Number Facts: Year 5

Addition and subtraction
Multiplication and division

Pupils should be taught to:
- add and subtract with more than four digits and with decimals (informal and formal methods)
- recall prime numbers to19
- multiply and divide mentally using known facts
- multiply and divide whole and decimal numbers by 10, 100 and 1000
- recognise and use square numbers

Fractions, decimals and percentages

Pupils should be taught to:
- read and write decimal numbers as fractions (e.g. $0.8 = \frac{8}{10}$)
- recognise and use thousandths, relating them to tenths, hundredths, and decimal equivalents
- recognise the per cent symbol (%) and know that per cent relate to the number of parts per hundred
- write percentages as a fractions with a denominator of 100 and as a decimal fraction (e.g. $0.71 = \frac{71}{100} = 71\%$)

Measurement

Pupils should be taught to:
- convert between different units of metric measure such as kilometre to metre, centimetre to metre, centimetre and millimetre, gram and kilogram, litre and millilitre
- know and use equivalences between metric units and common imperial units such as inches, pounds and pints

Geometry

Pupils should be taught to:
- identify angles at a point (one whole turn) as 360º
- identify angles at a point on a straight line (half a turn) as 180º
- identify angles in a right angle (quarter of a turn) as 90º
- recognise multiples of 90º
- know the sum of the angles in any triangle is 180º
- know the sum of the angles in any quadrilateral is 360º

Number facts: Addition and subtraction; multiplication and division

- Derive new facts from known facts:
  For example:

12 x 5 = 60	60 ÷ 5 = 12
5.2 x 5 = 6.0	6 ÷ 5 = 1.2
5 x 7 = 35	5 x 0.7 = 3.5
5 x 0.07 = 0.35	

- Square numbers:
  1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144
- Prime numbers:
  2, 3, 5, 7, 11, 13, 17, 19

- Associated facts
  10,000 = 9500 = 500
  10,000 = 5000 + 5000
  10,000 = 2500 + 2500 + 2500 + 2500
  10,000 ÷ 2 = 5000
  10,000 ÷ 4 = 2500
  10,000 ÷ 5 = 2000
  10,000 ÷ 10 = 1000
  10,000 ÷ 100 = 100

Number Facts: Fractions

- $1 \div 100 = \frac{1}{100} = 0.01$ $2 \div 100 = \frac{2}{100} = 0.02$

  $3 \div 100 = \frac{3}{100} = 0.03$ $4 \div 100 = \frac{4}{100} = 0.04$

  $5 \div 100 = \frac{5}{100} = 0.05$ $6 \div 100 = \frac{6}{100} = 0.06$

  $7 \div 100 = \frac{7}{100} = 0.07$ $8 \div 100 = \frac{8}{100} = 0.08$

  $9 \div 100 = \frac{9}{100} = 0.09$ $10 \div 100 = \frac{10}{100} = \frac{1}{10} = 0.1$

- $10\% = 0.1 = \frac{1}{10} = \frac{10}{100} = \frac{100}{1000}$
  $50\% = 0.5 = \frac{1}{2} = \frac{5}{10} = \frac{50}{100}$
  $25\% = 0.25 = \frac{1}{4} = \frac{25}{100}$
  $75\% = 0.75 = \frac{3}{4} = \frac{75}{100}$
  $20\% = 0.2 = \frac{1}{5} = \frac{2}{10} = \frac{20}{100}$
  $40\% = 0.4 = \frac{2}{5} = \frac{4}{10} = \frac{40}{100}$

Number Facts: Measure

- $1mm = \frac{1}{10}$ cm
- $1mm = \frac{1}{1000}$ m
- 1 kg ≈ 2.2 lbs
- 1 L ≈ 1.76 pints
- 1m ≈ 39.4 inches
- 1cm ≈ 2.54 inches
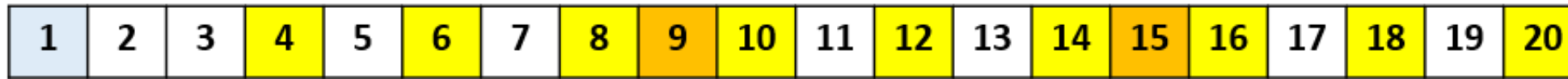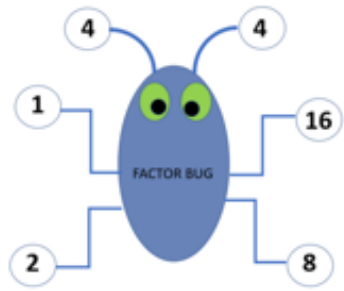
≈ means 'approximately equal to'

Number Facts: Geometry
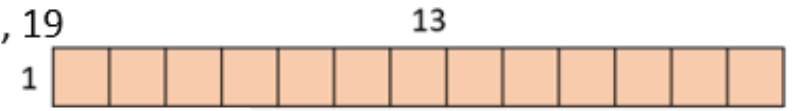
- 360 ÷ 4 = 90 $\frac{1}{4}$ of 360 = 90
- 360 ÷ 2 = 180 $\frac{1}{2}$ of 360 = 180
- $\frac{3}{4}$ of 360 = 270
- complements such as
  70 + 110 = 180
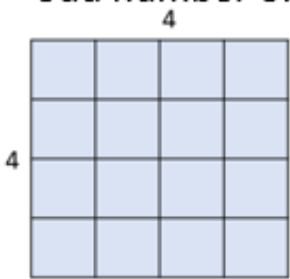 95 + 85 = 180
- multiples: 90 , 180 , 270 , 360 , 450 , 540

Mathematical models and images to support conceptual understanding underpinning key facts in Year 5

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Using a number track to generate multiples of primes to identify primes: 2, 3, 5, 7, 11, 13, 17, 19

13

1

Square numbers have an odd number of factors
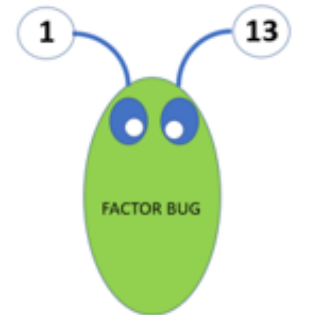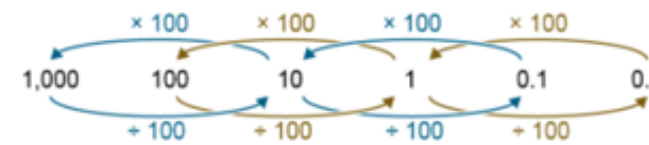
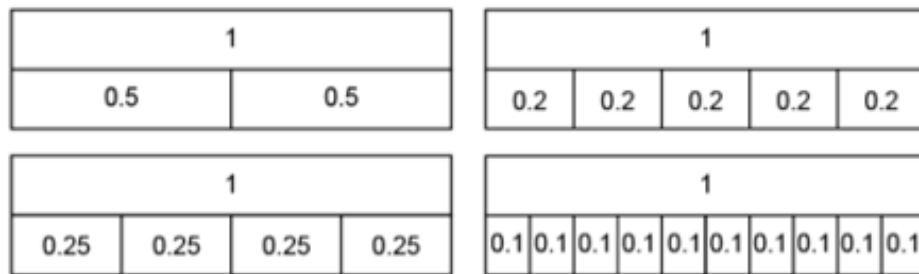| 1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

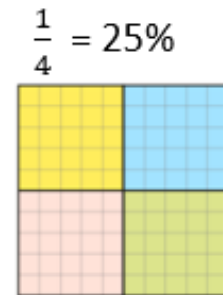Gattegno chart showing thousands, hundreds, tens, ones, tenths and hundredths
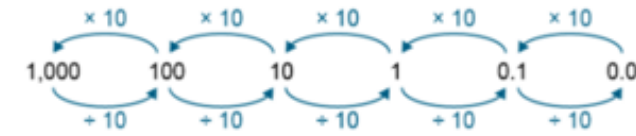
Multiplicative relationships between powers of ten

| × 10 | × 10 | × 10 | × 10 | × 10 |

1,000   100   10   1   0.1   0.01

÷ 10

| × 100 | × 100 | × 100 | × 100 |

1,000   100   10   1   0.1   0.01

÷ 100

Prime numbers have exactly two factors

Bar models showing 1 partitioned into 2, 4, 5 and 10 equal parts

1	
0.5	0.5

1				
0.2	0.2	0.2	0.2	0.2

1			
0.25	0.25	0.25	0.25

1									
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Bar models showing 1 partitioned into 2, 4, 5 and 10 equal parts

$1 \div 2 = 0.5$ and $\frac{1}{2}$ of $1 = 0.5$

$1 \div 4 = 0.25$ and $\frac{1}{4}$ of $1 = 0.25$

$1 \div 5 = 0.2$ and $\frac{1}{5}$ of $1 = 0.2$

$1 \div 10 = 0.1$ and $\frac{1}{10}$ of $1 = 0.1$

A hundred grid divided into four equal parts.

$\frac{1}{4} = 25\%$

Ratio tables for conversion

1m	100cm		1,000ml	1 litre		100p	£1
$\frac{3}{4}$m	75cm		3,700ml	3.7 litres		52p	£0.52

Key multiplication facts to support place value calculations, fractions and ratio

$2 \times 2 = 4$							
$3 \times 2 = 6$	$3 \times 3 = 9$						
$4 \times 2 = 8$	$4 \times 3 = 12$	$4 \times 4 = 16$					
$5 \times 2 = 10$	$5 \times 3 = 15$	$5 \times 4 = 20$	$5 \times 5 = 25$				
$6 \times 2 = 12$	$6 \times 3 = 18$	$6 \times 4 = 24$	$6 \times 5 = 30$	$6 \times 6 = 36$			
$7 \times 2 = 14$	$7 \times 3 = 21$	$7 \times 4 = 28$	$7 \times 5 = 35$	$7 \times 6 = 42$	$7 \times 7 = 49$		
$8 \times 2 = 16$	$8 \times 3 = 24$	$8 \times 4 = 32$	$8 \times 5 = 40$	$8 \times 6 = 48$	$8 \times 7 = 56$	$8 \times 8 = 64$	
$9 \times 2 = 18$	$9 \times 3 = 27$	$9 \times 4 = 36$	$9 \times 5 = 45$	$9 \times 6 = 54$	$9 \times 7 = 63$	$9 \times 8 = 72$	$9 \times 9 = 81$

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