

Maths knowledge expectations of Bure Valley School

(Year 3)

At the end of Year 3 children can confidently recall all pre-core knowledge and:

- **recall number bonds to 10, including all numbers 0-10**

0 + 10 = 10	so	10 – 10 = 0
1 + 9 = 10	so	10 – 9 = 1
2 + 8 = 10	so	10 – 8 = 2
3 + 7 = 10	so	10 – 7 = 3
4 + 6 = 10	so	10 – 6 = 4
5 + 5 = 10	so	10 – 5 = 5
6 + 4 = 10	so	10 – 4 = 6
7 + 3 = 10	so	10 – 3 = 7
8 + 2 = 10	so	10 – 2 = 8
9 + 1 = 10	so	10 – 1 = 9
10 + 0 = 10	so	10 – 0 = 10

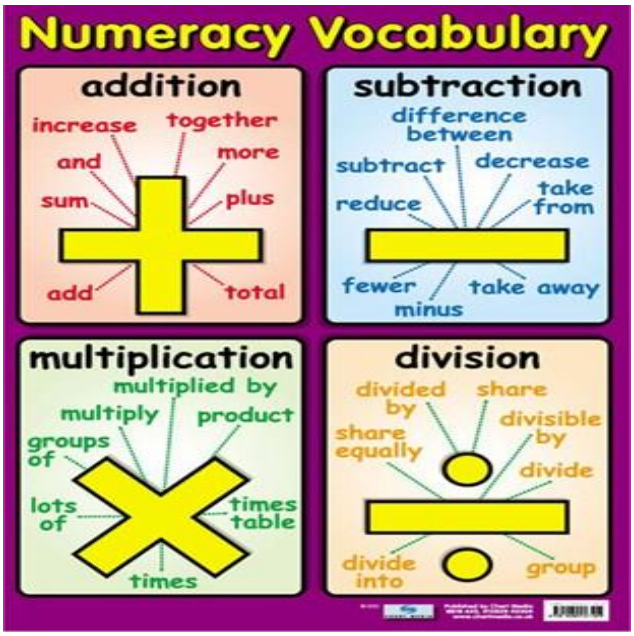
- **recognise the place value of each digit in a 3-digit number**

  For example 329:
  3 means three hundreds
  2 means two tens

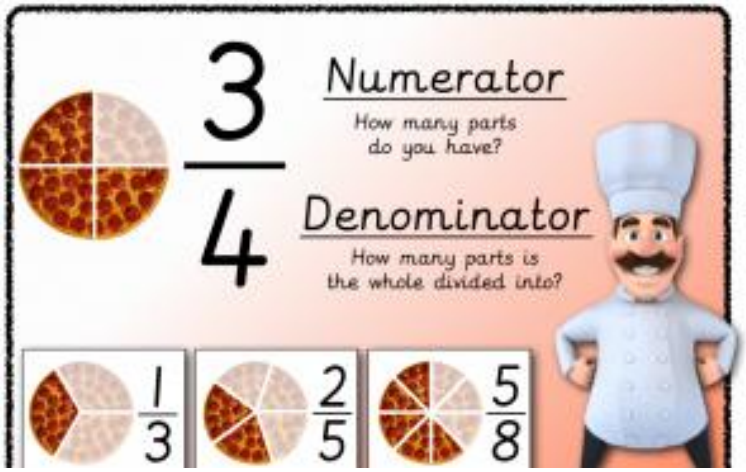
9 means 9 ones

Hundreds	Tens	Ones
3	**2**	**9**

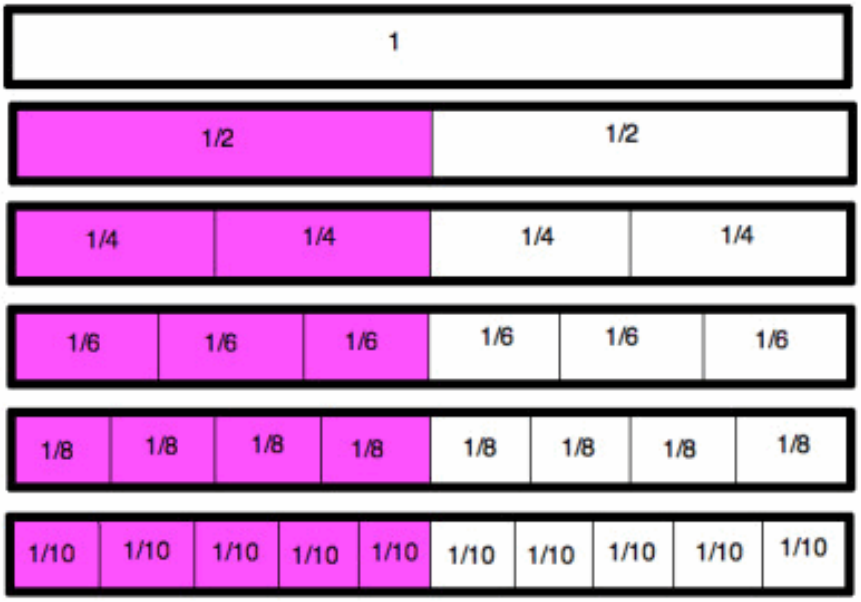
- **know the related vocabulary for each operation**



- **name the parts of a fraction – that the denominator is 'how many parts the whole is split into' and the numerator is 'the counted parts'**



- **give examples of fractions which are equivalent to ½**



- **recognise doubles and halves to 20**

	Ans		Ans		Ans		Ans
Double 1	2	Halve 40	20	Double 11	22	Halve 20	10
Double 2	4	Halve 38	19	Double 12	24	Halve 18	9
Double 3	6	Halve 36	18	Double 13	26	Halve 16	8
Double 4	8	Halve 34	17	Double 14	28	Halve 14	7

Double 5	10	Halve 32	16	Double 15	30	Halve 12	6
Double 6	12	Halve 30	15	Double 16	32	Halve 10	5
Double 7	14	Halve 28	14	Double 17	34	Halve 8	4
Double 8	16	Halve 26	13	Double 18	36	Halve 6	3
Double 9	18	Halve 24	12	Double 19	38	Halve 4	2
Double 10	20	Halve 22	11	Double 20	40	Halve 2	1

- **know the times table facts for 1, 2, 4, 5, 8 and 10's**

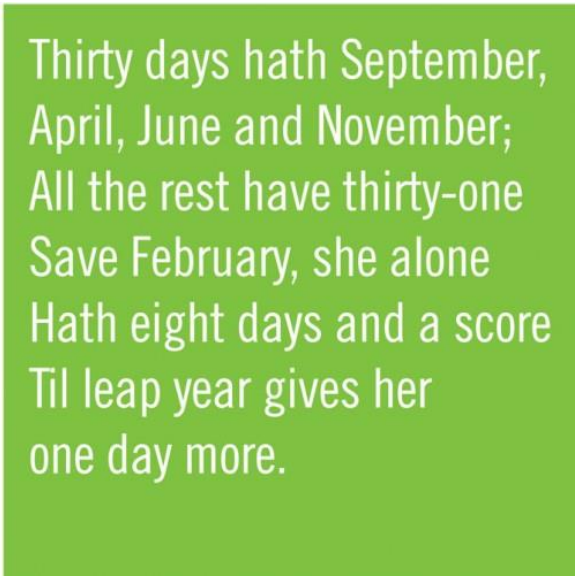
1x table	2x table	4x table	5x table	8x table	10x table
1 x 1 = 1	1 x 2 = 2	1 x 4 = 4	1 x 5 = 5	1 x 8 = 8	1 x 10 = 10
1 x 2 = 2	2 x 2 = 4	2 x 4 = 8	2 x 5 = 10	2 x 8 = 16	2 x 10 = 20
1 x 3 = 3	3 x 2 = 6	3 x 4 = 12	3 x 5 = 15	3 x 8 = 24	3 x 10 = 30
1 x 4 = 4	4 x 2 = 8	4 x 4 = 16	4 x 5 = 20	4 x 8 = 32	4 x 10 = 40
1 x 5 = 5	5 x 2 = 10	5 x 4 = 20	5 x 5 = 25	5 x 8 = 40	5 x 10 = 50
1 x 6 = 6	6 x 2 = 12	6 x 4 = 24	6 x 5 = 30	6 x 8 = 48	6 x 10 = 60
1 x 7 = 7	7 x 2 = 14	7 x 4 = 28	7 x 5 = 35	7 x 8 = 56	7 x 10 = 70
1 x 8 = 8	8 x 2 = 16	8 x 4 = 32	8 x 5 = 40	8 x 8 = 64	8 x 10 = 80
1 x 9 = 9	9 x 2 = 18	9 x 4 = 36	9 x 5 = 45	9 x 8 = 72	9 x 10 = 90
1 x 10 = 10	10 x 2 = 20	10 x 4 = 40	10 x 5 = 50	10 x 8 = 80	10 x 10 = 100
1 x 11 = 11	11 x 2 = 22	11 x 4 = 44	11 x 5 = 55	11 x 8 = 88	11 x 10 = 110
1 x 12 = 12	12 x 2 = 24	12 x 4 = 48	12 x 5 = 60	12 x 8 = 96	12 x 10 = 120

- **know the conversion facts between seconds, minutes, hours, days and weeks**

To convert seconds to minutes, divide by sixty.
Eg 120 seconds = ? minutes
120 divided by 60 = 2
So 120 seconds = 2 minutes
To convert minutes to seconds, multiply by sixty.
Eg 2 minutes = ? seconds
2 x 60 = 120
So 2 minutes = 120 seconds
To convert minutes to hours, divide by sixty.
Eg 180 minutes = ? hours
180 divided by 60 = 3
So 180 minutes = 3 hours

To convert hours to minutes, multiply by sixty.
Eg 3 hours = ? minutes
3 x 60 = 180
So 3 hours = 180 minutes
To convert hours to days, divide by twenty four.
Eg 96 hours = ? days
96 divided by 24 = 4
So 96 hours = 4 days
To convert days to hours, multiply by twenty four.
Eg.4 days = ? hours
4 x 24 = 96
So 4 days = 96 hours
To convert days to weeks, divide by seven.
Eg. 21days = ? weeks
21 divided by 7 = 3
So 21 days = 3 weeks
To convert weeks to days, multiply by seven.
Eg. 3 weeks = ? days
3 x 7 = 21
So 3 weeks = 21 days

- **know how many days per month, year and leap year**



There are 365 days in a year.

Every 4 years we have an extra day.

This is called a *leap* year and consists of 365 days!

(Year 4)

At the end of Year 4 children can confidently recall all Year 3 core- knowledge and:

- **recall number bonds to 100, including all numbers 0-100**

0 + 10 = 10	so	10 - 10 = 0	Therefore:	10 + 10 = 20	so	20 - 10 = 10
1 + 9 = 10	so	10 – 9 = 1		11 + 9 = 20	so	20 - 9 = 11
2 + 8 = 10	so	10 – 8 = 2		12 + 8 = 20	so	20 - 8 = 12
3 + 7 = 10	so	10 – 7 = 3		13 + 7 = 20	so	20 - 7 = 13
4 + 6 = 10	so	10 – 6 = 4		14 + 6 = 20	so	20 - 6 = 14
5 + 5 = 10	so	10 – 5 = 5		15 + 5 = 20	so	20 - 5 = 15
6 + 4 = 10	so	10 – 4 = 6		16 + 4 = 20	so	20 - 4 = 16
7 + 3 = 10	so	10 – 3 = 7		17 + 3 = 20	so	20 - 3 = 17
8 + 2 = 10	so	10 – 2 = 8		18 + 2 = 20	so	20 - 2 = 18
9 + 1 = 10	so	10 – 1 = 9		19 + 1 = 20	so	20 - 1 = 19
10 + 0 = 10	so	10 - 0 = 10		20 + 0 = 20	so	20 - 0 = 20

And so it continues…

Also answer questions such as:

54 + ? = 100 or 100 – 23=? For all numbers to 100.

- **recognise the place value of each digit in a 4-digit number**

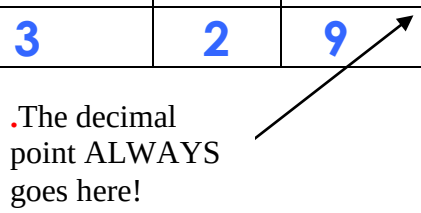
For example 6329:
6 means six thousands
3 means three hundreds
2 means two tens
9 means 9 ones

Thousands	Hundreds	Tens	Ones
6	**3**	**2**	**9**

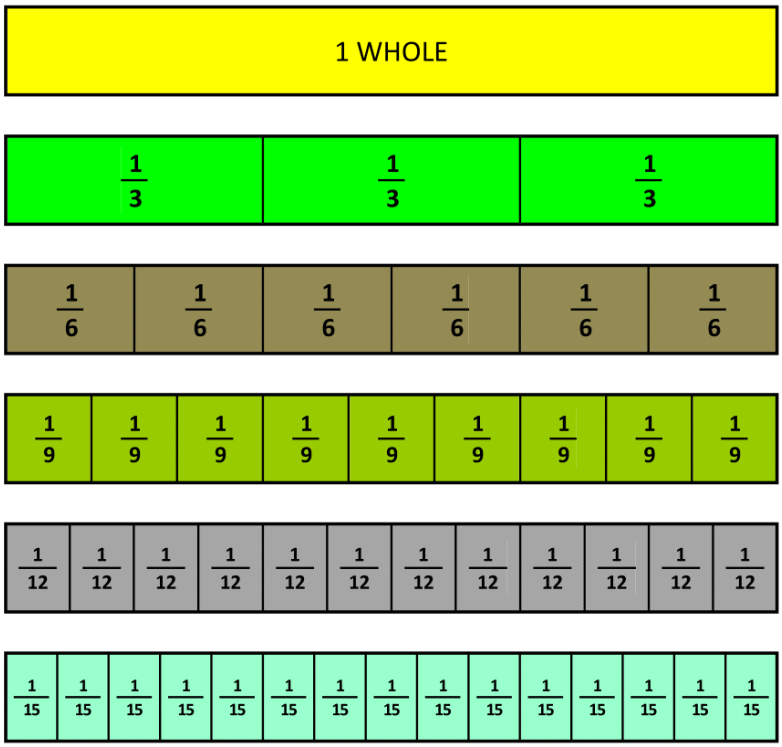
- **recognise the place value of each digit to two decimal places (dp)**

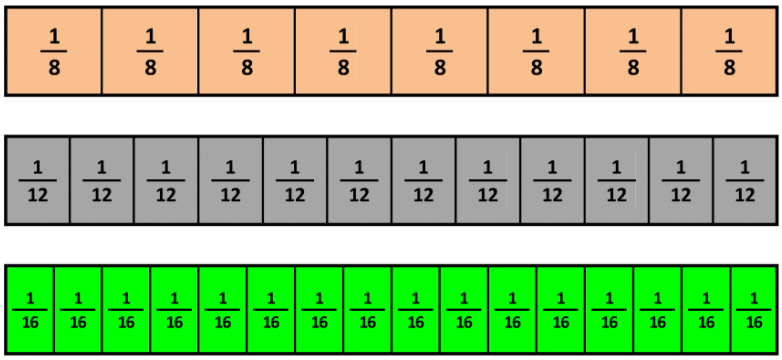
For example 6329.45:
6 means six thousands
3 means three hundreds
2 means two tens
9 means nine ones
0.4 means four tenths
0.05 means five hundredths

Thousands	Hundreds	Tens	Ones	Tenths	Hundredths
6	**3**	**2**	**9**	**4**	**5**



- **give examples of fractions which are equivalent to quarters and thirds**





- **fluently know multiplication and division facts for 3, 6, 7, 9, 11 and 12 times tables**

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

- **know decimal equivalents of fractions for ½, ¼ , ¾, and 1/10**

½ = 0.5
¼ = 0.25
¾ = 0.75
1/10 = 0.1

- **know the conversion facts between g, kg and metric ton (tonne)**

1000g = 1 kilogram (kg)
1000kg = 1 metric ton

- know the conversion facts between mm, cm, m and km

10mm = 1 centimetre (cm)
100cm = 1 metre (m)
1000m = 1 kilometre (km)

- know the conversion facts between ml and l

1000ml = 1 litre (l)

- read Roman numerals to 100

1	=	I	10	=	X
2	=	II	20	=	XX
3	=	III	30	=	XXX
4	=	IV	40	=	XL
5	=	V	50	=	L
6	=	VI	60	=	LX
7	=	VII	70	=	LXX
8	=	VIII	80	=	LXXX
9	=	IX	90	=	XC
			100	=	C

- know that a 90 degree turn is a right angle

(Year 5)

At the end of Year 5 children can confidently recall all Year 4 core-knowledge and:

- **recall the place value of each digit in a 6-digit number**

For example in the number: 876,329:

8 is worth 800 thousand
7 is worth 70 thousand
6 is worth 6 thousand
3 is worth three hundreds
2 is worth two tens
9 is worth 9 ones

(Eight hundred and seventy six thousand, three hundred and nine)

Hundreds of thousands	Tens of thousands	Thousands	Hundreds	Tens	Ones
8	**7**	**6**	**3**	**2**	**9**

- **recognise the place value of each digit to 3 decimal places (dp)**

For example 329.456:

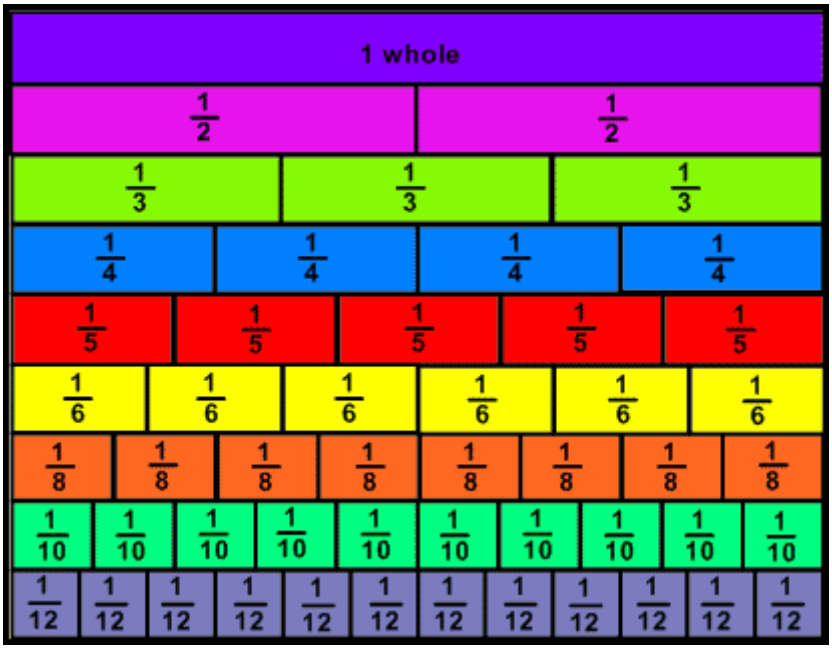
3 is worth three hundreds
2 is worth two tens
9 is worth nine ones
0.4 is worth four tenths
0.05 is worth five hundredths
0.006 is worth six thousandths

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths	Tenths of thousandths
3	2	9	4	5	6	9

.The decimal point ALWAYS goes here!

- **identify an equivalent for any given fraction**

For example: ½ = 2/4, 3/6, 4/8, 50/100



- **know the percentage and decimal equivalents for ½, ¼, 1/5, 2/5 & 4/5.**



- **know the decimal equivalents for fractions involving hundredths and thousandths.**

For example:

1/10=0.1, 1/100=0.01, 1/1000=0.0001

2/10=0.2, 2/100=0.02, 2/1000=0.002 etc…

- **know the decimal number bonds 0-10 (using their knowledge of bonds to 10 to support)**

For example:

0 + 1 = 1	so	1 - 1 = 0
0.1 + 0.9 = 1	so	1 – 0.9 = 0.1
0.2 + 0.8 = 1	so	1 – 0.8 = 0.2
0.3 + 0.7 = 1	so	1 – 0.7 = 0.3
0.4 + 0.6 = 1	so	1 – 0.6 = 0.4
0.5 + 0.5 = 1	so	1 – 0.5 = 0.5
0.6 + 0.4 = 1	so	1 – 0.4 = 0.6
0.7 + 0.3 = 1	so	1 – 0.3 = 0.7
0.8 + 0.2 = 1	so	1 – 0.2 = 0.8
0.9 + 0.1 = 1	so	1 – 0.1 = 0.9
1 + 0 = 1	so	1 - 0 = 1

And so on… to include all bonds to 10.
Such as:
6.1 + 3.9 = 10
(Using bonds to 100 knowledge to support them).

- **Fluently know all multiplication facts (including division) to 12x12**

1x table	2x table	3x table	4x table	5x table	6x table
1 x 1 = 1	1 x 2 = 2	1 x 3 = 3	1 x 4 = 4	1 x 5 = 5	1 x 6 = 6
1 x 2 = 2	2 x 2 = 4	2 x 3 = 6	2 x 4 = 8	2 x 5 = 10	2 x 6 = 12
1 x 3 = 3	3 x 2 = 6	3 x 3 = 9	3 x 4 = 12	3 x 5 = 15	3 x 6 = 18
1 x 4 = 4	4 x 2 = 8	4 x 3 = 12	4 x 4 = 16	4 x 5 = 20	4 x 6 = 24
1 x 5 = 5	5 x 2 = 10	5 x 3= 15	5 x 4 = 20	5 x 5 = 25	5 x 6 = 30
1 x 6 = 6	6 x 2 = 12	6 x 3 = 18	6 x 4 = 24	6 x 5 = 30	6 x 6 = 36

1 x 7 = 7	7 x 2 = 14	7 x 3 = 21	7 x 4 = 28	7 x 5 = 35	7 x 6 = 42
1 x 8 = 8	8 x 2 = 16	8 x 3 = 24	8 x 4 = 32	8 x 5 = 40	8 x 6 = 48
1 x 9 = 9	9 x 2 = 18	9 x 3 = 27	9 x 4 = 36	9 x 5 = 45	9 x 6 = 54
1 x 10 = 10	10 x 2 = 20	10 x 3 = 30	10 x 4 = 40	10 x 5 = 50	10 x 6 = 60
1 x 11 = 11	11 x 2 = 22	11 x 3 = 33	11 x 4 = 44	11 x 5 = 55	11 x 6 = 66
1 x 12 = 12	12 x 2 = 24	12 x 3 = 36	12 x 4 = 48	12 x 5 = 60	12 x 6 = 72

7x table	8x table	9x table	10x table	11x table	12x table
1 x 7 = 7	1 x 8 = 8	1 x 9 = 9	1 x 10 = 11	1 x 11 = 11	1 x 12 = 12
2 x 7 = 14	2 x 8 = 16	2 x 9 = 18	2 x 10 = 22	2 x 11 = 22	2 x 12 = 24
3 x 7 = 21	3 x 8 = 24	3 x 9 = 27	3 x 10 = 33	3 x 11 = 33	3 x 12 = 36
4 x 7 = 28	4 x 8 = 32	4 x 9 = 36	4 x 10 = 44	4 x 11 = 44	4 x 12 = 48
5 x 7 = 35	5 x 8 = 40	5 x 9 = 45	5 x 10 = 55	5 x 11 = 55	5 x 12 = 60
6 x 7 = 42	6 x 8 = 48	6 x 9 = 54	6 x 10 = 66	6 x 11 = 66	6 x 12 = 72
7 x 7 = 49	7 x 8 = 56	7 x 9 = 63	7 x 10 = 77	7 x 11 = 77	7 x 12 = 84
8 x 7 = 56	8 x 8 = 64	8 x 9 = 72	8 x 10 = 88	8 x 11 = 88	8 x 12 = 96
9 x 7 = 63	9 x 8 = 72	9 x 9 =81	9 x 10 = 99	9 x 11 = 99	9 x 12 = 108
10 x 7 = 70	10 x 8 = 80	10 x 9 = 90	10 x 10 = 110	10 x 11 = 110	10 x 12 = 120
11 x 7 = 77	11 x 8 = 88	11 x 9 = 99	11 x 10 = 121	11 x 11 = 121	11 x 12 = 132
12 x 7 = 84	12 x 8 = 96	12 x 9 = 108	12 x 10 = 132	12x11 = 132	12 x 12 = 144

- **Know the metric and imperial conversion facts for length**

LENGTH

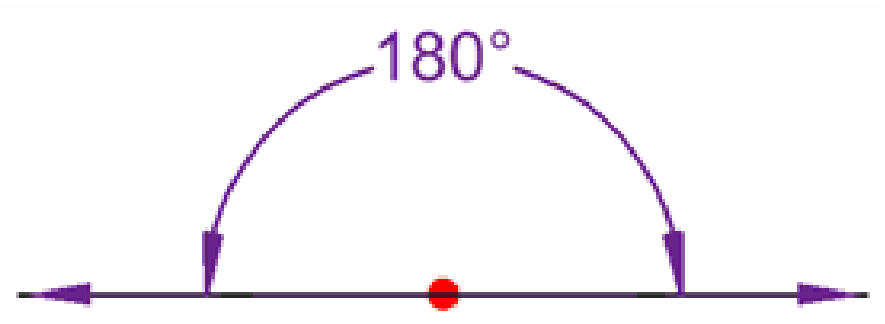
Metric To Imperial		
Metric		Imperial
1 mm		0.03937 in
1 cm	10 mm	0.3937 in
1 m	100 cm	1.0936 yd
1 km	1000 m	0.6214 mile

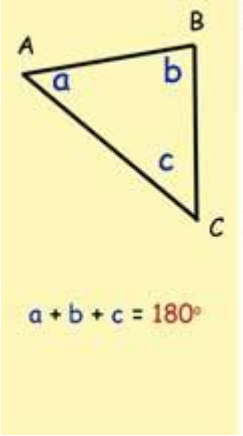
Imperial To Metric		
Imperial		Metric
1 in		2.54 cm
1 ft	12 in	0.3048 m
1 yd	3 ft	0.9144 m
1 mile	1760 yd	1.6093 km

- **Read Roman numerals to 1000**

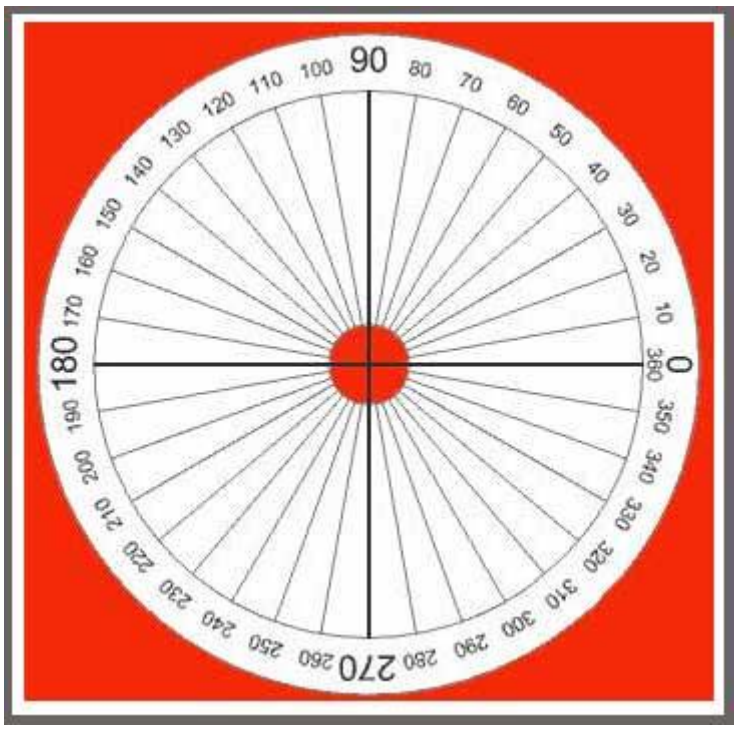
I	1	XXI	21	XLI	41	LXI	61	LXXXI	81
II	2	XXII	22	XLII	42	LXII	62	LXXXII	82
III	3	XXIII	23	XLIII	43	LXIII	63	LXXXIII	83
IV	4	XXIV	24	XLIV	44	LXIV	64	LXXXIV	84
V	5	XXV	25	XLV	45	LXV	65	LXXXV	85
VI	6	XXVI	26	XLVI	46	LXVI	66	LXXXVI	86
VII	7	XXVII	27	XLVII	47	LXVII	67	LXXXVII	87
VIII	8	XXVIII	28	XLVIII	48	LXVIII	68	LXXXVIII	88
IX	9	XXIX	29	XLIX	49	LXIX	69	LXXXIX	89
X	10	XXX	30	L	50	LXX	70	XC	90
XI	11	XXXI	31	LI	51	LXXI	71	XCI	91
XII	12	XXXII	32	LII	52	LXXII	72	XCII	92
XIII	13	XXXIII	33	LIII	53	LXXIII	73	XCIII	93
XIV	14	XXXIV	34	LIV	54	LXXIV	74	XCIV	94
XV	15	XXXV	35	LV	55	LXXV	75	XCV	95
XVI	16	XXXVI	36	LVI	56	LXXVI	76	XCVI	96
XVII	17	XXXVII	37	LVII	57	LXXVII	77	XCVII	97
XVIII	18	XXXVIII	38	LVIII	58	LXXVIII	78	XCVIII	98
XIX	19	XXXIX	39	LIX	59	LXXIX	79	XCIX	99
XX	20	XL	40	LX	60	LXXX	80	C	100
								D	500
								M	1000

- **Know that on a straight line and in a triangle there are 180 degrees.**





- Know that a circle is a 360 degree turn



(Year 6)

At the end of Year 6 children can confidently recall all Year 5 core- knowledge and:

- **recall the place value of each digit in a 7-digit number**

For example in the number: 1,876,329:

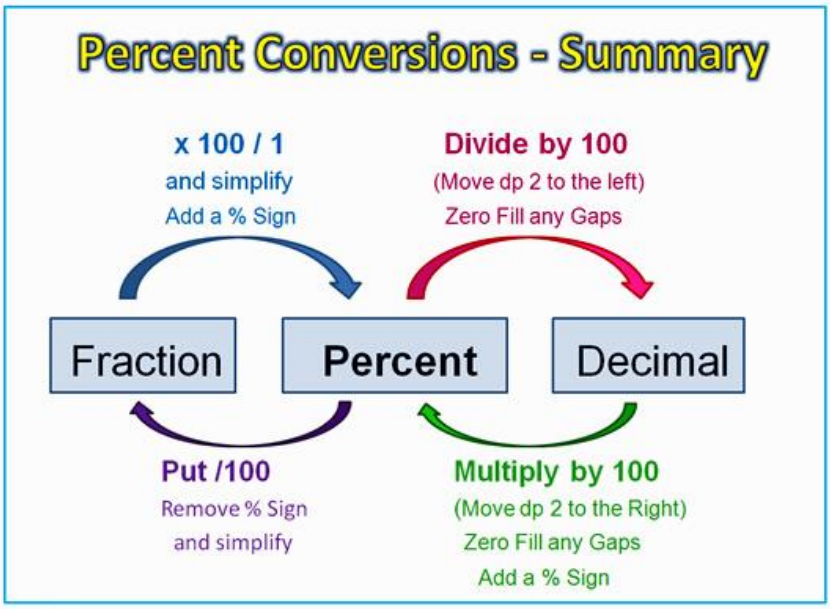
1 is worth 1 million
8 is worth 800 thousand
7 is worth 70 thousand
6 is worth 6 thousand
3 is worth three hundreds
2 is worth two tens
9 is worth 9 ones

(Eight hundred and seventy six thousand, three hundred and nine)

Millions	Hundreds of thousands	Tens of thousands	Thousands	Hundreds	Tens	Ones
1	**8**	**7**	**6**	**3**	**2**	**9**

- **can convert between decimals, fractions and percentages**





- **Fluently know all multiplication facts (including division) to 12x12.**

1x table	2x table	3x table	4x table	5x table	6x table
1 x 1 = 1	1 x 2 = 2	1 x 3 = 3	1 x 4 = 4	1 x 5 = 5	1 x 6 = 6
1 x 2 = 2	2 x 2 = 4	2 x 3 = 6	2 x 4 = 8	2 x 5 = 10	2 x 6 = 12
1 x 3 = 3	3 x 2 = 6	3 x 3 = 9	3 x 4 = 12	3 x 5 = 15	3 x 6 = 18
1 x 4 = 4	4 x 2 = 8	4 x 3 = 12	4 x 4 = 16	4 x 5 = 20	4 x 6 = 24
1 x 5 = 5	5 x 2 = 10	5 x 3= 15	5 x 4 = 20	5 x 5 = 25	5 x 6 = 30
1 x 6 = 6	6 x 2 = 12	6 x 3 = 18	6 x 4 = 24	6 x 5 = 30	6 x 6 = 36
1 x 7 = 7	7 x 2 = 14	7 x 3 = 21	7 x 4 = 28	7 x 5 = 35	7 x 6 = 42
1 x 8 = 8	8 x 2 = 16	8 x 3 = 24	8 x 4 = 32	8 x 5 = 40	8 x 6 = 48
1 x 9 = 9	9 x 2 = 18	9 x 3 = 27	9 x 4 = 36	9 x 5 = 45	9 x 6 = 54
1 x 10 = 10	10 x 2 = 20	10 x 3 = 30	10 x 4 = 40	10 x 5 = 50	10 x 6 = 60
1 x 11 = 11	11 x 2 = 22	11 x 3 = 33	11 x 4 = 44	11 x 5 = 55	11 x 6 = 66
1 x 12 = 12	12 x 2 = 24	12 x 3 = 36	12 x 4 = 48	12 x 5 = 60	12 x 6 = 72

7x table	8x table	9x table	10x table	11x table	12x table
1 x 7 = 7	1 x 8 = 8	1 x 9 = 9	1 x 10 = 11	1 x 11 = 11	1 x 12 = 12
2 x 7 = 14	2 x 8 = 16	2 x 9 = 18	2 x 10 = 22	2 x 11 = 22	2 x 12 = 24
3 x 7 = 21	3 x 8 = 24	3 x 9 = 27	3 x 10 = 33	3 x 11 = 33	3 x 12 = 36
4 x 7 = 28	4 x 8 = 32	4 x 9 = 36	4 x 10 = 44	4 x 11 = 44	4 x 12 = 48
5 x 7 = 35	5 x 8 = 40	5 x 9 = 45	5 x 10 = 55	5 x 11 = 55	5 x 12 = 60
6 x 7 = 42	6 x 8 = 48	6 x 9 = 54	6 x 10 = 66	6 x 11 = 66	6 x 12 = 72
7 x 7 = 49	7 x 8 = 56	7 x 9 = 63	7 x 10 = 77	7 x 11 = 77	7 x 12 = 84
8 x 7 = 56	8 x 8 = 64	8 x 9 = 72	8 x 10 = 88	8 x 11 = 88	8 x 12 = 96
9 x 7 = 63	9 x 8 = 72	9 x 9 =81	9 x 10 = 99	9 x 11 = 99	9 x 12 = 108
10 x 7 = 70	10 x 8 = 80	10 x 9 = 90	10 x 10 = 110	10 x 11 = 110	10 x 12 = 120
11 x 7 = 77	11 x 8 = 88	11 x 9 = 99	11 x 10 = 121	11 x 11 = 121	11 x 12 = 132
12 x 7 = 84	12 x 8 = 96	12 x 9 = 108	12 x 10 = 132	12x11 = 132	12 x 12 = 144

- **Know the metric and imperial conversion facts for mass and capacity**

Dry measures

Metric	Imperial
15g	½oz
30g	1oz
60g	2oz
90g	3oz
125g	4oz (¼lb)
155g	5oz
185g	6oz
220g	7oz
250g	8oz (½lb)
280g	9oz
315g	10oz
345g	11oz
375g	12oz (1lb)
410g	13oz
440g	14oz
470g	15oz
500g	16oz (1lb)
750g	24oz (1½lb)
1000g (1kg)	32oz (2lb)

Liquid measures

Metric	Imperial
30ml	1 fl oz
60ml	2 fl oz
100ml	3 fl oz
125ml	4 fl oz
150ml	5 fl oz (¼ pint / 1 gill)
190ml	6 fl oz
250ml	8 fl oz
300ml	10 fl oz (½ fl oz)
500ml	16 fl oz
600ml	20 fl oz (1 pint)
1000ml (1L)	1¾ pints

Common measures	Metric	Imperial
1 cup	250ml	8 fl oz
1 tablespoon (tbsp)	20ml	0.68 fl oz
1 teaspoon (tsp)	5ml	0.17 fl oz

- **Know all prime numbers up to 100**



- **Fluently recall all square numbers and their roots up to 12 x 12**

Perfect Square	Square Root
• 1 x 1= 1	√1= 1
• 2 x 2= 4	√4= 2
• 3 x 3= 9	√9= 3
• 4 x 4= 16	√16= 4
• 5 x 5= 25	√25= 5
• 6 x 6= 36	√36= 6
• 7 x 7= 49	√49= 7
• 8 x 8= 64	√64= 8
• 9 x 9= 81	√81= 9
• 10 x 10= 100	√100= 10
• 11 x 11= 121	√121= 11
• 12 x 12= 144	√144= 12