

# 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 to 19
- 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  $360^\circ$
- identify angles at a point on a straight line (half a turn) as  $180^\circ$
- identify angles in a right angle (quarter of a turn) as  $90^\circ$
- recognise multiples of  $90^\circ$
- know the sum of the angles in any triangle is  $180^\circ$
- know the sum of the angles in any quadrilateral is  $360^\circ$

### Number facts: Addition and subtraction; multiplication and division

- Derive new facts from known facts:  
For example:  

$12 \times 5 = 60$	$60 \div 5 = 12$
$5.2 \times 5 = 6.0$	$6 \div 5 = 1.2$
$5 \times 7 = 35$	$5 \times 0.7 = 3.5$
$5 \times 0.07 = 0.35$	
- 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  

$10,000 = 9500 + 500$
$10,000 = 5000 + 5000$
$10,000 = 2500 + 2500 + 2500 + 2500$
$10,000 \div 2 = 5000$
$10,000 \div 4 = 2500$
$10,000 \div 5 = 2000$
$10,000 \div 10 = 1000$
$10,000 \div 100 = 100$

### 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

- $1\text{mm} = \frac{1}{10}\text{cm}$
- $1\text{mm} = \frac{1}{1000}\text{m}$
- $1\text{kg} \approx 2.2\text{lbs}$
- $1\text{L} \approx 1.76\text{pints}$
- $1\text{m} \approx 39.4\text{inches}$
- $1\text{cm} \approx 2.54\text{inches}$

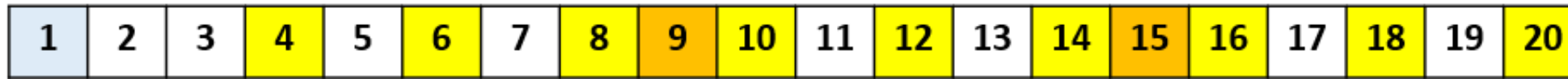
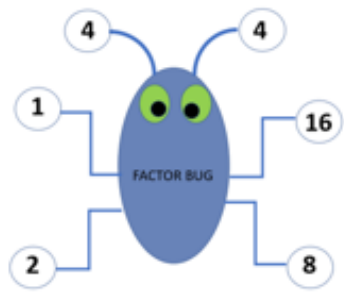
$\approx$  means 'approximately equal to'

### Number Facts: Geometry

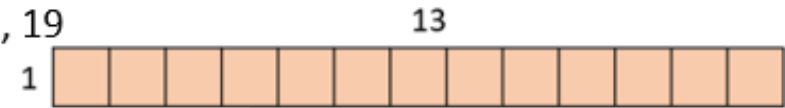
- $360 \div 4 = 90$        $\frac{1}{4}$  of  $360 = 90$
- $360 \div 2 = 180$        $\frac{1}{2}$  of  $360 = 180$
- $\frac{3}{4}$  of  $360 = 270$
- complements such as  

$70 + 110 = 180$
$95 + 85 = 180$
- multiples: 90, 180, 270, 360, 450, 540

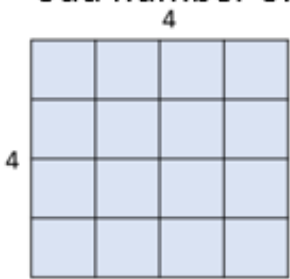
Mathematical models and images to support conceptual understanding underpinning key facts in Year 5



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

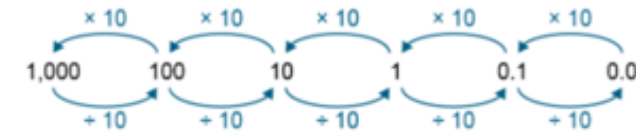


Square numbers have an odd number of factors

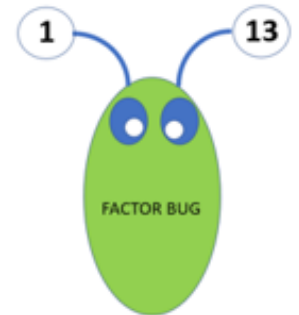
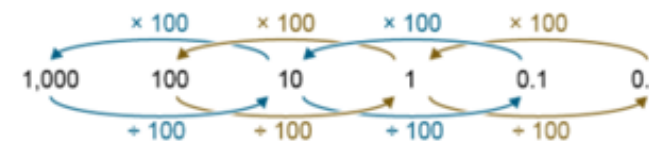


1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

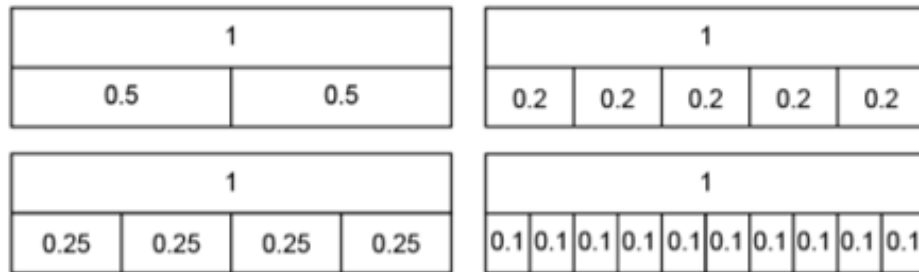
Gattegno chart showing thousands, hundreds, tens, ones, tenths and hundredths



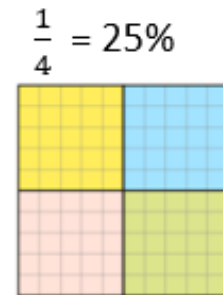
Multiplicative relationships between powers of ten



Prime numbers have exactly two factors



A hundred grid divided into four equal parts.



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

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

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

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