	=	1 Carolus.
0 4 . . . . .	=	1 groat.	25 0 . . . . .	=	1 Jacobus.

TABLES OF ALIQUOT PARTS.

d.	s.	d.	s.	s. d.	£.	s. d.	£.
1½ = ½ of 1		7½ = ¾ of 1		2 6 = ¼ of 1		10 0 = ¼ of 1	
3 = ⅓ "		8 = ⅔ "		4 0 = ⅓ "		12 6 = ⅓ "	
4 = ¼ "		9 = ⅞ "		5 0 = ⅕ "		13 4 = ⅕ "	
4½ = ⅓ "		10½ = ⅞ "		6 8 = ⅕ "		15 0 = ⅕ "	
6 = ⅙ "				7 6 = ⅕ "		17 6 = ⅕ "	

TIME.

60 seconds . . . . .	= 1 minute.	7 days . . . . .	= 1 week.
60 minutes . . . . .	= 1 hour.	4 weeks . . . . .	= 1 lunar month.
24 hours . . . . .	= 1 day.	365 days . . . . .	= 1 year.

A solar year is the time which the earth takes to perform a revolution in its orbit (called the ecliptic) round the sun; and has been determined, from a great number of observations, made by the greatest astronomers in Europe, to be 365 days, 5 hours, 48 minutes, 47½ seconds. A solar day is the interval between the successive returns of the centre of the sun's disk to the meridian, and is divided into 24 equal parts, called hours.

For Remembering the Days in each Month.

Thirty days hath September, April, June, and November;  
 February hath twenty-eight alone; and all the rest have thirty-one;  
 Except leap year, and that is the time  
 When February's days are twenty-nine.