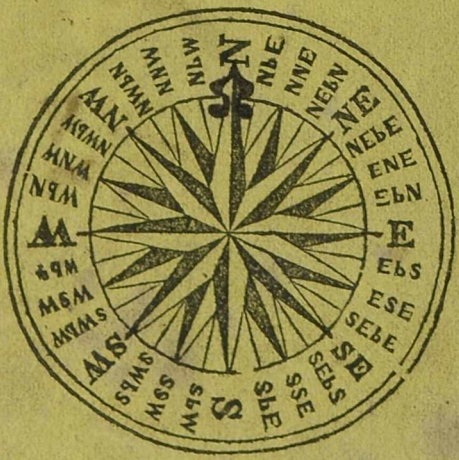
ARITHMETICAL TABLES,

According to the New Act of Parliament.

THE COMPASS.



THE NEW STANDARD

WEIGHTS AND MEASURES,

AND OTHER

MISCELLANEOUS INFORMATION.

Price One Penny.

FRONTISPIECE.

If you wish for the pleasures that riches impart,
You must first learn these Tables correctly by heart;
Rise early, live temperate, be just, and have care;
And out of your income save at least a third share.

NEW

ARITHMETICAL

TABLES,

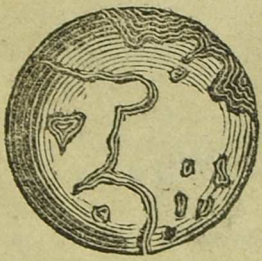
FOR THE USE OF SCHOOLS,

Enlarged and improved;

WITH

Other Miscellaneous Information.

"Arithmetic is of such general use, in all parts of life and business, that scarcely anything is to be done without it." LOCKE.



DEVONPORT:

PRINTED AND PUBLISHED BY E. KEYS.

SOLD BY R. STONE, EXETER.

AN

INTRODUCTION

TO THE

ART OF NUMBERING.

Arithmetic is a science so universally useful, that all advantages in learning are of small account without the knowledge of it.

Number is always expressed by letters or figures.

Figures are, 1 2 3 4 5 6 7 8 9 0, and by these ten characters all numbers may be fully expressed.

The reading, writing, valuing, or the expressing of number, is called Numeration.

The common affections of all numbers, are, Addition, Subtraction, Multiplication, and Division, which are called the rules in arithmetic.

Addition teaches us to add or cast up several numbers together into one whole or total sum.

Subtraction teaches us to take one number from another, and to know the remainder.

Multiplication shows, at one operation, the product of several equal sums added together.

Division shows how to separate any number into as many parts as you please.

These four rules are called the Fundamental Rules; because no question in this science can be wrought without them.

Reduction teaches us to reduce numbers from one name to another, in coin, in weight, or measure.

The Rule of Three is either single, double, direct, or inverse.

The Single Rule has three terms given to find a fourth, and the Double Rule has five terms given to find a sixth.

The Direct Rule requires a direct operation, and the Inverse Rule an inverted operation.

All the other rules in arithmetic are more or less dependent on the Rule of Three.

Fractions are parts of numbers, and are of various kinds; as, Vulgar, Decimal, Duodecimal, &c.

By fractional numbers most questions may be solved, as well as by whole numbers, and many operations more precisely performed.

Arithmetical Characters, &c.

= *Equal.* The sign of Equality; as, 4qrs.=1cwt., signifies that 4qrs. are equal to 1cwt.

— *Minus, or less.* The sign of Subtraction; as, 8—2=6; that is, 8 lessened by 2 is equal to 6.

+ *Plus, or more.* The sign of Addition; as, 4+4=8; that is, 4 added to 4 more is equal to 8.

× *Multiplied by.* Sign of Multiplication; as, 4×6=24; that is, 4 multiplied by 6 is equal to 24.

÷ *Divided by.* The sign of Division; as, 8÷2=4; that is, 8 divided by 2 is equal to 4.

: *is,* :: *so is.* Sign of Proportion; as, 2 : 4 :: 8 : 16; that is, as 2 is to 4 so is 8 to 16.

⌝ greater than; ⌜ less than.

$\sqrt{^2}$ Square Root; $\sqrt{^3}$ Cube Root.

⊥ Perpendicular. —— Horizontal.

|| *or* = Parallel. △ Triangle. □ Square.

⌓ Semicircle. ⬭ Oval. Qrs. quarters.

Ancient English Coins.

Moidore, 27s.	Mark, 13s. 4d.	Noble, 6s. 8d.
Half Do. 13s. 6d.	Angel, 10s.	Groat, 4d.

NEW

ARITHMETICAL TABLES.

Numeration.

Units	1
Tens	12
Hundreds	123
Thousands	1,234
Tens of Thousands	12,345
Hundreds of Thousands	123,456
Millions	1,234,567
Tens of Millions	12,345,678
Hundreds of Millions	123,456,789
Thousands of Millions	1,234,567,890

Note.—This table is indefinite in its extent; but what is here inserted is sufficient for every common purpose.

Arabic and Roman Numbers.

1..I.	12..XII.	35..XXXV.	90..XC.
2..II.	13..XIII.	40..XL.	100..C.
3..III.	14..XIV.	45..XLV.	200..CC.
4..IV.	15..XV.	50..L.	300..CCC.
5..V.	16..XVI.	55..LV.	400..CCCC.
6..VI.	17..XVII.	60..LX.	500..D.
7..VII.	18..XVIII.	65..LXV.	600..DC.
8..VIII.	19..XIX.	70..LXX.	700..DCC.
9..IX.	20..XX.	75..LXXV.	800..DCCC.
10..X.	25..XXV.	80..LXXX.	900..DCCCC.
11..XI.	30..XXX.	85..LXXXV.	1000..M.

Addition and Subtraction.

1 and 1 are 2	3 and 1 are 4	5 and 1 are 6	7 and 1 are 8	9 and 1 are 10
2.. 3	2.. 5	2.. 7	2.. 9	2..11
3.. 4	3.. 6	3.. 8	3..10	3..12
4.. 5	4.. 7	4.. 9	4..11	4..13
5.. 6	5.. 8	5..10	5..12	5..14
6.. 7	6.. 9	6..11	6..13	6..15
7.. 8	7..10	7..12	7..14	7..16
8.. 9	8..11	8..13	8..15	8..17
9..10	9..12	9..14	9..16	9..18

2 and 1 are 3	4 and 1 are 5	6 and 1 are 7	8 and 1 are 9	10 and 1 are 11
2.. 4	2.. 6	2.. 8	2..10	2..12
3.. 5	3.. 7	3.. 9	3..11	3..13
4.. 6	4.. 8	4..10	4..12	4..14
5.. 7	5.. 9	5..11	5..13	5..15
6.. 8	6..10	6..12	6..14	6..16
7.. 9	7..11	7..13	7..15	7..17
8..10	8..12	8..14	8..16	8..18
9..11	9..13	9..15	9..17	9..19

Note.—This table may be applied to Subtraction by reversing it; as, 2 taken from 4 leaves 2; 2 from 5 leaves 3, &c.

British Currency.

Sovereign, £1.
Double Ditto, £2.
Half Sovereign, 10s.
Guinea, £1. 1s.
Half-Guinea, 10s. 6d.
Crown, 5s.
Half-Crown, 2s. 6d

Shilling, 1s.
Sixpence, 6d.
Fourpenny Piece, 4d.
Penny, 1d.
Halfpenny, ½d.
Farthing, ¼d.

Multiplication Table.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140
8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160
9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162	171	180
10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	220
12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240
13	26	39	52	65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260
14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280
15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300
16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320
17	34	51	68	85	102	119	136	153	170	187	204	221	238	255	272	289	306	323	340
18	36	54	72	90	108	126	144	162	180	198	216	234	252	270	288	306	324	342	360
19	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380
20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400

Quarter Days, for paying Rent, &c.

Lady-day.....25th of March
Midsummer-day.....24th of June
Michaelmas-day.....29th of September
Christmas-day .....25th of December

Multiplication and Division.

Twice	3 times	4 times	5 times
1 are 2	4 are 12	7 are 28	10 are 50
2.. 4	5.. 15	8.. 32	11.. 55
3.. 6	6.. 18	9.. 36	12.. 60
4.. 8	7.. 21	10.. 40	13.. 65
5.. 10	8.. 24	11.. 44	14.. 70
6.. 12	9.. 27	12.. 48	15.. 75
7.. 14	10.. 30	13.. 52	16.. 80
8.. 16	11.. 33	14.. 56	17.. 85
9.. 18	12.. 36	15.. 60	18.. 90
10.. 20	13.. 39	16.. 64	19.. 95
11.. 22	14.. 42	17.. 68	20..100
12.. 24	15.. 45	18.. 72	21..105
13.. 26	16.. 48	19.. 76	22..110
14.. 28	17.. 51	20.. 80	23..115
15.. 30	18.. 54	21.. 84	24..120
16.. 32	19.. 57	22.. 88	
17.. 34	20.. 60	23.. 92	6 times
18.. 36	21.. 63	24.. 96	1 are 6
19.. 38	22.. 66		2.. 12
20.. 40	23.. 69	5 times	3.. 18
21.. 42	24.. 72	1 are 5	4.. 24
22.. 44		2.. 10	5.. 30
23.. 46	4 times	3.. 15	6.. 36
24.. 48	1 are 4	4.. 20	7.. 42
	2.. 8	5.. 25	8.. 48
3 times	3.. 12	6.. 30	9.. 54
1 are 3	4.. 16	7.. 35	10.. 60
2.. 6	5.. 20	8.. 40	11.. 66
3.. 9	6.. 24	9.. 45	12.. 72

6 times
13 are78
14.. 84
15.. 90
16.. 96
17..102
18..108
19..114
20..120
21..126
22..132
23. 138
24..144

7 times
1 are 7
2.. 14
3.. 21
4.. 28
5.. 35
6.. 42
7.. 49
8.. 56
9.. 63
10.. 70
11.. 77
12.. 84
13.. 91
14.. 98
15..105
16..112
17..119

7 times
18are126
19..133
20..140
21..147
22..154
23..161
24..168

8 times
1 are 8
2.. 16
3.. 24
4.. 32
5.. 40
6.. 48
7.. 56
8.. 64
9.. 72
10.. 80
11.. 88
12.. 96
13..104
14..112
15..120
16..128
17..136
18..144
19..152
20..160
21..168
22..176

8 times
23are184
24..192

9 times
1 are 9
2.. 18
3.. 27
4.. 36
5.. 45
6.. 54
7.. 63
8.. 72
9.. 81
10.. 90
11.. 99
12..108
13..117
14..126
15..135
16..144
17..153
18..162
19..171
20..180
21..189
22..198
23..207
24..216

10 times
1 are10

10 times
2 are20
3.. 30
4.. 40
5.. 50
6.. 60
7.. 70
8.. 80
9.. 90
10..100
11..110
12..120
13..130
14..140
15..150
16..160
17..170
18..180
19..190
20..200
21..210
22..220
23..230
24..240

11 times
1 are11
2.. 22
3.. 33
4.. 44
5.. 55
6.. 66

11 times	11 times	12 times	12 times
7 are 77	18 are 198	3 are 36	14 are 168
8.. 88	19..209	4.. 48	15..180
9.. 99	20..220	5.. 60	16..192
10..110	21..231	6.. 72	17..204
11..121	22..242	7.. 84	18..216
12..132	23..253	8.. 96	19..228
13..143	24..264	9..108	20..240
14..154	———	10..120	21..252
15..165	12 times	11..132	22..264
16..176	1 are 12	12..144	20..276
17..187	2.. 24	13..156	24..288

Note.—This table may be applied to Division, by reversing it: as, the 2s in 4 are 2; the 2s in 6 are 3, &c.

The Weight of Gold Coins.

	oz.	dwts.	grs.
A five-sovereign piece..	1	5	16 370
A double sovereign	0	10	6.548
A sovereign	0	5	3.274
A half-sovereign	0	2	13.637
A guinea	0	5	9½
Half-a-guinea	0	2	16¼
A seven-shilling piece..	0	1	19

The price of Standard GOLD is £46. 14s. 6d. ℔ lb.; or £3. 17s. 10½d. ℔ oz. The price of Standard SILVER is £3. 6s. 0d. ℔ lb.; or 5s. 6d. ℔ oz. Both Gold and Silver Bullion (which is the solid metal not coined into money) vary almost every day, according to the demand for them, for exportation, in return for various articles of commerce sent to this country; such as wines, oil, grain, silk, fruit, drugs, &c.

Money Tables.

4 farthings - - - make 1 penny
12 pence - - - - - - - 1 shilling
20 shillings - - - - - - 1 pound

A pound contains 240 pence, or 960 farthings.

Farthings.	d.	Pence.	s.	d.	Shillings.	£.	s.
1	$\frac{1}{4}$	12	1	0	20	1	0
2	$\frac{1}{2}$	20	1	8	30	1	10
3	$\frac{3}{4}$	24	2	0	40	2	0
4	1	30	2	6	50	2	10
5	$1\frac{1}{4}$	36	3	0	60	3	0
6	$1\frac{1}{2}$	40	3	4	70	3	10
7	$1\frac{3}{4}$	48	4	0	80	4	0
8	2	50	4	2	90	4	10
9	$2\frac{1}{4}$	60	5	0	100	5	0
10	$2\frac{1}{2}$	70	5	10	110	5	10
11	$2\frac{3}{4}$	72	6	0	120	6	0
12	3	80	6	8	130	6	10
13	$3\frac{1}{4}$	84	7	0	140	7	0
14	$3\frac{1}{2}$	90	7	6	150	7	10
15	$3\frac{3}{4}$	96	8	0	160	8	0
16	4	100	8	4	170	8	10
17	$4\frac{1}{4}$	108	9	0	180	9	0
18	$4\frac{1}{2}$	110	9	2	190	9	10
19	$4\frac{3}{4}$	120	10	0	200	10	0
20	5	130	10	10	250	12	10
21	$5\frac{1}{4}$	132	11	0	300	15	0
22	$5\frac{1}{2}$	140	11	8	350	17	10
23	$5\frac{3}{4}$	144	12	0	400	20	0
24	6	150	12	6	450	22	10
25	$6\frac{1}{4}$	160	13	4	500	25	0

Avoirdupois Weight.

16 drams.....	make	1 ounce.
16 ounces		1 pound.
14 pounds		1 stone.
28 pounds		1 quarter.
4 quarters, or 112lbs		1 hundred weight.
20 hundred weight..		1 ton.

Used for weighing all coarse and heavy goods; such as pitch, tar, rosin, copper, tin, meat, butter, bread, grocery wares, silks, drugs, &c.

A pound avoirdupois contains 14 ounces, 11 pennyweights, 16 grains troy.

Apothecaries' Weight.

20 grains.....	make	1 scruple ℈
3 scruples		1 dram ʒ
8 drams		1 ounce ℥
12 ounces.....		1 pound. ℔

By this weight medicines are compounded; but drugs are bought and sold by Avoirdupois weight.

Apothecaries' Measure.

60 minims..	make	1 fluid dram.
8 fluid drams ..		1 ounce.
*20 fluid ounces ..		1 pint.
8 pints		1 gallon.

* Many Apothecaries use the 16oz., but the Pharmacopeia has it 20oz.

Square Measure.

144	inches..... make	1 foot.
9	feet.....	1 yard.
30¼	yards	1 pole.
16	poles	1 chain.
40	poles	1 rood.
4	roods, or 10 chains	1 acre.
160	poles, or 4,480 yards also	1 acre.
640	acres	1 mile.

272¼ feet are 1 rod of brick work.

By this measure any thing having length and breadth only is measured.

Long Measure.

3	barleycorns make	1 inch.
4	inches	1 hand.
12	inches	1 foot.
3	feet	1 yard.
6	feet	1 fathom.
5½	yards	1 pole.
40	poles	1 furlong.
8	furlongs.....	1 mile.
3	miles	1 league.
60	miles	1 degree.

A degree is nearly 69 English miles and 4 furlongs.

Used in measuring the distances of places, or any thing else, where length is considered, without regard to breadth.

Troy Weight.

24	grains....make	1 pennyweight.
20	pennyweights ..	1 ounce.
12	ounces.....	1 pound.

By this weight, jewels, gold, silver, and many liquids are weighed.

Wool Weight.

7	pounds.....make	1 clove.
2	cloves	1 stone.
2	stones	1 tod.
6½	tods	1 wey.
2	weys	1 sack.
12	sacks	1 last.

Cloth Measure.

2¼	inches.....make	1 nail.
4	nails	1 quarter.
3	quarters	1 ell Flemish.
4	quarters	1 yard.
5	quarters	1 ell English.
6	quarters	1 ell French.

The yard is used for measuring all sorts of woollen cloths, wrought silk, most linens, tapes, &c.; the ell English, in measuring some particular linens called hollands; and the ell Flemish, in measuring tapestry.

Cubic or Solid Measure.

1728	inches	make 1 foot.
27	feet	1 yard.
49	feet of unhewn timber	1 ton or load.
50	feet of hewn timber	1 ton or load.
108	feet.....	1 stack of wood.
128	feet.....	1 cord of wood.

Used to find the cubic contents, including length, breadth, and thickness.

Wheaten Bread.

	lb.	*oz.*	*dr.*
A peck loaf weighs	17	6	2
A half-peck loaf	8	11	1
A quartern loaf	4	5	8
A peck of flour	14	0	0
A bushel of flour	56	0	0
A sack of flour, or five bushels	280	0	9

Involution.

Square of 1	is	1	Cube of 1	is	1
,, 2	—	4	,, 2	—	8
,, 3	—	9	,, 3	—	27
,, 4	—	16	,, 4	—	64
,, 5	—	25	,, 5	—	125
,, 6	—	36	,, 6	—	216
,, 7	—	49	,, 7	—	343
,, 8	—	64	,, 8	—	512
,, 9	—	81	,, 9	—	729

In the four following tables, the left-hand columns show the capacity of the old standard measures, compared with the new standard: the right-hand columns, the capacity of the new standard measures, compared with that of the old. Thus, in wine, 1 anker of the new standard contains a little more than 12 gallons of the old standard; and 1 anker of the old standard is equal to 8 gallons, 1 quart, 2.58 gills of the new measure. Observe, that the 100th parts need not *generally* be noted: if they exceed 50, they may be considered as half a gill.

Wine Measure.

New Standard contains of the Old.					Old Standard contains of the New.			
ga.	*q.*	*p.*	*gls.*		*ga.*	*q.*	*p.*	*gls.*
0	1	0	1.60	2 pints make 1 quart.	0	0	1	2.66
1	0	1	2.41	4 quarts — 1 gallon.	0	3	0	2.65
12	0	0	0.10	10 gallons — 1 anker.	8	1	0	2.58
21	2	0	3.38	18 gallons — 1 runlet.	14	3	1	3.87
50	1	1	1.22	42 gallons — 1 tierce.	34	3	1	3.70
75	2	0	3.83	63 gallons — 1 hogsh.	52	1	1	3.55
100	3	0	2.44	84 gallons — 1 punch.	69	3	1	3.40
151	0	1	3.66	2 hhds. — 1 pipe.	104	3	1	3.11
302	1	1	3.33	2 pipes — 1 tun.	209	3	1	2.22

This is employed in measuring spirits, perry, cider, mead, vinegar, oil, &c.

Dry Measure.

b.	*p.*	*g.*	*q.*	*p.*	*gills.*				*b.*	*p.*	*g.*	*q.*	*p.*	*gills.*
0	0	0	1	0	0.25	2 pints	make	1 quart.	0	0	0	0	1	3.75
0	0	1	0	0	1.01	4 quarts	—	1 gallon.	0	0	0	3	1	3.02
0	1	0	0	0	2.02	2 gallons	—	1 peck.	0	0	1	3	1	2.04
1	0	0	1	0	0.07	4 pecks	—	1 bushel.	0	3	1	3	0	0.17
2	0	0	2	0	0.14	2 bushels	—	1 strike.	1	3	1	2	0	0.35
4	0	1	0	0	0.28	4 bushels	—	1 sack.	3	3	1	0	0	0.70
8	1	0	0	0	0.56	8 bushels	—	1 quarter.	7	3	0	0	0	1.40
33	0	0	0	0	2.24	4 quarters	—	1 chaldron.	31	0	0	0	1	1.65
82	2	0	0	1	1.63	10 quarters	—	1 last.	77	2	0	1	1	2.13

The standard bushel is 19½ in diameter and 8¼ deep, containing 2218.192 cubic inches.

The bushel in water measure is 5 pecks.

Coal Measure.

3	0	0	3	0	0.21	3 bushels	—	1 sack.	2	3	1	1	0	0.52
37	0	1	0	0	2.52	36 bushels	—	1 chaldron.	34	3	1	0	1	2.34

Ale and Beer Measure.

Old Standard.			New Standard.
ga. q. p. gls.			*ga. q. p. gls.*
0 0 0 3.93	4 gills make	1 pint.	0 0 1 0.07
0 0 1 3.86	2 pints —	1 qrt.	0 1 0 0.13
0 3 1 3.46	4 quarts —	1 gal.	1 0 0 0.54
8 3 0 3.17	9 gallons	1 firk.	9 0 1 0 91
17 2 1 2.34	2 firkins —	1 kild.	18 1 0 1.82
35 1 1 0.69	2 kilderks.	1 bar.	36 2 0 3 64
53 0 0 3.03	1½ barrel	1 hhd.	54 3 1 1.45
70 3 0 1.38	2 barrels	1 pun.	73 0 1 3.27
106 0 1 2.06	3 barrels	1 butt.	109 3 0 2.91

The Ale and Beer (imperial) gallon contains 277.274 cubic inches.

Hay, &c.

36 pounds make 1 truss of straw.
56 pounds ..... 1 truss of old hay.
60 pounds ..... 1 truss of new hay.
36 trusses ..... 1 load

Hay is new to September 1st.

Land Measure.

30¼ yards ..... 1 perch.
40 perches ..... 1 rood.
4 roods ..... 1 acre.
30 acres ..... 1 yard.
100 acres ..... 1 hide.

Cheese and Butter.

A clove, or half-stone, 8lbs.

A wey, in Suffolk, 32 cloves, or 256lbs.

A wey, in Essex, 42 cloves, or 336lbs.

Practice Tables.

ALIQUOT PARTS

OF A POUND OR SOVEREIGN.

s.	*d.*		*£.*	
10	0	equal	1	half
6	8	....	1	third
5	0	....	1	fourth
4	0	....	1	fifth
3	4	....	1	sixth
2	6	....	1	eighth
2	0	....	1	tenth
1	8	....	1	twelfth
1	4	....	1	fifteenth
1	3	....	1	sixteenth
1	0	....	1	twentieth
0	6	....	1	fortieth

OF A SHILLING.

d.		*s.*	
6	....	1	half
4	....	1	third
3	....	1	fourth
2	....	1	sixth
1½	....	1	eighth
1	....	1	twelfth

OF A TON.

Cwt.		*T.*	
10	equal	1	half
5	....	1	fourth
4	....	1	fifth
2½	....	1	eighth
2	....	1	tenth
1	....	1	twentieth

OF A CWT.

qr.	*lb.*		*Cwt.*	
2	0	....	1	half
1	0	....	1	fourth
0	16	....	1	seventh
0	14	....	1	eighth

OF A QUARTER.

lb.		*Qr.*	
14	....	1	half
7	....	1	fourth
4	....	1	seventh
3½	....	1	eighth

Time Measure.

60 seconds	make	1 minute.
60 minutes		1 hour.
24 hours		1 day.
7 days		1 week.
4 weeks		1 month.
365 days, 6 hours		1 Julian year.
365d. 5h. 48m. 57s. ..		1 Solar year.

N.B. The calendar months, by which we reckon time, are unequally of 30 or 31 days, excepting February, which is of 28, and in leap year, of 29 days.

The addition of a day in the month of February is made every fourth year, to recover the six hours which the sun spends in his course each year, beyond the 365 days ordinarily allowed for it.

A lunar month contains 28 days, being the time which the moon takes in revolving round the earth.

A solar month is the space of time in which the sun passes through a sign of zodiac.

In every year there are 12 calendar months, viz. January, containing 31 days; February 28, and in leap year 29; March, 31; April, 30; May, 31; June, 30; July, 31; August, 31; September, 30; October, 31; November, 30; and December, 31 days.

Thirty days hath September,
April, June, and November;
February has twenty-eight alone,
And all the rest have thirty-one;
Except in leap year, at which time,
February's days are twenty-nine.

Motion.

60 seconds make 1 minute.
60 minutes .... 1 degree.
90 degrees ..... 1 quadrant
4 quadrants .... 1 circle.

This Table is used in geographical calculations.

Geographical Tables, &c.

A circle..... 360 degrees.
A degree ..... 60 minutes.
A minute ..... 60 seconds.

Diurnal Motion of the Earth reduced to Time.

360 degrees equal 24 hours.
15 ditto ..... 1 hour.
1 ditto ..... 4 minutes.

Apparent Annual Motion of the Sun, reduced to Time.

	days.	hours.
360 deg. or 12 signs equal to	365	6 nearly.
30 ditto or 1 ditto.....	30	10½ do.
1 ditto	1	0 21m.

Miscellaneous Information.

Length of Miles, &c. in different Countries.

An English statute mile contains 1760 yards, or 8 furlongs.
A Russian verst is a little more than ¾ of a mile English.
A Scotch and Irish mile about 1¾ English.
A Spanish and Polish is about 3½ English.
A German is more than 4 English.
A Swedish, Danish, and Hungarian, is from 5 to 6 English.
A French common league is nearly 3 English
An English marine league is 3 English miles.
The Arabian mile is 2148 English yards.
The China mile is 632 yards.
The Flanders league is 6864 yards.
The French kilometre is 1093 yards.
The French metre is 39¼ English inches.
The Dutch mile is 8101 yards.
The Persian parasang is 6086 yards.
The Roman mile is 1628 yards.
The Turkish berri is 1826 yards.

Things necessary to be known.

A stone of fish weighs 8lbs.
A quintal of fish, 100lbs.
A stone of glass, 5lbs.
A seam of glass, 120lbs.
A stone of iron or wool, 14lbs.
A stone of meat, 8lbs.
A stone of hemp, 32lbs.

A barrel of soft soap, weighs 256lbs.
A barrel of anchovies, 30lbs.
A barrel of raisins, 112lbs.
A gallon of train oil, 9lbs.
A barrel of prunes, 112lbs.
A bag of coffee, about 168lbs.
A barrel of gunpowder, 112lbs.
A firkin of soft soap, 64lbs.
A firkin of butter, 56lbs.
Ditto Irish, about 70lbs.
A cask of Dutch butter, 112lbs.
A bushel of salt or flour, 56lbs.
A peck of salt or flour, 14lbs.
A sack of coals, 224lbs.
Chest of black tea, about 84lbs.
Chest of Hyson tea, 60lbs.
Chest of Twankay tea, 80lbs.
A faggot of steel, 120lbs.
A bag of rice, 168lbs.
Sack of corn, 5 bushels, or 280lbs.
A wey, or cart of corn, 40 bushels.
A barrel of tobacco, 2 to 3cwt.
A cask of coffee, 7 or 8cwt.
A barrel of Carolina rice, 6cwt.
A tun of fish oil, 252 gallons.
A tun of seed oil, 236 gallons.
A barrel of salmon, 42 gallons.
A barrel of herrings, 32 gallons.
Keg of sturgeon, 4 or 5 gallons.
A fother or ton of lead, 19½cwt.
30 deals, 1 quarter.
4 quarters or 120 deals, 1 hundred.

A load of bricks, 500; tiles, 1000.
A ton of potatoes or salt, 40 bushels.
A boll of canvass, 28lbs.
A barrel of ale, 36 gallons.
A pipe of Port wine, 138 gallons.
A pipe of Sherry, 130 gallons.
A pipe of Madeira, 110 gallons.
90 words, 1 folio in chancery.
80 words, 1 ditto exchequer.
72 words, 1 ditto common law.
5 doz. parchments, 1 roll.
A brace, 2; a leash, 3; a warf or cast, 4.
12 articles, 1 dozen; 12 dozen, 1 gross; 12 gross, 1 great gross
20 articles, 1 score; 5 score, 1 hundred; 6 score, 1 great hundred.

BOOKS.

4 pages or 2 leaves, 1 sheet of folio.
8 pages or 4 leaves, 1 sheet of quarto.
16 pages or 8 leaves, 1 sheet of octavo.
24 pages or 12 leaves, 1 sheet of duodecimo.
36 pages or 18 leaves 1 sheet of eighteens.

PAPER.

20 sheets.....make 1 quire of outsides.
24 sheets ..... 1 quire of insides.
20 quires..... 1 ream.
2 reams..... 1 bundle.

A ream of paper, as sent from the paper mill, has 2 outsides or damaged quires. 25 sheets are a printer's quire; or 21½ quires, or 516 sheets, a printer's ream, but has no outsides.

Supposed Population of the World.

960 millions of human beigns are supposed to be upon the earth; of which Europe is said to contain 153 millions—Africa, 156—Asia, 500—America, 150—and the islands in the Pacific, 7.

If divided into 30 equal parts, 5 of them will be Christians, 6 Mahometans, 1 part Jews, and 18 Pagans.

Christians are numerous in Europe and America, some in the south of Asia, and a few in Africa.

Mahometans are numerous in Asia, Africa, and south-east of Europe.

Pagans abound in Africa, and in the interior of America; some in Asia; and a small number in the north of Europe.

The whole number of persons that have ever existed upon the earth, since the creation of the world, was estimated a few years ago at about 132,000,000,000.

Early Rising and Lost Hours.

One person rises in the morning at half-past nine, another at six. If each live to be fifty years old, the one will have enjoyed sixty-three thousand eight hundred and seventy-five hours, or two thousand six hundred & sixty-one days, more than the other. Let us suppose that there are throughout Great Britain, one million five hundred

thousand persons who rise at a quarter past nine, or later. Of these, perhaps, nine hundred and fifty thousand would, if they rose at six, be usefully employed. At this rate, fifty-six thousand three hundred and forty-six million eight hundred and seventy-five thousand hours, or six million four hundred and thirty-two thousand two hundred and ninety-two years of individual improvement are lost to society every half century.

English Grammar.

THE MARKS AND STOPS IN READING.

(,) A *comma* is a pause, or resting in speech, while you may count *one;* as in the *first* stop of the following example: *Get wisdom, get understanding; forget it not: neither decline from the words of my mouth.*

(;) A *semicolon* is a pause while you may count *two;* as in the *second* pause of the above example.

(:) A *colon* is a pause while you may count *three.* It is used when the sense is perfect, but not ended; as in the *third* stop of the above example.

(.) A *period,* or full stop, denotes the longest pause, or while you may count *four.* It is placed after a sentence when it is completely and fully ended, as in the *last* stop of the above example.

(—) The *dash* is used where the sentence breaks off abruptly; or where a significant pause is required.

(?) An *interrogation* is used when a question is asked, and requires as long a pause as a full stop; as, *Who is that?*

(!) A *note of admiration* is used when any thing is expressed with wonder, and requires a pause somewhat longer than a period; as, *O Lord, how glorious are thy works!*

( ) A *parenthesis* is used to include words in a sentence, which may be left out without injuring the sense; as, *Pride (says a great author) was not made for man.*

(ʌ) A *caret* is used only in writing, to denote that a letter or word is left out.

(-) The *hyphen* is used to separate syllables, and the parts of compound words; as, *watch-ing, coach-man.*

(') The *apostrophe* at the head of a letter denotes the omission of one or more letters; as *lov'd, tho',* for *loved, though.* And it is used to mark the possessive case; as, *virtue's reward,* meaning, *the reward of virtue.*

(" " or ' ') *Quotations* are put at the beginning and end of lines or sentences taken from other authors.

(*) An *asterisk,* and (†) an *obelisk* or *dagger,* and (‖) *parallels* are used to refer to some note in the margin, or at the foot of the page.

(¶) A *paragraph* is chiefly used in the bible, and denotes the beginning of a new subject.

(–) An *ellipsis* is used when some letters in a word are omitted; as, *k—g* for *king*.

(☞) An *index* points out something very remarkable.

(¨) A *diæresis* divides two vowels into two syllables, that would otherwise make a diphthong; as, *Creator*.

OF CAPITALS.

Capitals are proper only in the following cases:—

1. At the beginning of any writing, book, chapter, paragraph; & the beginning of every line in poetry.

2. After a period or full stop; at the beginning of a new sentence; also, in the pronoun *I*, and the interjection *O*.

3. All the names of God must begin with a capital letter, and all proper names; as, *Almighty, Lord, Eternal; Thomas, London, Paris, England, France*, &c.

4. Adjectives derived from proper names; as, *Grecian, Roman, English, Baxterian*, &c.

5. Words of importance; as, *the Reformation, the Revolution*.

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PENCE TABLE, IN VERSE.

Twelve Pence is a silver Shilling,
Which went in trifles at the Fair;
Fourteen Pence is One and Two Pence,
But this I'll keep with better care.
Sixteen Pence is One and Four Pence;—
And sorry am I to confess,
Though Eighteen Pence is One and Six Pence,
Too many toil a day for less!
Twenty Pence is One and Eight Pence,
A loaf of wheaten bread cost—once;
Thirty Pence is Two and Six Pence,
Or Half a Crown, if I'm no dunce.
Forty Pence is Three and Four Pence,
The price of pencil, book, and slate;
Fifty Pence is Four and Two Pence,—
With these I'll learn to calculate.
Sixty Pence is just Five Shillings,
In some countries called a Dollar;
Seventy Pence is Five and Ten Pence:
Diligence will make a scholar:
Eighty Pence is Six and Eight Pence,
Oh dear me!—a Lawyer's fee!
Ninety Pence is Seven and Six Pence,
As good as Three Half-Crowns to me.
One Hundred Pence is Eight and Four Pence,
Borrow'd by my brother Ben;
And, as he wanted Nine and Two Pence,
I offer'd him the other Ten.
One Hundred and Twenty is Ten Shillings;
A Hundred and Thirty's Ten Pence more,
And, if in Pence you have Twelve Shillings,
You'll find a Hundred and Forty-four.