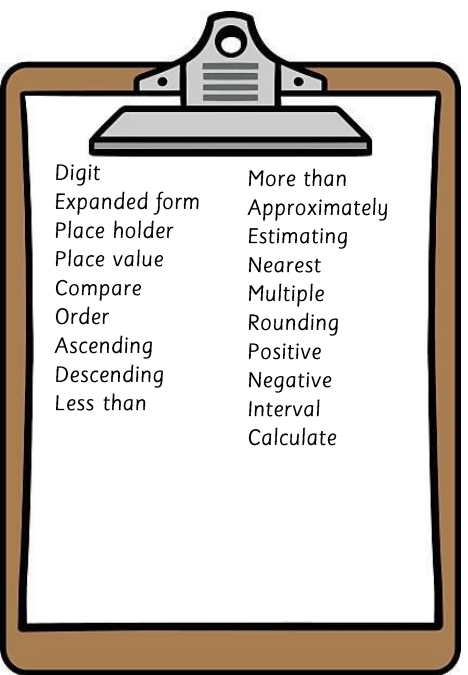


# Year 6

## Number and place value



Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit

M	HTh	TTh	Th	H	T	O
Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
8	2	1	7	5	4	3

$8,000,000 + 200,000 + 10,000 + 7,000 + 500 + 40 + 3$   
 Eight million, two hundred and seventeen thousand, five hundred and forty-three



**Ascending**  
Order from smallest to largest



**Descending**  
Order from largest to smallest

>	<	=
more than	less than	equal to

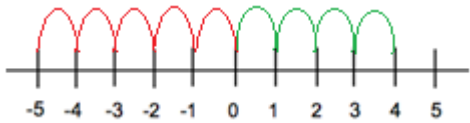
More than:  $3,456,543 > 3,000,000 + 400,000 + 50,000 + 6,000 + 200 + 40 + 3$   
 Less than:  $2,468,593 < 2,000,000 + 100,000 + 60,000 + 8,000 + 500 + 90 + 3$   
 Equal to:  $4,532,596 = 4,000,000 + 500,000 + 30,000 + 2,000 + 500 + 90 + 6$

Use negative numbers in context, and calculate intervals across zero



You'll most often use negative numbers when looking at temperature. Temperatures below zero will go into negative numbers.

What is the difference between 4 and -5?  
 The difference between -5 and 0 is 5, and the difference between 0 and 4 is 4. In total, the difference is 9.



Round any whole number to a required degree of accuracy

**Tips and tricks**  
 Find your number and circle it.  
 Look next door.  
 Less than four, just ignore.  
 More than 4, add one more (to the circled number)  
 Replace the rest with zeroes

nearest 10 ← 4 1 2 3 → nearest 1000  
 4 1 2 3  
 4 1 2 0  
 nearest 100  
 4 1 2 3  
 4 1 0 0

nearest 10 ← 5 8 6 7 → nearest 1000  
 5 8 6 7  
 5 8 7 0  
 nearest 100  
 5 8 6 7  
 5 9 0 0

Rounding is a way of saying approximately how big a number is.  
 E.g. If 5,698,596 people live in a country, we might round to the nearest hundred thousand and say that approximately 5,700,000 people live in the country.

# Year 6

Addition, subtraction

Multiplication and division



Sum	Multiply
Product	Lots of
Difference	Column
Quotient	Place value
Divisor	Digit
Dividend	Remainder
Operation	Decimal
Equation	Multiples
Equal to	Factor
Digit	Prime
Inverse	Divisible
Symbol	

Multiply numbers up to 4 digits by a two-digit whole number using long multiplication

$$\begin{array}{r}
 \phantom{1} \phantom{2} \phantom{8} \phantom{0} \\
 \phantom{1} \phantom{2} \phantom{8} \phantom{0} \\
 \phantom{1} \phantom{2} \phantom{8} \phantom{0} \\
 \phantom{1} \phantom{2} \phantom{8} \phantom{0} \\
 \hline
 1 \phantom{2} \phantom{8} \phantom{0} \\
 1 \phantom{2} \phantom{8} \phantom{0} \\
 1 \phantom{2} \phantom{8} \phantom{0} \\
 \hline
 1 \phantom{2} \phantom{8} \phantom{0} \\
 1 \phantom{2} \phantom{8} \phantom{0} \\
 1 \phantom{2} \phantom{8} \phantom{0} \\
 \hline
 1440
 \end{array}$$

Long multiplication lets us multi-digit number together. This calculation is the same as doing  $32 \times 5 = 160$  and  $32 \times 40 = 1280$ , then adding them together to make 1440.

The green zero is a placeholder which shows that in the second half of the calculation, we are multiplying by 40, not 4.

Divide numbers up to 4 digits by a two-digit number

$$24 \div 4 = 6$$

Labels: divisor (4), quotient (6), dividend (24)

$$1472 \div 23 = 64$$

$$\begin{array}{r}
 23 \overline{) 1472} \\
 \underline{1150} \phantom{0} \\
 0322 \\
 \underline{230} \phantom{0} \\
 092 \\
 \underline{92} \\
 00
 \end{array}$$

$23 \times 50 = 1150$

$23 \times 10 = 230$

$23 \times 4 = 92$

Using the chunking method, we take away 'chunks' of multiples of the dividend.

Then add up how many 'chunks' you have subtracted.  
 $50 + 10 + 5 = 64$

$1472 \div 23 = 64$

When dividing, interpret remainders according to context

When doing short division, we will sometimes need to interpret the remainders in different ways.

Remainders

$$625 \div 4 =$$

$$\begin{array}{r}
 156 \\
 4 \overline{) 625} \\
 \underline{622} \\
 5
 \end{array}$$

1) Starting from the left, see how many times the divisor will go into each digit of the dividend

$$\begin{array}{r}
 156 \text{ r } 1 \\
 4 \overline{) 625} \\
 \underline{622} \\
 5 \\
 \underline{4} \\
 1
 \end{array}$$

2) When you reach the last digit, if there is a remainder, add a 'r' and the number that is left over.

With remainders, sometimes you'll need to go one step further depending on the question.

Eggs go into boxes of 4. If we have 625 eggs, how many boxes can we fill? 156  
 Eggs go into boxes of 4. If we have 625 eggs, how many boxes will we need to hold all the eggs? 157

Decimal Remainders

$$625 \div 4 =$$

$$\begin{array}{r}
 156.25 \\
 4 \overline{) 625.00} \\
 \underline{622} \phantom{00} \\
 50 \\
 \underline{40} \phantom{0} \\
 100 \\
 \underline{80} \\
 20 \\
 \underline{20} \\
 0
 \end{array}$$

1) Starting from the left, see how many times the divisor will go into each digit of the dividend

2) When you reach the last digit, add a decimal point to the dividend and a decimal point to the quotient.

3) Continue the division, adding more zeroes to the dividend if needed.

This will usually be used for measure and money.

# Year 6

Addition, subtraction

Multiplication and division



Sum	Multiply
Product	Lots of
Difference	Column
Quotient	Place value
Divisor	Digit
Dividend	Remainder
Operation	Decimal
Equation	Multiples
Equal to	Factor
Digit	Prime
Inverse	Divisible
Symbol	

## Identify common factors, common multiples and prime numbers

A multiple is a number which can be divided by another number without a remainder.

Multiples of 3: 3, 6, 9, 12, 18, 21, 24

Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32

1 2 and 2 4 appear in both sets so are common multiples of 3 and 4.

Factors are whole number that can multiply by other whole numbers to make the product.

$4 \times 8 = 32$   
 $1 \times 4 = 4$   
 $2 \times 2 = 4$   
 $3 \times 1 = 3$   
 $4 \times 1 = 4$   
 $6 \times 1 = 6$

Common factors appear in both lists. The common factor of 2 4 and 3 6 is 1, 2, 3, 4, 6, 12

A prime number is a whole number greater than 1 with no divisors except 1 and itself.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Top tips:

2 is the only even prime number.

There are no prime numbers that end in 5, except for 5.

The digits can't add up to 3, except 3.

## Use the order of operations to carry out calculations

**B**rackets  
**O**rder (square/ cubes)  
**D**ivision **M**ultiplication  
**A**ddition **S**ubtraction

$3^3 - 3 \times (3 + 2)$

$3^3 - 3 \times 5$  1) Complete any calculations in brackets.

$27 - 3 \times 5$  2) Complete any square or cube number calculations

$27 - 15$  3) Complete any multiplication or division (going from left to right)

$27 - 15 = 12$  4) Complete any addition or subtraction (going from left to right)

## Solve multi-step problems in context and use estimation to check calculations

1) One drink costs £1.67 and I buy 4. 2) If I pay with a £20 note, how much change will I get?

1) Read the question and break it down into parts.

2) Work out the calculation £20 - (4 x £1.67)

3) Solve each part. £1.67 x 4 = £6.68  
 £20 - £6.68 = £13.32

$$\begin{array}{r} 1.67 \\ \times 4 \\ \hline 6.68 \\ 22 \phantom{00} \\ \hline 13.32 \end{array}$$

4) Check your answer fits the question.  
 £1.67 + £1.67 + £1.67 + £1.67 + £13.32 = £20

$$\begin{array}{r} 30,127 + 2,953 \\ 30,000 + 3,000 = 33,000 \\ 30,127 + 2,953 = 33,080 \end{array}$$

# Year 6 Fractions

Including decimals and percentages



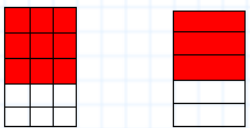
Fraction	Simplest form
Decimal	Original form
Percentage	Ascending
Simplify	Descending
Numerator	Mixed number
Denominator	Improper fraction
Vinculum	fraction
Equivalent	
Express	
Denomination	

Use common factors and multiples to simplify fractions and express fractions in the same denominator

## Simplifying fractions

1) Find a number that both the numerator and the denominator can be divided by.

2) Divide both the numerator and denominator by that number.



$$\frac{9}{15} \div 3 = \frac{3}{5}$$

## Expressing fractions in the same denominator

$$\frac{2}{3} \quad \frac{3}{4}$$

1) Find a number that is a common multiple of both denominators.

2) Multiply both fractions by the relevant multiple to reach the new denominator

$$\frac{2}{3} \times \frac{4}{4} = \frac{8}{12}$$

$$\frac{3}{4} \times \frac{3}{3} = \frac{9}{12}$$

Both 3 and 4 are factors of 12, so 12 is a common multiple of 3 and 4.

Knowing your times tables is very important for this!

## Compare and order fractions

$$\frac{2}{3} \times \frac{4}{4} = \frac{8}{12}$$

$$\frac{3}{4} \times \frac{3}{3} = \frac{9}{12}$$

$$\frac{8}{12} < \frac{9}{12}$$

> More than  
< Less than  
= Equal to

↑ ascending ↓ descending

Put these fractions in ascending order:

$$\frac{3}{4} \quad \frac{4}{5} \quad \frac{9}{10} \quad \frac{14}{20}$$

$$\frac{3}{4} \times \frac{5}{5} = \frac{15}{20}$$

$$\frac{4}{5} \times \frac{4}{4} = \frac{16}{20}$$

$$\frac{9}{10} \times \frac{2}{2} = \frac{18}{20}$$

$$\frac{14}{20} \times \frac{1}{1} = \frac{14}{20}$$

First, express the fractions in the same denominator.

Then order them.

Then re-write them in their original form

$$\frac{14}{20} > \frac{3}{4} > \frac{4}{5} > \frac{9}{10}$$

## Add and subtract fractions

$$\frac{1}{3} + \frac{1}{6}$$

$$\frac{1}{3} \text{ is equal to } \frac{2}{6}$$

$$\frac{2}{6} + \frac{1}{6} = \frac{3}{6}$$

$$\frac{2}{6} + \frac{1}{6} = \frac{3}{6}$$

$\frac{3}{6}$  can be simplified to  $\frac{1}{2}$

## Adding mixed numbers

$$1\frac{3}{4} + 1\frac{3}{8}$$

1) Add the two whole numbers together.  $1 + 1 = 2$

2) Convert both fractions to have the same denominator.  $\frac{3}{4} \times \frac{2}{2} = \frac{6}{8}$

3) Add the numerators together.  $\frac{6}{8} + \frac{3}{8} = \frac{9}{8}$

4) Change any improper fractions back to mixed numbers.  $\frac{9}{8} = 1\frac{1}{8}$

5) Add together your two answers.  $2 + 1\frac{1}{8} = 3\frac{1}{8}$

6) Simplify the answer if you can.

## Subtracting mixed numbers

$$2\frac{3}{4} - 1\frac{1}{8}$$

1) Change any mixed numbers to improper fractions.  $\frac{11}{4} - \frac{9}{8}$

2) Convert both fractions to have the same denominator.  $\frac{11}{4} \times \frac{2}{2} = \frac{22}{8}$

3) Subtract the second numerator from the first.  $\frac{22}{8} - \frac{9}{8} = \frac{13}{8}$

4) Change any improper fractions back to mixed numbers.  $\frac{13}{8} = 1\frac{5}{8}$

5) Simplify the answer if you can.

# Year 6 Fractions

Including decimals and percentages

## Multiply pairs of fractions

$$\frac{3}{4} \times \frac{2}{3}$$

- 1) Multiply the numerators  $\frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$
- 2) Multiply the denominators
- 3) Simplify the answer if you can.  $\frac{6}{12} = \frac{1}{2}$

## Multiplying two mixed numbers- a challenge!

$$2\frac{3}{4} \times 2\frac{2}{3}$$

- 1) Change any mixed numbers to improper fractions.  $\frac{11}{4} \times \frac{8}{3}$
- 2) Multiply the numerators  $\frac{11}{4} \times \frac{8}{3} = \frac{88}{12}$
- 3) Multiply the denominators
- 4) Change any improper fractions back to mixed numbers.  $\frac{88}{12} = 7\frac{4}{12}$
- 5) Simplify the answer if you can.  $7\frac{4}{12} = 7\frac{1}{3}$

## Divide proper fractions by whole numbers

$$\frac{1}{2} \div 2$$

- 1) Multiply the denominator by the whole number and write the answer as the new denominator.  $\frac{1}{2} \div 2 = \frac{1}{4}$
- 2) Simplify the answer if you can.

## Calculate decimal equivalents for fractions and know FDP equivalence

Fractions to decimals:

- 1) Divide the numerator by the denominator.

$$\frac{3}{4} = 0.75$$

$$\frac{5}{8}$$

Decimal- divide the numerator by the denominator. 0.625

Percentage- multiply by 10 and add the percent symbol. 62.5%

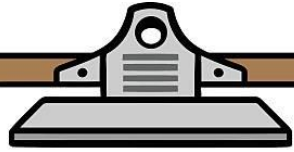
Fraction	Decimal	Percentage
$\frac{1}{8}$	0.125	12.5%
$\frac{2}{8}$	0.25	25%
$\frac{3}{8}$	0.375	37.5%
$\frac{4}{8}$	0.5	50%
$\frac{5}{8}$	0.625	62.5%
$\frac{6}{8}$	0.75	75%
$\frac{7}{8}$	0.875	87.5%
$\frac{8}{8}$	1	100%

Fraction	Simplest form
Decimal	Original form
Percentage	Ascending
Simplify	Descending
Numerator	Mixed number
Denominator	Improper fraction
Vinculum	
Equivalent	
Express	
Denomination	

# Year 6

## Fractions

Including decimals and percentages



Fraction	Simplest form
Decimal	Original form
Percentage	Ascending
Simplify	Descending
Numerator	Mixed number
Denominator	Improper fraction
Vinculum	fraction
Equivalent	
Express	
Denomination	

### Round decimal numbers

Remember:  
Find your number and circle it.  
Look next door.  
Less than four, just ignore.  
More than 4, add one more (to the circled number)  
Replace the rest with zeroes

nearest whole      nearest hundredth (2dp)

4.123 → 4.12

nearest tenth (1dp)

4.123 → 4.1

nearest whole      nearest hundredth (2dp)

5.867 → 5.87

nearest tenth (1dp)

5.867 → 5.9

### Multiply and divide numbers by 10, 100 and 1000

Makes the number 10 times bigger. Move each digit one place to the left.

Makes the number 10 times smaller. Move each digit one place to the right.

Makes the number 100 times bigger. Move each digit two places to the left.

Makes the number 100 times smaller. Move each digit two places to the right.

Makes the number 1000 times bigger. Move each digit three places to the left.

Makes the number 1000 times smaller. Move each digit three places to the right.

Identify the value of each digit in numbers given to three decimal places

O	t	h	th
Ones	Tenths	Hundredths	Thousandths
3	4	7	6

$$3 + 0.4 + 0.07 + 0.006$$

Three point four seven six

### Multiply decimal numbers by whole numbers

8.53 x 6

1) Multiply the top ones digit by the multiplier. Carry the extra digit if needed.

2) Multiply the top tens digit by the multiplier. Add any carried digits. Carry the extra digit if needed.

3) Multiply the top hundreds digit by the multiplier. Add any carried digits.

$$853 \times 6 = 5118$$

$$8.53 \times 6 = 51.18$$

To make the calculation easier, treat 8.53 as 853.

Don't forget to include the decimal point in the answer!

# Year 6

## Ratio and proportion



Ratio                      Proportion

Sharing

Equal

Unequal

Whole

Scale

Scale factor

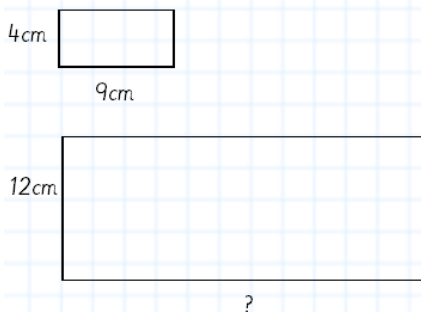
Relationship

Link

Side

Length

### Use scale factor with shapes



1) Find the corresponding known lengths on each shape (in this case, the vertical sides)

2) Find the scale factor by working out the relationships between the two lengths.

4cm → 12cm = multiply by 3    scale factor is 3

3) Use this scale factor to work out the unknown line, using the corresponding known line.

$9\text{cm} \times 3 = 27\text{cm}$ .

To enlarge a shape by a scale factor, multiply each measurement by that scale factor. E.g. to enlarge by a scale factor of 4, multiply each measurement by 4.

### Solve problems using calculation of percentages

Remember that 'per cent' means 'out of 100'

#### Easy ones to remember:

- 50% = divide by 2
- 25% = divide by 4
- 75% = divide by 4, then multiply by 3
- 10% = divide by 10
- 5% = divide by 10, then divide by 2
- 1% = divide by 100

For all other multiples of 10%, divide by 10 to find 10%, then multiply by the first digit.

- 30% = divide by 10, then multiply by 3
- 40% = divide by 10, then multiply by 4
- 70% = divide by 10, then multiply by 7

For all other percentages, divide by 100 to find 1%, then multiply by the percentage.

- 35% = divide by 100, then multiply by 35
- 48% = divide by 100, then multiply by 48
- 79% = divide by 100, then multiply by 79

### Use scale factor with amounts

Complete the recipe for 8 people.

- 1) Work out the relationship between 2 and 8 (x 4)
- 2) Using your scale factor, convert each value (x 4)

6 eggs	(x 4)	24 eggs
100g flour	→	400g flour
50g butter		200g butter
80 ml milk		320 ml milk

For measurements where there is not a clear scale factor, first find the amount for one serving.

2 people	1 person	5 people
6 eggs	$6 \div 2 = 3$ eggs	$3 \times 5 = 15$ eggs
100g flour	$100 \div 2 = 50\text{g}$	$50 \times 5 = 250\text{g}$
50g butter	$50 \div 2 = 25\text{g}$	$25 \times 5 = 125\text{g}$
80ml milk	$80 \div 2 = 40\text{ml}$	$40 \times 5 = 200\text{ml}$

Find the amount for one serving ( ÷ 2 )

Multiply by the amount of servings there are ( x 5 )

# Year 6

## Ratio and proportion

### Simplifying ratio



1) Work out how many of each item there are.

2) Write out as a ratio.

red : blue : green  
2 : 4 : 6

3) Work out if there is a number that you can divide each of the shares by, and if so divide them.

red : blue : green  $\div 2$   
2 : 4 : 6  
1 : 2 : 3

Ratio                      Proportion

Sharing

Equal

Unequal

Whole

Scale

Scale factor

Relationship

Link

Side

Length

### Using ratio when one part is known

A prize is shared in a ratio of 3 : 4 between Jamie and Dan. If Jamie gets £21, how much will Dan get?

Jamie : Dan  
3 : 4  
21 : 28

1) Work out how to get from the share you know to the value. In this case, multiply by 7.

2) Do the same with the other shares.

Jamie will get £21 and Dan will get £28.

### Using ratio to find the size of the parts when the total is known

A prize of £200 is shared in a ratio of 3:2 between Diane and Dave. How much should they get each?

Diane : Dave                      1) Add together the total shares (3 + 2 = 5)  
3 : 2 = 5

2) Work out how to get from the total shares to the overall amount.

Diane : Dave  
3 : 2 = 5  $\times 40$   
= £200

3) Multiply each of the shares by that amount.

Diane : Dave  
3 : 2 = 5  $\times 40$   
£120 : £80 = £200



# Year 6 Algebra

## Use simple formulae

$$5x + 4 = 39$$

$$5x = 35$$

$$x = 7$$

1) Subtract the whole number from both sides (-4)

2) Divide both sides by the 'x' number (divide by 5)

## Find pairs of numbers that satisfy an equation

$$2a + b = 10$$

$$(2 \times 1) + 8 = 10$$

$$(2 \times 2) + 6 = 10$$

$$(2 \times 3) + 4 = 10$$

$$(2 \times 4) + 2 = 10$$

1) Work systematically to find sets of numbers that make the total

## Generate linear number sequences

Finding the rule:

3    7    11    15    19

+4    +4    +4    +4

1) Find the difference between each number in the sequence.

4 n

This is your 'n'

2) Work out how to get from your 'n' to the first number in the sequence. In this case, -1

4 n - 1

3) Check your rule.

$$4 \times 1 - 1 = 3$$

$$4 \times 2 - 1 = 7$$

$$4 \times 3 - 1 = 11$$

$$4 \times 4 - 1 = 15$$

$$4 \times 5 - 1 = 19$$



## Describe linear number sequences

Calculating the sequence.

Rule:  $5n - 4$

1) Multiply the 'n' number by the each term in the term in the sequence.

2) Add or subtract the number which comes after 'n'

1st term:  $5 \times 1 - 4 = 1$

2nd term:  $5 \times 2 - 4 = 6$

3rd term:  $5 \times 3 - 4 = 11$

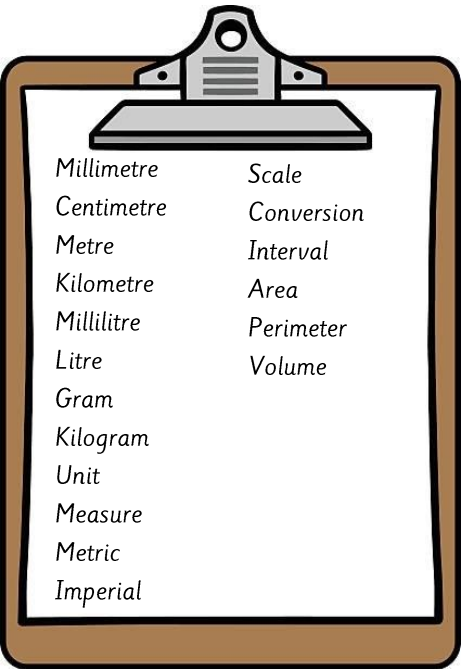
4th term:  $5 \times 4 - 4 = 16$

5th term:  $5 \times 5 - 4 = 21$

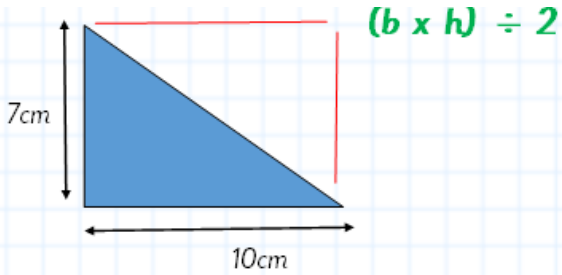
20th term:  $5 \times 20 - 4 = 96$

Expression  
Equation  
Formula  
Formulae  
Represent  
Symbol  
Unknown  
Variable  
Combinations  
Enumerate

# Year 6 Measurement



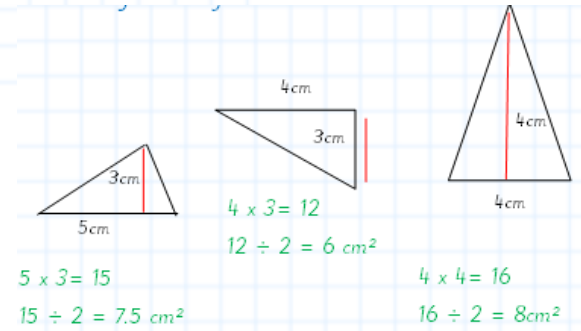
## Calculate the area of triangles



The area of a triangle will always be half the area of a rectangle.

1) Find the area of the rectangle by multiplying the base by the height.  $9 \times 6 = 54$

2) Divide the answer by 2  
 $54 \div 2 = 27 \text{ cm}^2$



## Convert between miles and kilometres

Facts to remember:

$1 \text{ mile} = 1.6 \text{ km}$

$5 \text{ miles} = 8 \text{ km}$

To convert miles to km:

$5 \text{ miles} = 8 \text{ km}$     1) Divide by 5 ( $45 \div 5 = 9$ )

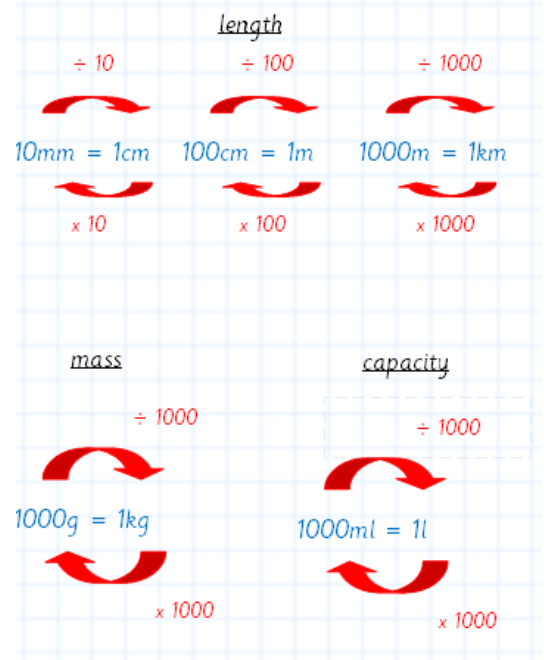
$40 \text{ miles} = 72 \text{ km}$     2) Multiply by 8 ( $9 \times 8 = 72$ )

To convert km to miles: 1) Divide by 8 ( $48 \div 8 = 6$ )

$5 \text{ miles} = 8 \text{ km}$     2) Multiply by 5

$30 \text{ miles} = 48 \text{ km}$     ( $6 \times 5 = 30$ )

## Convert units of measure

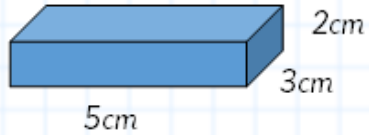


# Year 6 Measurement



Millimetre	Scale
Centimetre	Conversion
Metre	Interval
Kilometre	Area
Millilitre	Perimeter
Litre	Volume
Gram	
Kilogram	
Unit	
Measure	
Metric	
Imperial	

Calculate the volume of cube and cuboids



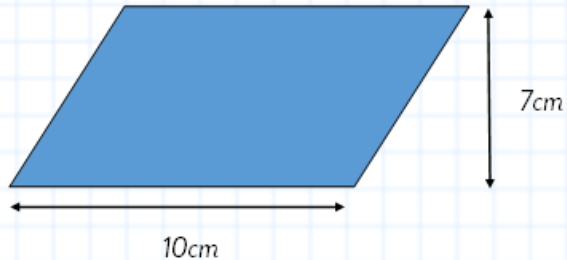
1) Multiply the length by the width to find the area of one face.  $5 \times 3 = 15$

2) Multiply the answer by the height.  
 $15 \times 2 = 30 \text{ cm}^3$

Calculate the area of parallelograms

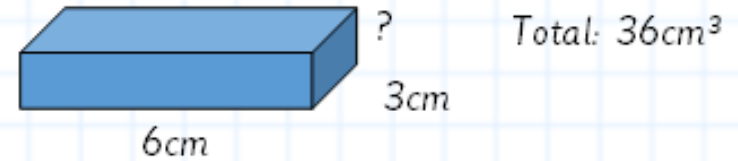
Finding the area of a parallelogram is the same as finding the area of a rectangle.

$b \times h$



1) Multiply the base by the height.  $10 \times 7 = 70 \text{ cm}^2$

Finding a missing value with volume



1) Divide the volume by one of the values.  
 $36 \div 6 = 6$

2) Divide the answer by the other value.  
 $6 \div 3 = 2$

3) Check by multiplying  
 $6 \times 3 \times 2 = 36 \text{ cm}^3$

# Year 6

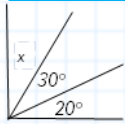
## Geometry

### Properties of shape



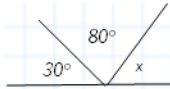
Polygon	Angle
Two-dimensional	Reflex
Three-dimensional	Sides
Parallel	Faces
Perpendicular	Vertex/vertices
Regular	Symmetry
Irregular	Edges
Acute	Apex
Obtuse	Net
Right	Point
	Straight line

Recognise angles where they meet at a point, on a straight line, or are vertically opposite and find missing angles



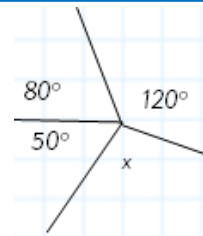
- 1) Add the known values.  
 $20^\circ + 30^\circ = 50^\circ$
- 2) Subtract from  $90^\circ$ .  
 $90^\circ - 50^\circ = 40^\circ$

3) Check that the values add to  $90^\circ$ .



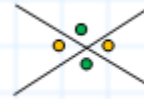
- 1) Add the known values.  
 $30^\circ + 80^\circ = 110^\circ$
- 2) Subtract from  $180^\circ$ .  
 $180^\circ - 110^\circ = 70^\circ$

3) Check that the values add to  $180^\circ$



- 1) Add the known values.  
 $120^\circ + 80^\circ + 50^\circ = 250^\circ$
- 2) Subtract from  $360^\circ$ .  
 $360^\circ - 250^\circ = 110^\circ$

3) Check that the values add to  $360^\circ$ .

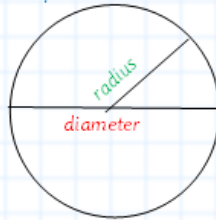


Opposite angles are equal

Illustrate and name parts of circles

Hint: the diameter is twice the radius.

circumference

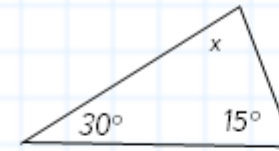


**Circumference:** Distance around the edge of the circle.

**Diameter:** Length of a line through the middle from one edge to the other.

**Radius:** Distance from the middle of the circle to the outer edge.

Finding unknown angles in triangles

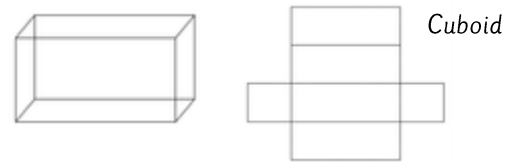
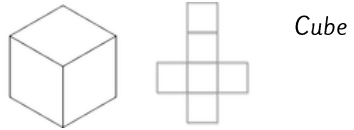


Angles in a triangle add to  $180^\circ$

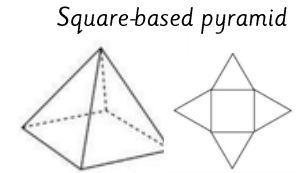
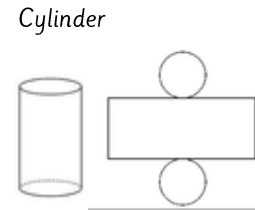
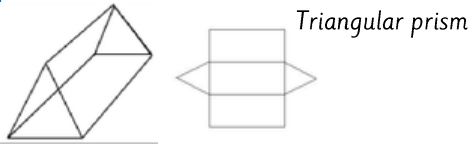
- 1) Add the two known values.  
 $30^\circ + 15^\circ = 45^\circ$
- 2) Subtract from  $180^\circ$ .  
 $180^\circ - 45^\circ = 135^\circ$
- 3) Check by adding the values together to make sure they reach  $180^\circ$

# Year 6 Geometry Properties of shape

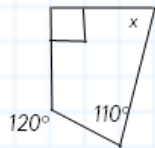
## Recognise nets of 3D shapes



A net shows which 2D shapes can be folded and joined to make a 3D shape.



## Finding unknown angles in quadrilaterals



Angles in a quadrilateral add to  $360^\circ$

1) Add the three known values.  
 $120^\circ + 110^\circ + 90^\circ = 320^\circ$

2) Subtract from  $360^\circ$   
 $360^\circ - 320^\circ = 40^\circ$

3) Check by adding the values together to make sure they reach  $360^\circ$

## Compare and classify 3D shapes

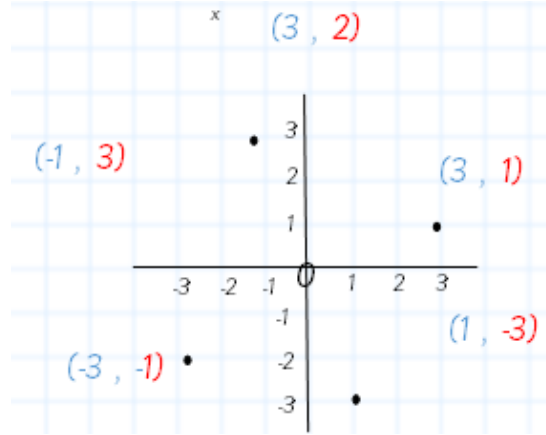
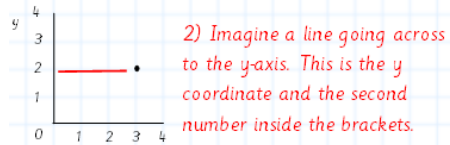
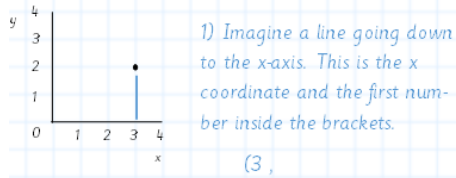
<p><b>Cube</b> 6 square faces 12 edges 8 vertices</p>	<p><b>Cuboid</b> 6 faces 12 edges 8 vertices</p>	<p><b>Sphere</b> 1 curved surface 0 edges 0 vertices</p>
<p><b>Tetrahedron</b> 4 triangular faces 6 edges 4 vertices</p>	<p><b>Triangular prism</b> 5 faces 9 edges 6 vertices</p>	<p><b>Cylinder</b> 2 circular faces 1 curved surface 2 curved edges 0 vertices</p>
<p><b>Cone</b> 1 circular face 1 curved surface 1 curved edge 1 apex</p>	<p><b>Square-based pyramid</b> 5 faces 8 edges 5 vertices</p>	<p><b>Octahedron</b> 8 faces 12 edges 6 vertices</p>

Polygon  
 Two-dimensional  
 Three-dimensional  
 Parallel  
 Perpendicular  
 Regular  
 Irregular  
 Acute  
 Obtuse  
 Right  
 Angle  
 Reflex  
 Sides  
 Faces  
 Vertex/  
 vertices  
 Symmetry  
 Edges  
 Apex  
 Net  
 Point  
 Straight line

# Year 6 Geometry Position/direction

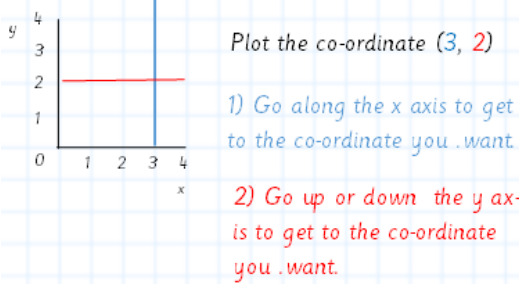
## Read coordinates

**Remember:** Along the corridor and up the stairs



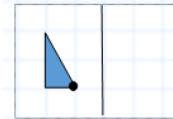
## Read and plot coordinates

**Remember:** Along the corridor and up the stairs

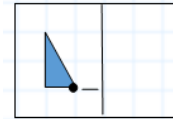


3) Put a cross where the two imaginary lines meet

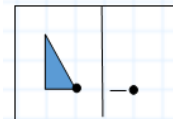
## Reflect shapes



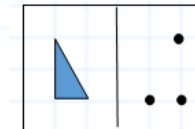
1) Choose a point



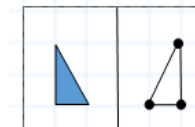
2) Count the units from the point to the mirror line



3) Count the same number out the other side and draw a dot.



4) Repeat with the other points.



5) Join the points using a ruler

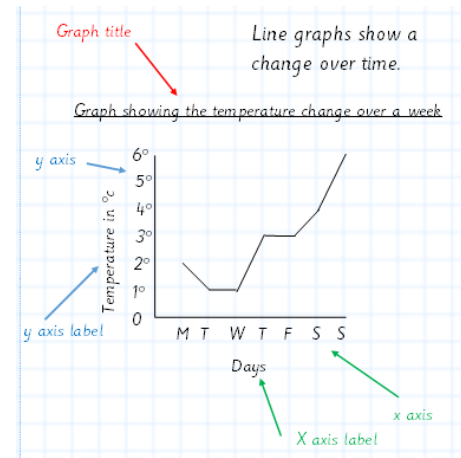
Coordinate  
Coordinate  
plane  
X axis  
Y axis  
Origin  
Value  
Quadrants  
Horizontal  
Vertical

Reflect

# Year 6 Statistics

## Read and interpret line graphs

- 1) Read the title and the axes
- 2) Check what the graph is telling you
- 3) Look at the general trends.



## Read and interpret pie charts

Pie chart showing the favourite fruits of year 5



Pie charts are a way of showing data

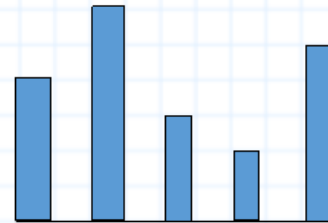
Strawberries	12
Apples	3
Blueberries	7
Bananas	8

Before answering any questions, make sure you understand what the chart shows.

## Calculate the mean of a set of data

The mean is a way of finding the average of a set of data.

4 6 3 2 5



$$4 + 6 + 3 + 2 + 5 = 20$$

$$20 \div 5 = 4$$

1) Add the values together

2) Divide by the amount of values.

Data Centre  
Interval Circle  
Line Segment  
Continuous Size  
Values Proportion  
X axis Degrees  
Y axis Mean  
Horizontal Average  
Vertical Estimate  
Construct Total  
Interpret Sum