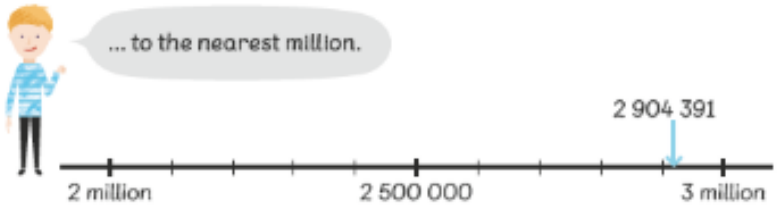
Year 6 Gold Knowledge Organiser: Numbers To 10 Million

Show 5 472 737 on a place-value chart.

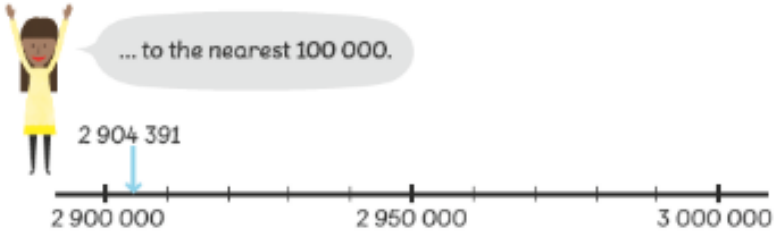
millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
5	4	7	2	7	3	7

Can you recognise the value of digits to 10,000,000?

Round 2 904 391...



2 904 391 is closer to 3 million than to 2 million.
2 904 391 ≈ 3 million



2 904 391 is closer to 2 900 000 than to 3 000 000.
2 904 391 ≈ 2 900 000 (to the nearest 100 000)

Can you round numbers to the nearest million, hundred thousand and ten thousand?

Arrange these numbers in order, from the greatest to the smallest.

7 650 000 , 6 570 000 , 5 760 000

greatest → smallest

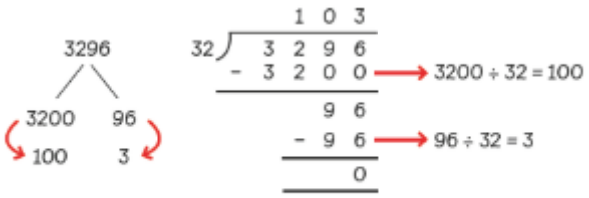
Can you order numbers up to 10,000,000?

Year 6 Gold Knowledge Organiser: Four Operations On Whole Numbers

$(1 + 2) \div 3 \times 4 + 5 - 6$

Step 1: Perform the calculation in the brackets first.
Step 2: Multiply or divide whichever comes first.
Step 3: Add or subtract whichever comes first.

Can you use knowledge of the order of operations to carry out calculations?



Can you divide numbers up to 4 digits by a 2 digit whole number?

1 × 20 = 20
2 × 20 = 40
3 × 20 = 60
4 × 20 = 80
5 × 20 = 100

1 × 15 = 15
2 × 15 = 30
3 × 15 = 45
4 × 15 = 60
5 × 15 = 75

60 is a common multiple of 20 and 15.

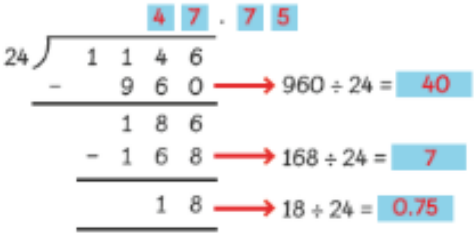
Can you identify common multiples?

Method 1
414 × 10 = 4140
414 × 20 = 4140 + 4140
= 8280

Method 2
414 × 20 = 414 × 2 × 10
= 828 × 10
= 8280

Can you multiply numbers up to 4 digits by a multiple of 10?

£1146 ÷ 24 = £47.75



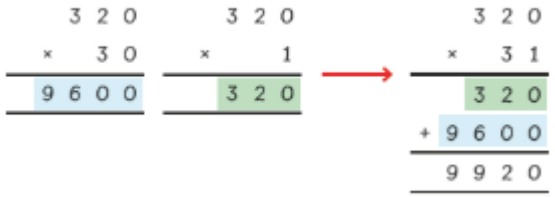
Can you divide numbers up to 4 digits by a 2 digit whole number, with remainders and express remainders as a fraction or decimal?

156 = 1 × 156
156 = 2 × 78
156 = 3 × 52
156 = 4 × 39
156 = 6 × 26
156 = 12 × 13

132 = 1 × 132
132 = 2 × 66
132 = 3 × 44
132 = 4 × 33
132 = 6 × 22
132 = 11 × 12

1, 2, 3, 4, 6, 12 are all the common factors of 156 and 132. So 12 is the largest common factor.

Can you identify common factors and the lowest common factor?



Can you multiply numbers up to 4 digits by a 2 digit whole number?

Flags are placed 42 cm apart.
(a) Find the distance between the 1st and the 10th flags.
(b) What is the largest number of flags there could be in a row 80 m long?

Can you solve word problems involving the four operations?

Prime

whole number that has **only 2 factors**

1 & number itself

3: Factors 1 × 3
7: Factors 1 × 7

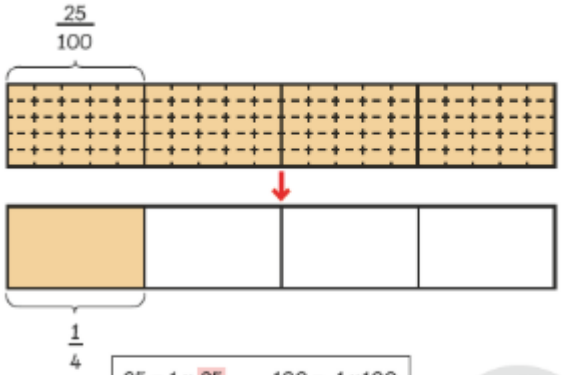
Composite

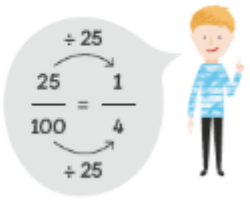
whole number that has **more than 2 factors**

12: Factors 1 × 12, 2 × 6, 3 × 4
6: Factors 1 × 6, 2 × 3

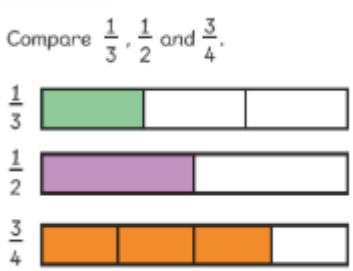
Can you identify prime and composite numbers?

Year 6 Gold Knowledge Organiser: Fractions

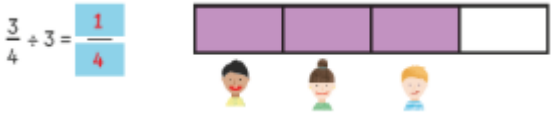




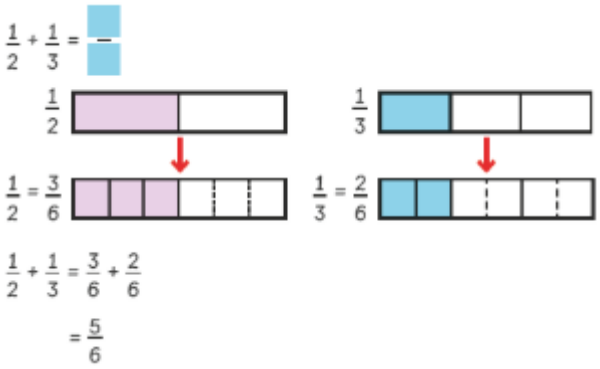
Can you use common factors to simplify fractions?



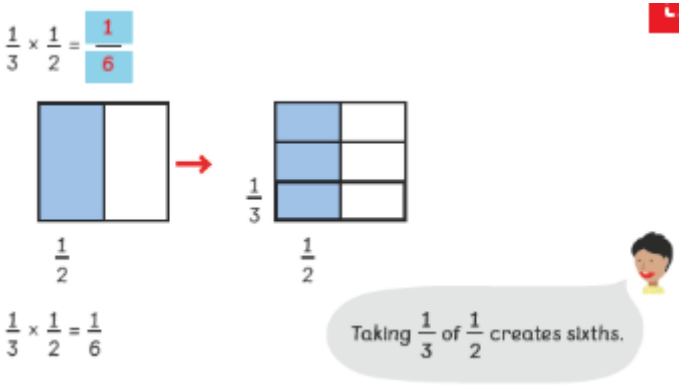
Can you compare and order fractions?



Can you divide fractions by whole numbers?

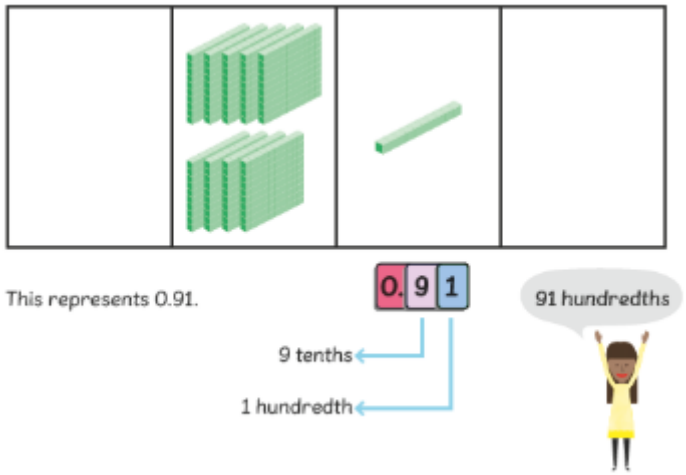


Can you add and subtract fractions with different denominators?



Can you multiply simple pairs of proper fractions and write the answer in the simplest form?

Year 6 Gold Knowledge Organiser: Decimals



Can you identify the value of each digit in numbers up to 3 decimal places?

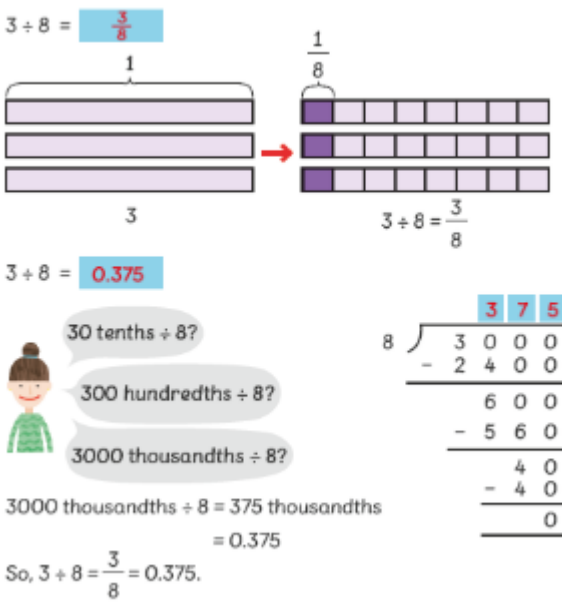
$32 \div 10 = 3 + 2 \text{ tenths} = 3.2$

30 | 2 = 20 tenths

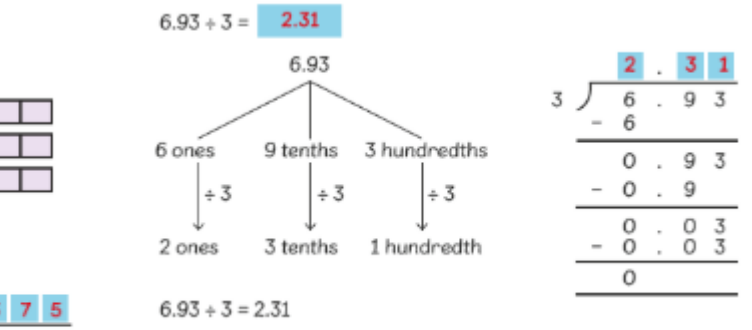
$32 \div 100 = 3200 \text{ hundredths} \div 100$
$= 32 \text{ hundredths}$
$= 0.32$

$32 \div 1000 = 32\,000 \text{ thousandths} \div 1000$
$= 32 \text{ thousandths}$
$= 0.032$

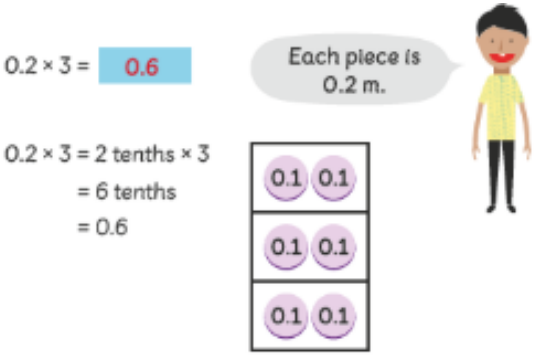
Can you multiply and divide numbers by 10, 100 and 1000 giving answers up to 3 decimal places?



Can you associate a fraction with division and calculate decimal fraction equivalents for a simple fraction?



Can you divide 1-digit numbers with up to 2 decimal places by 1-digit whole numbers?



Can you multiply 1-digit numbers with up to 2 decimal places by 1-digit whole numbers?

Year 6 Gold Knowledge Organiser: Measurements

1 mm = 0.1 cm
2 mm = 0.2 cm
12 mm = 1.2 cm

1 cm = 10 mm

Can you convert between centimetres and millimetres?

2 kg 60 g = 2.06 kg

1000 g = 1 kg
100 g = 0.1 kg
10 g = 0.01 kg
60 g = 0.06 kg
2 kg 60 g = 2.06 kg

1 kg = 1000 g

1 kg = 1000 g

Can you convert between grams and kilograms?

1 m 2 cm = 1.02 m

100 cm = 1 m

1 cm = $\frac{1}{100}$ m = 0.01 m

2 cm = 0.02 m

1 m 2 cm = 1.02 m

1 m = 100 cm

Can you convert between centimetres and metres?

1000 ml = 1 l
500 ml = 0.5 l
250 ml = 0.25 l

1 l = 1000 ml

Can you convert between litres and millilitres?

1 km 25 m = 1.025 km

25 m = $\frac{25}{1000}$ km
= 0.025 km

1 km 25 m = 1.025 km

1 km 25 m < 1.25 km

1 km = 1000 m

Can you convert between metres and kilometres?

Take 1 mile = 1.6 km.
1 mile = 1.6 km
10 miles = 16 km
100 miles = 160 km

Can you convert between miles and kilometres?

2.12 h = 2 h 7 min 12 s

1 h = 60 min
0.1 h = 6 min
0.01 h = 36 s
0.02 h = 72 s
2.12 h = 2 h 7 min 12 s

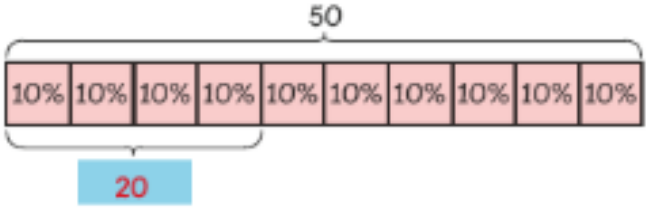
1 min = 60 s
6 min = 360 s

1 h = 60 min

Can you convert between seconds, minutes and hours?

Year 6 Gold Knowledge Organiser: Percentage

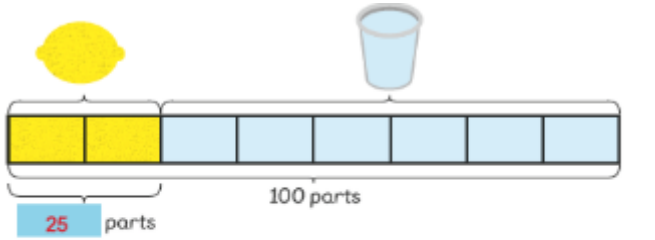
40% of 50 = 20



10% ⟶ 50 ÷ 10 = 5

40% ⟶ 4 × 5 = 20

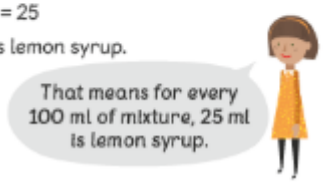
Can you calculate percentages of whole numbers?



100 ÷ 4 = 25

25 out of 100 parts of the mixture is lemon syrup.

25% of the mixture is lemon syrup.



Can you calculate percentages of a quantity?

The number of pupils in a school has been increasing by about 10% each year since 2010. In 2011, the number of pupils was 220.

10% of 220 = 22

220 ÷ 10 = 22

In 2012, the number of pupils was 220 + 22 or 242.

Can you calculate percentage changes?

Year 6 Gold Knowledge Organiser: Ratio

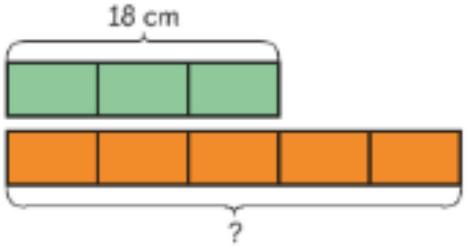
(a) For every slice of ham, we need 2 slices of bread.
The ratio of the number of ham slices to bread slices = 1 : 2.

(b) For every slice of ham, we need 3 slices of tomato.
The ratio of the number of ham slices to tomato slices = 1 : 3.

(c) For every 2 slices of bread, we need 3 slices of tomato.
The ratio of the number of bread slices to tomato slices = 2 : 3.

The ratio of the length of a shorter strip of paper to the length of a longer strip of paper is 3 : 5.

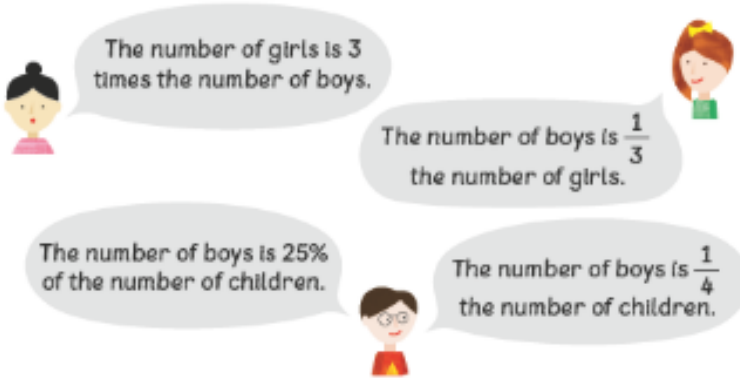
(a) If the shorter strip is 18 cm, how long is the longer strip?

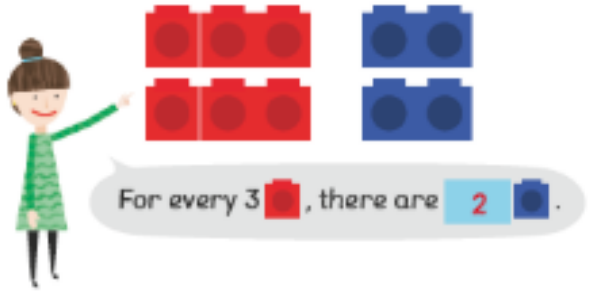


18 ÷ 3 = 6 cm

5 × 6 = 30 cm

The longer strip is 30 cm.

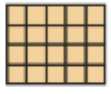
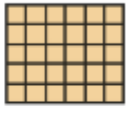


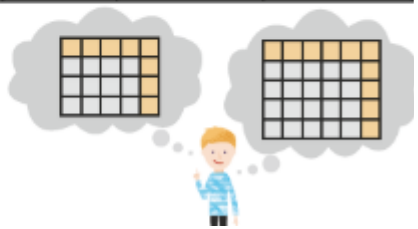


Can you use ratio to compare two quantities?

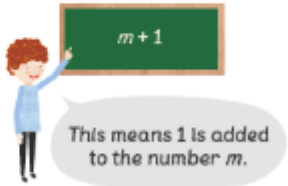
Year 6 Gold Knowledge Organiser: Algebra

Make Rectangle 4 and Rectangle 5.

Rectangle number	1	2	3	4	5
					



Rectangle number	Length of shorter side (units)	Length of longer side (units)
99	99	99 + 1 = 100
m	m	$m + 1$

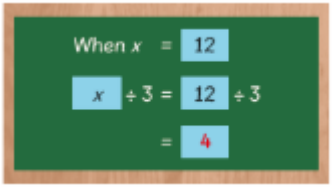


Can you generate and describe number patterns?

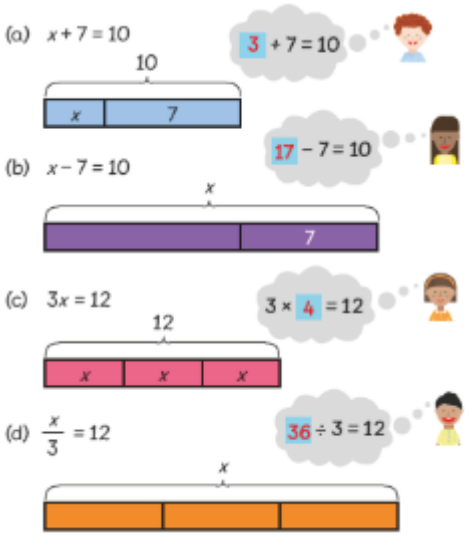
 thinks of a number. He then multiples it by 3.

Write an expression for the product.

$3x$



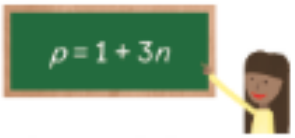
Can you express missing numbers algebraically?



Can you find pairs of numbers that satisfy an equation with two unknowns and list possible combinations?

 's method

Let p stand for the nth number in the pattern.



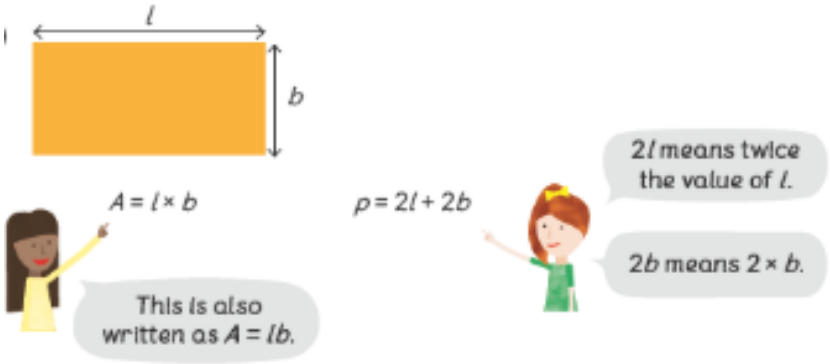
When $n = 6$, 6th number is $p = 1 + 3 \times 6 = 19$

When $n = 7$, 7th number is $p = 1 + 3 \times 7 = 22$

$p = 1 + 3n$ is a formula.

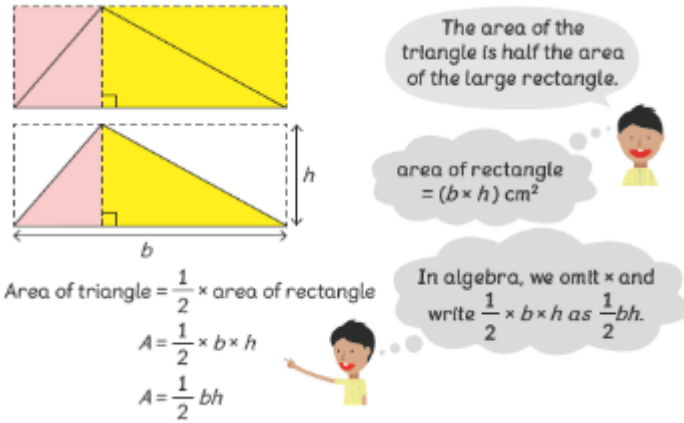
Can you use simple formulae?

Year 6 Gold Knowledge Organiser: Area & Perimeter

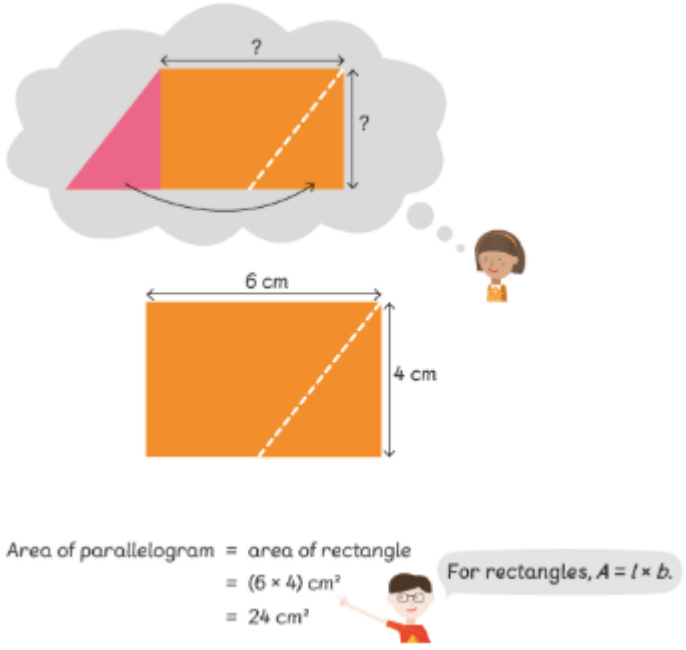


These are formulas (or formulae).

Can you use formulae for the area and perimeter or rectangles?

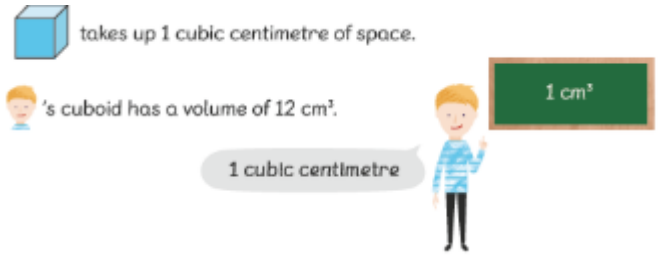


Can you calculate the area of triangles?

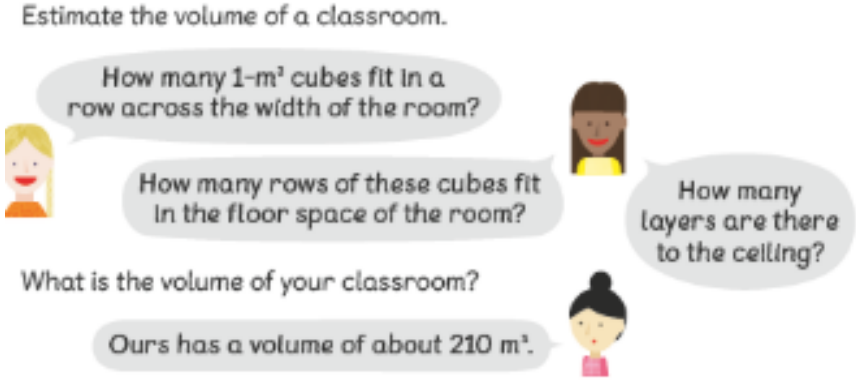


Can you calculate the area of parallelograms?

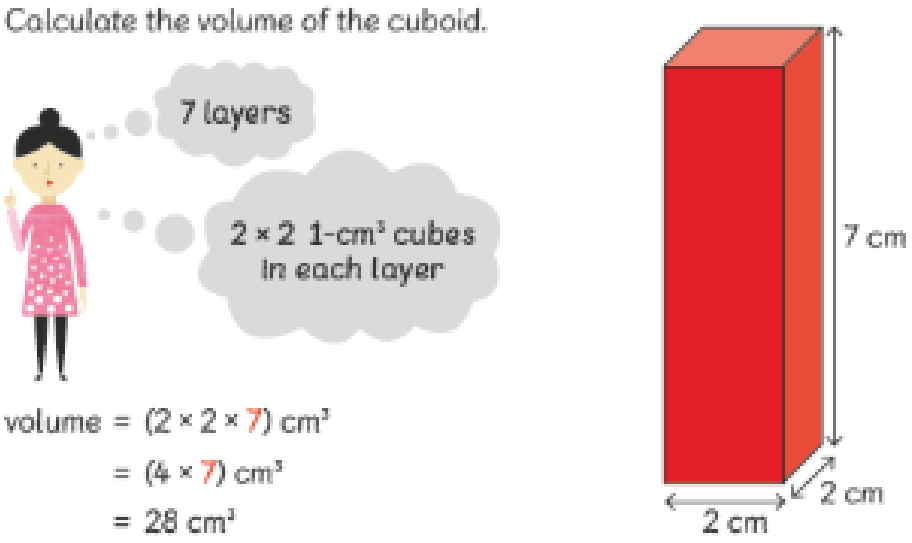
Year 6 Gold Knowledge Organiser: Volume



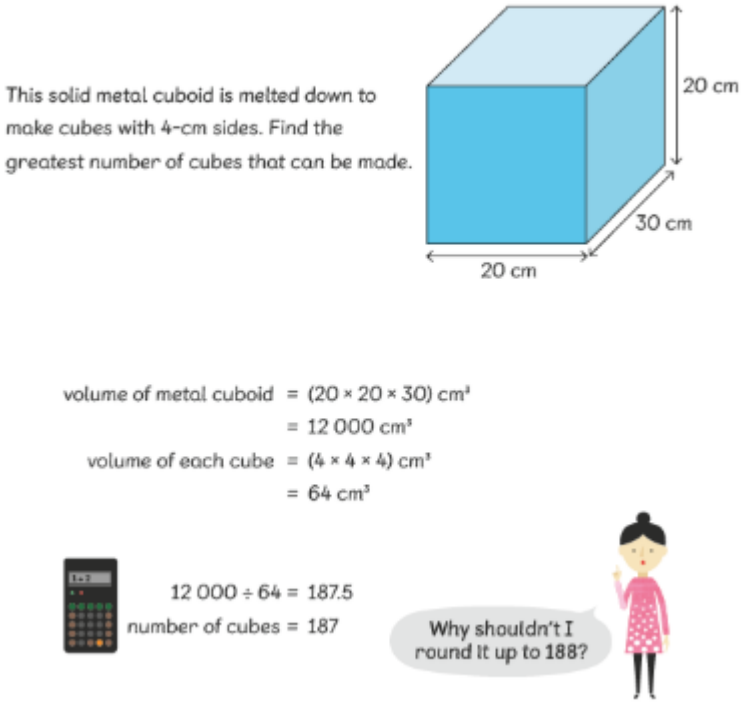
Can you measure volume in cubic centimetres?



Can you estimate the volume?



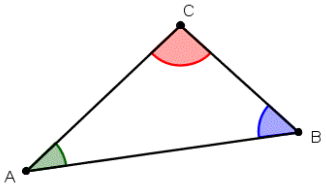
Can you calculate volume using a formula?



Can you solve problems involving volume?

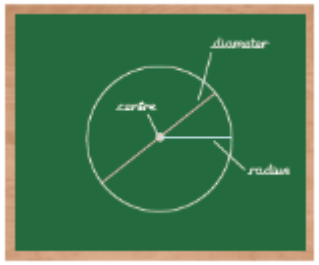
Year 6 Gold Knowledge Organiser: Geometry

Can you recognise vertically opposite angles and know that they are equal?



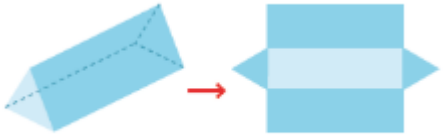
$m\angle A + m\angle B + m\angle C = 180$

Do you know that angles in a triangle always add up to 180 degrees and use this to find unknown angles?



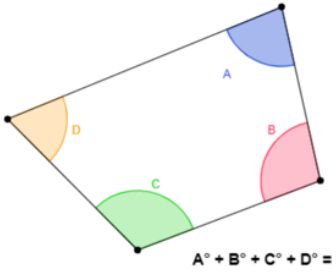
Can you name the parts of circles and know that the diameter is twice the radius?

Can you solve problems



Can you recognise and make nets for 3-D shapes?

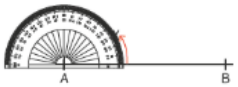
Sum of interior angles in a quadrilateral = 360°



Do you know the angles of a quadrilateral always add up to 360 degrees?

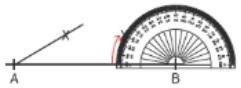
Step 1: Draw a straight line 6 cm long using a ruler and pencil.

Step 2: Place a protractor to measure 30°. Mark X to show 30°.

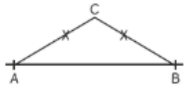


Step 3: Draw a line to show 30°.

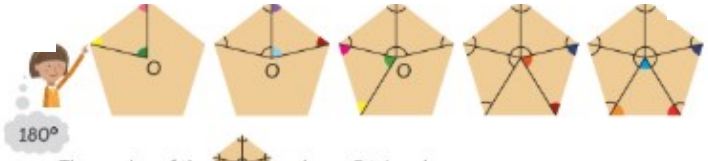
Step 4: Do the same at B.



Step 5: Continue the two lines until they meet at C.



Can you draw triangles and other shapes with given properties?



The angles of the make up 5 triangles.

So the sum of the 5 angles of the pentagon + 360° = 5 × 180°.

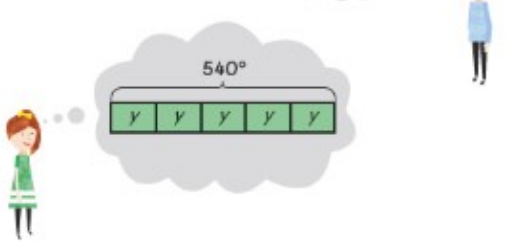
If all 5 angles are equal,

then $5y = 5 \times 180° - 360°$

$5y = 540°$

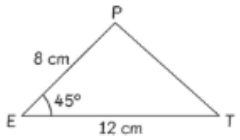
$y = 108°$

Why do we subtract?

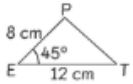


Can you solve problems involving angles in polygons?

uses a scale of 1 : 2.

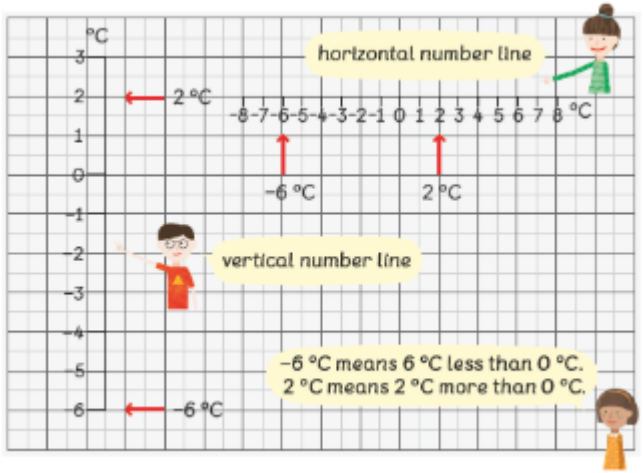


uses a scale of 1 : 4.

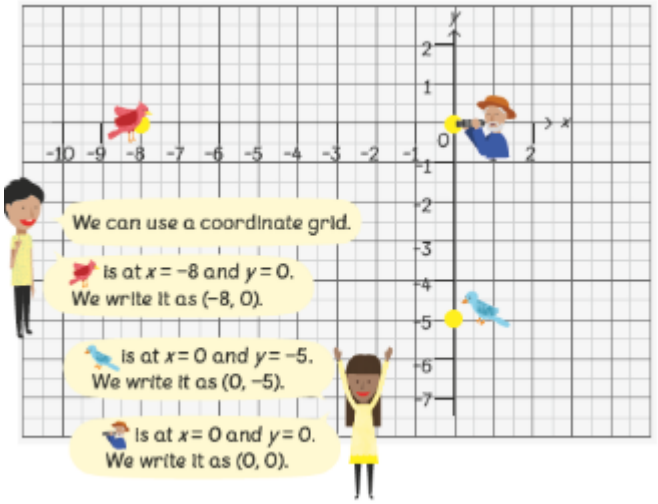


Can you solve problems where the scale factor is known or can be found?

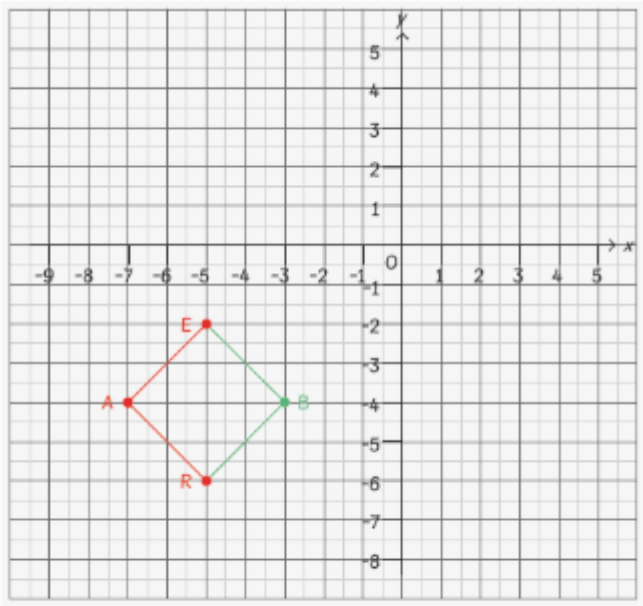
Year 6 Gold Knowledge Organiser: Position & Movement



Can you calculate negative numbers in context?

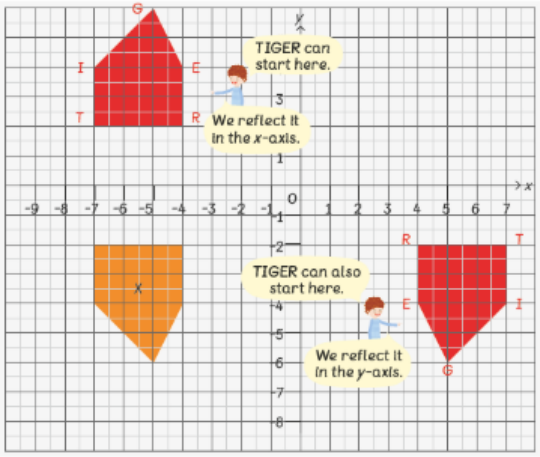


Can you describe positions on a full co-ordinate grid?

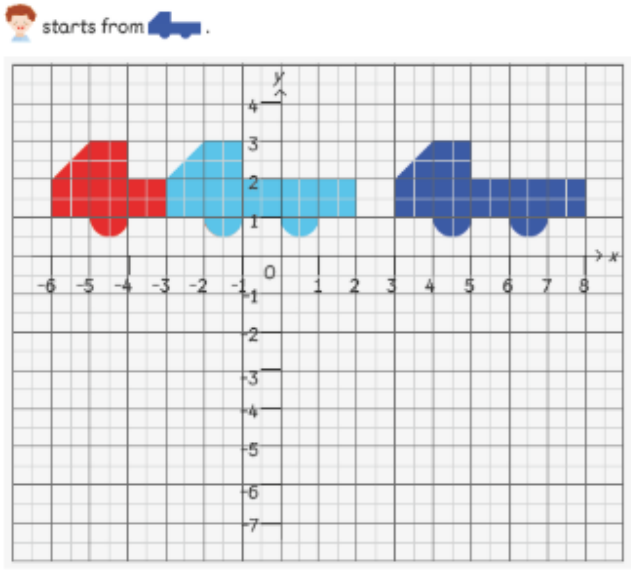


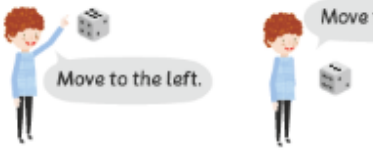
Quadrilateral BEAR is a square.
In this case, B is (−3, −4).

Can you draw simple shapes on a co-ordinate plane?

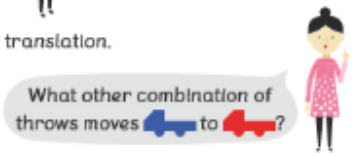


Can you reflect shapes in the axes?

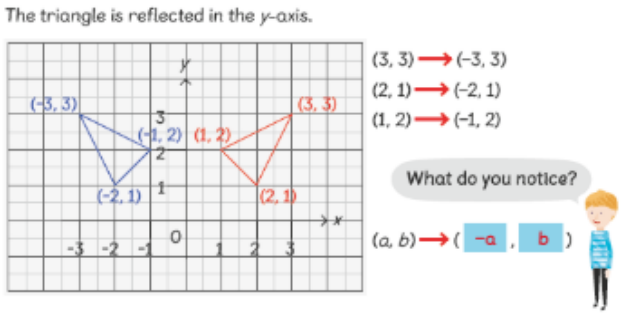




This type of movement is a translation.

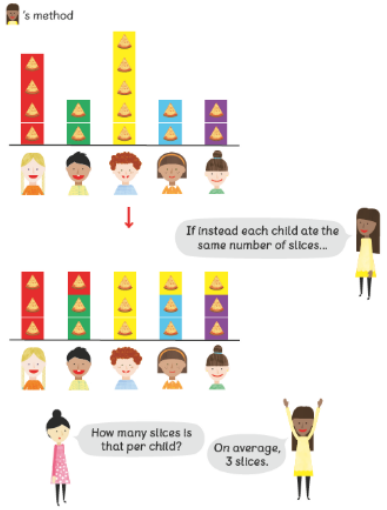


Can you describe the translation of shapes on a co-ordinate grid?

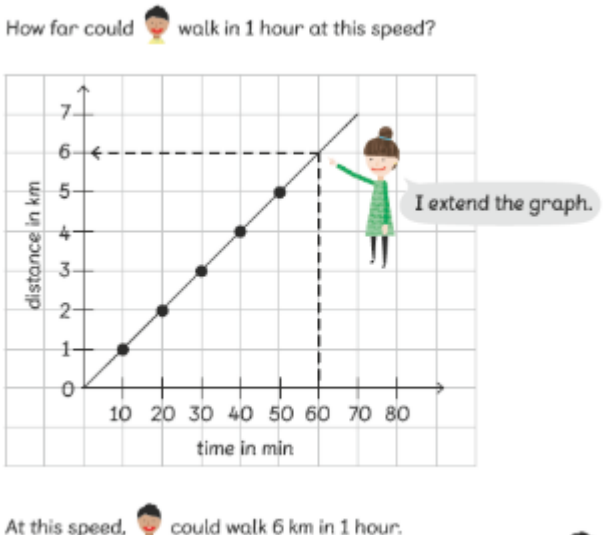


Can you use algebra to describe movement?

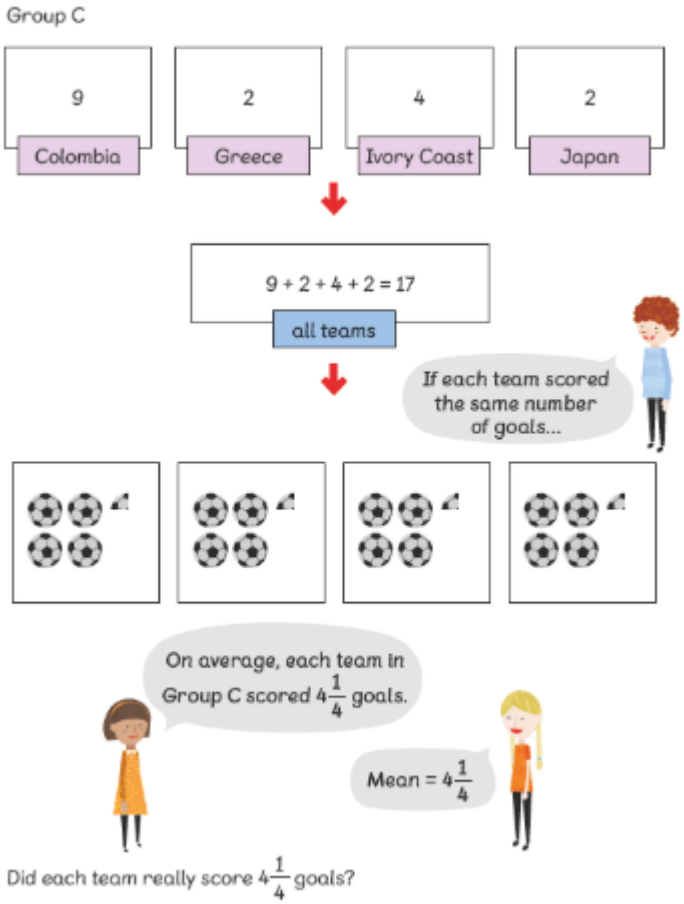
Year 6 Gold Knowledge Organiser: Graphs & Averages



Can you interpret the mean as an average?

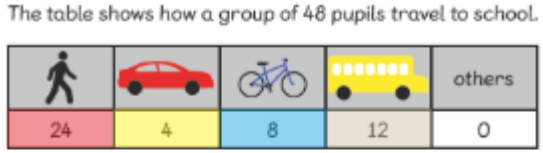


Can you read and interpret line graphs?



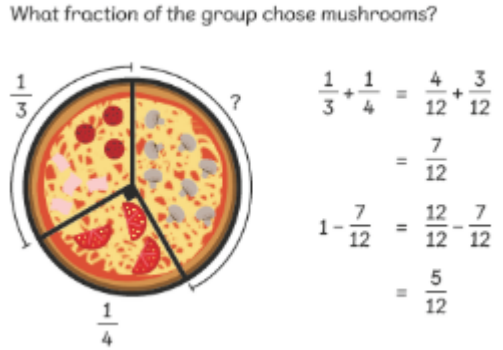
Can you calculate and interpret the mean as an average?

Can you solve problems involving the mean?



Show the information on a pie chart.

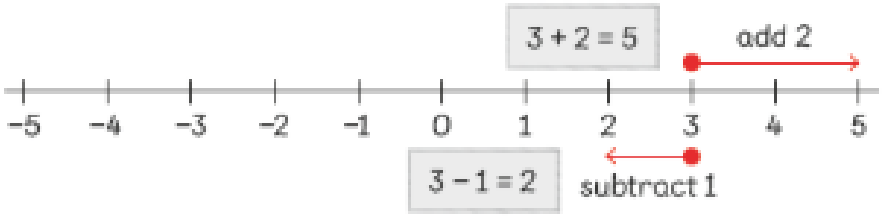
Can you show information on graphs, including pie charts?



Can you read and interpret pie charts?

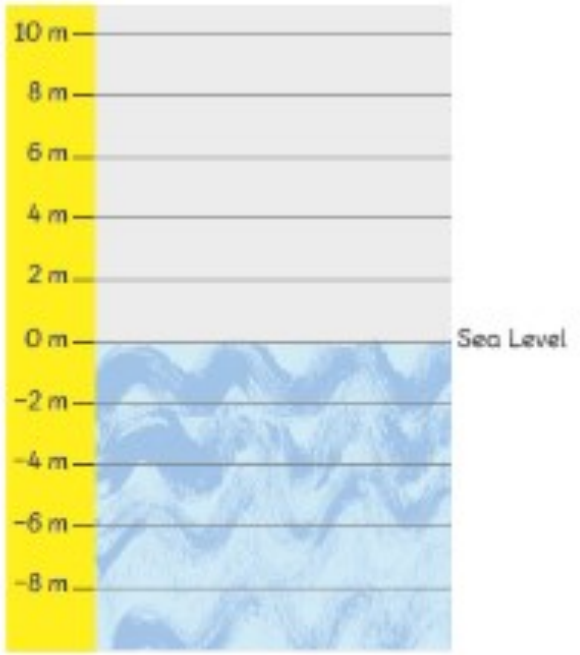
Year 6 Gold Knowledge Organiser: Negative Numbers

uses this method to add and subtract numbers.



Can you use negative numbers in context, and calculate intervals across zero?

The water level in a well rose 3 m from −8 m.



Is the new water level above or below sea level?

Can you use knowledge of negative numbers to solve problems?