

Year 5 Violet Knowledge Organiser: Numbers to 1,000,000

Each Is 100 thousand.

Each Is 10 thousand.

hundred thousands	ten thousands	thousands	hundreds	tens	ones
3	2	9	8	3	9

Can you read and represent numbers to 1,000 000?

806 421 is greater than **785 312**.

785 312 is less than **806 421**.

Can you compare numbers to 1,000,000 using place value?

25 160 , 65 160 , 105 160 , 145 160 , ...

What is the next number in this number pattern?

Add 40 thousand to get the next number.

Each number is 4 ten thousands more than the number before it.

Look at the ten thousands.

2 } 4
6 } 4
10 } 4
14 } 4

Look at the thousands.

25 } 40
65 } 40
105 } 40
145 } 40

Can you make and identify patterns in numbers using knowledge of place value?

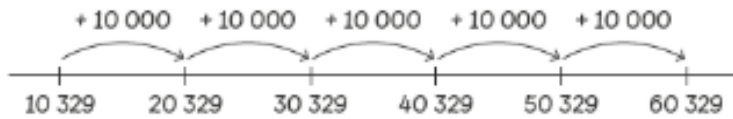
St James' Park can seat 52 404.



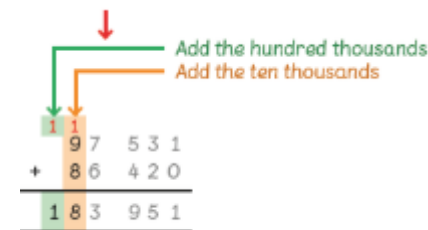
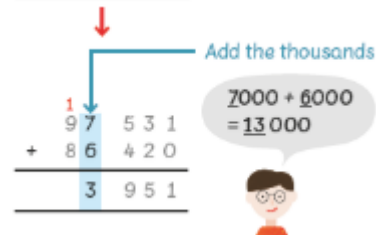
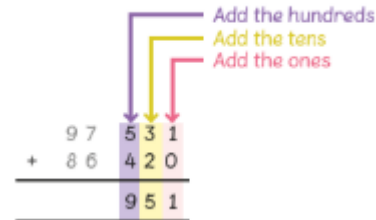
52 404 is closer to 50 000 than to 60 000.

Can you round numbers to the nearest 100, 1000, 10,000 and 100,000 using number lines?

Year 5 Violet Knowledge Organiser: Addition & Subtraction



Can you use 'counting on' as a strategy for adding?



Can you add 5 digit numbers using the column method?

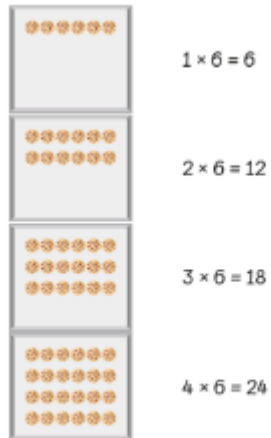


Can you subtract 5 digit numbers using the column method?



Can you use 'counting back' as a strategy for subtracting?

Year 5 Violet Knowledge Organiser: Multiplication & Division



We say 6, 12, 18 and 24 are multiples of 6.

Can you find multiples of a given number?

$$9 = 1 \times 9$$

$$9 = 3 \times 3$$

$$12 = 1 \times 12$$

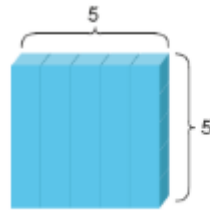
$$12 = 2 \times 6$$

$$12 = 3 \times 4$$

Can you find common factors of numbers to 100?

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

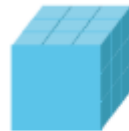
Can you determine prime numbers to 100?



25 is a square number.

$$25 = 5 \times 5 = 5^2$$

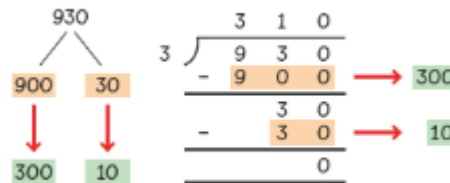
Can you recognise square numbers?



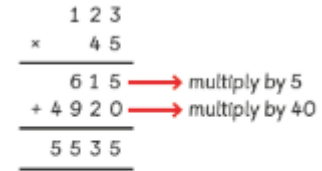
27 is a cube.

$$27 = 3 \times 3 \times 3 = 3^3$$

Can you recognise cube numbers?



Can you divide 3 and 4 digit numbers by 1 digit numbers using long division and remainders?

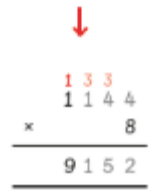
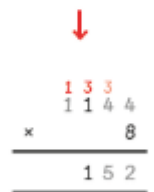
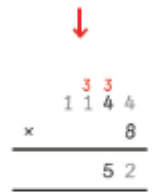
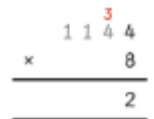


$$123 \times 45 = 5535$$

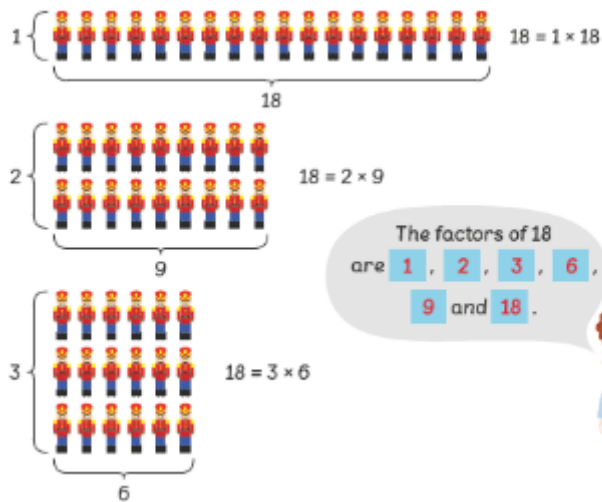
Can you multiply a 3 digit number by a 2 digit number using the column method?



Can you use bar models to solve word problems?



Can you multiply 4 digit numbers by a 1 digit number?



The factors of 18 are 1, 2, 3, 6, 9 and 18.

Can you find the factors of a given number?

12×10	12×100	12×1000
10 10 10 10 10 10 10 10 10 10 10 10	100 100 100 100 100 100 100 100 100 100 100 100	1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000
$12 \times 10 = 12 \times 1$ ten = 12 tens	$12 \times 100 = 12 \times 1$ hundred = 12 hundreds	$12 \times 1000 = 12 \times 1$ thousand = 12 thousands

Can you multiply 1 and 2 digit numbers by 10, 100 and 1000?

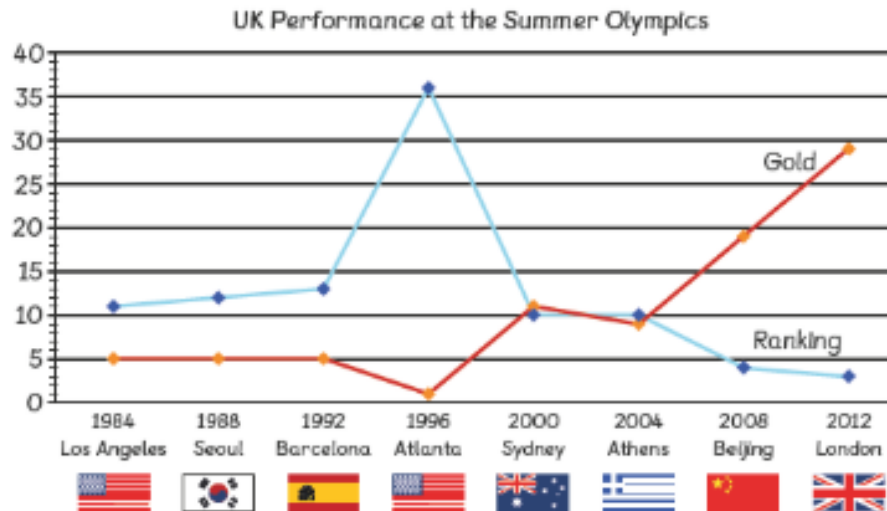
Year 5 Violet Knowledge Organiser: Graphs

From: Singapore – Changi Airport (SIN) To: London – Heathrow Airport (LHR)

Depart	Arrive	Flight	Aircraft	Duration	Frequency						
					Mon	Tues	Wed	Thurs	Fri	Sat	Sun
01:10	07:45	SQ306	77W	13h 35min	✈	✈		✈	✈		✈
09:05	15:40	SQ308	388	13h 35min	✈	✈	✈	✈	✈	✈	✈
12:35	19:05	SQ318	77W	13h 30min	✈	✈	✈	✈	✈	✈	✈
22:45	05:05+1	BA12	744	13h 20min	✈	✈	✈	✈	✈	✈	✈
23:15	05:30+1	BA16	777	13h 15min	✈	✈	✈	✈	✈	✈	✈
23:30	05:55+1	SQ322	388	13h 25min	✈	✈	✈	✈	✈	✈	✈

Note: 05:30+1 means 1 day after departure date.

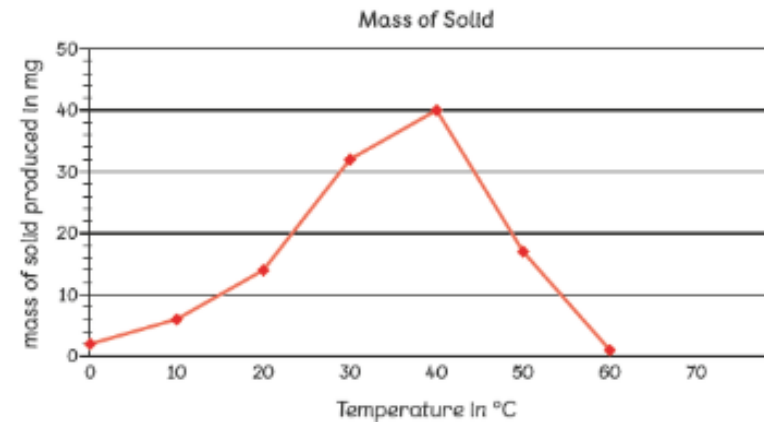
Can you read information presented in a table and interpret the meaning?



Can you read and interpret information presented on a line graph where the data is represented by more than one line?

Temperature in °C	0	10	20	30	40	50	60
Mass of solid produced in mg	2	6	14	32	40	17	1

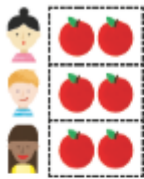
1000 mg = 1 g



Can you read and interpret information in a table and turn it into a line graph?

Can you determine relationships between data sets?

Year 5 Violet Knowledge Organiser: Fractions

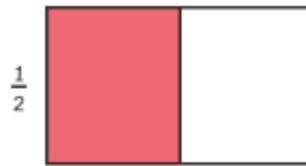


Each friend gets 2 apples.



6 apples shared equally among 3 friends.

$$6 \div 3 = \frac{6}{3} = 2$$



Find the sum of $\frac{1}{5}$, $\frac{3}{10}$ and $\frac{2}{5}$.



$$\begin{aligned} \frac{1}{5} + \frac{2}{5} &= \frac{3}{5} \\ \frac{1}{5} + \frac{3}{10} + \frac{2}{5} &= \frac{3}{5} + \frac{3}{10} \\ &= \frac{6}{10} + \frac{3}{10} \\ &= \frac{9}{10} \end{aligned}$$

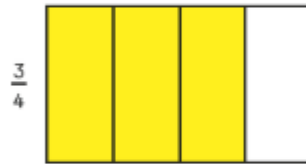
What if there is only 1 apple?

1 apple shared equally among 3 friends.

$$1 \div 3 = \frac{1}{3}$$



Each friend gets $\frac{1}{3}$ of an apple.



Can you add unlike fractions by finding a common denominator?



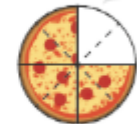
Can you subtract unlike fractions?



$$1 - \frac{1}{4} = \frac{4}{4} - \frac{1}{4} = \frac{3}{4}$$

$$\frac{3}{4} = \frac{6}{8}$$

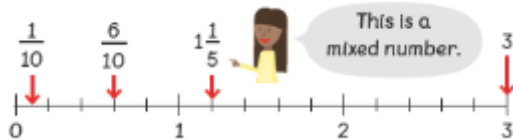
$$\frac{3}{4} - \frac{1}{8} = \frac{6}{8} - \frac{1}{8} = \frac{5}{8}$$



We need equal denominators.

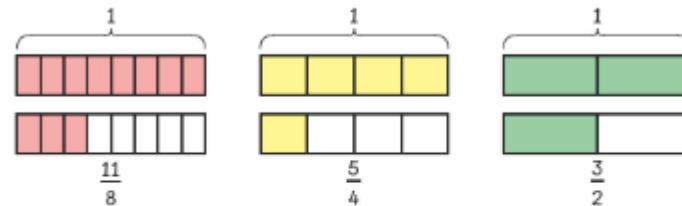
$\frac{5}{8}$ of the pizza is left over after [boy] and [girl] eat their share.

Can you divide whole numbers to create fractions?



Can you represent fractions pictorially?

Arrange $\frac{11}{8}$, $\frac{5}{4}$ and $\frac{3}{2}$ from the smallest to the greatest.



$$\frac{5}{4} = \frac{10}{8}$$

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

$$\frac{10}{8} < \frac{11}{8} < \frac{12}{8}$$

$\frac{5}{4}$, $\frac{11}{8}$, $\frac{3}{2}$
smallest \rightarrow greatest

Can you write improper fractions and mixed numbers using a number line?



$$3 \times \frac{1}{4} = \frac{3}{4}$$

Can you multiply a fraction by a whole number?

Can you convert mixed numbers to improper fractions and vice versa?

$$3\frac{2}{3} = \frac{11}{3}$$

Can you compare and order fractions?

Year 5 Violet Knowledge Organiser: Decimals & Percentages

<p>0.102</p> <p>1 tenth and 2 thousandths</p>	
<p>0.012</p> <p>1 hundredth and 2 thousandths</p>	
<p>0.021</p> <p>2 hundredths and 1 thousandth</p>	

Can you read and write decimal numbers to three decimal places?

Can you compare tenths and hundredths written as decimals?

$$0.4 = \frac{40}{100}$$

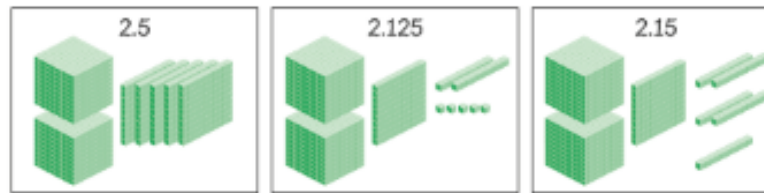
40 hundredths

$$0.12 = \frac{12}{100}$$

12 hundredths

0.4 is greater than 0.12.

0.12 is less than 0.4.



$$2.125 < 2.15 < 2.5$$

2.125 kg is the lightest of the three masses.

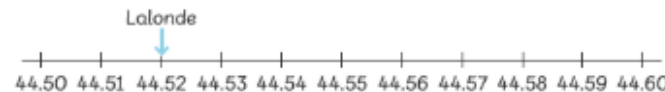
Can you compare and order decimals of amounts?



Can you write fractions as decimals?

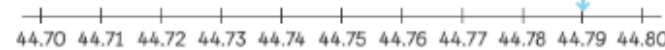


Can you find number pairs that add up to 1?



44.52 s is closer to 44.5 s than to 44.6 s.

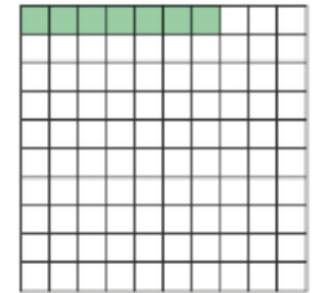
$$44.52 \text{ s} \approx 44.5 \text{ s}$$



Chris' time is closer to 44.8 s than to 44.7 s.

$$44.79 \text{ s} \approx 44.8 \text{ s (to the nearest tenth of a second)}$$

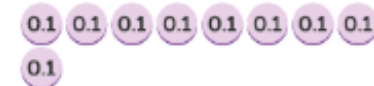
Can you round decimals to the nearest whole number and nearest tenth?



$$\frac{7}{100} = 7 \text{ per cent}$$

Can you convert fractions to decimals and percentages?

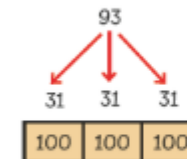
(a) 8 tenths + 1 tenth = 9 tenths 8 tenths - 1 tenth = 7 tenths



Can you add and subtract amounts in deci-

$$\begin{array}{r} \text{£ } 1.30 \\ + \text{£ } 0.80 \\ \hline \text{£ } 2.10 \end{array}$$

uses percentages.



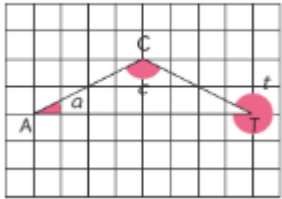
For every 100 pupils, 31 got an A.

31%



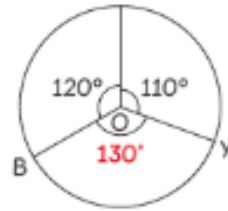
Can you convert values of an amount into percentages?

Year 5 Violet Knowledge Organiser: Geometry



Which type of angle:
 (a) is angle c? **Obtuse**
 (b) is angle a? **Acute**
 (c) is angle t? **Reflex**

Do you know the names and qualities of acute, right, obtuse and reflex angles?



Can you recognise that angles around a point make 360° ?

The four sides of a square all have the same length.

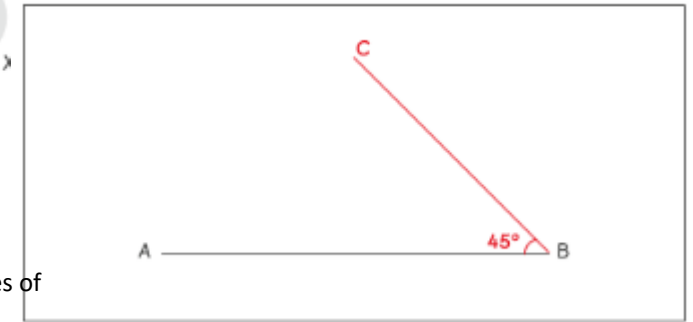


The 'opposite' sides of a rectangle are always the same length.

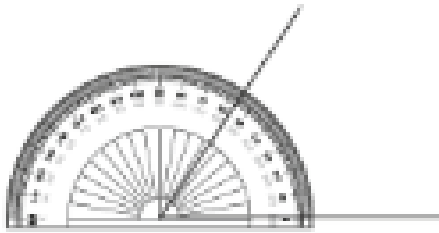


Can you describe the sides and angles of rectangles and squares?

The line AB is given below. Draw and label $\angle ABC$ such that $\angle ABC = 45^\circ$.

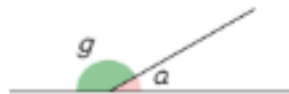


Can you draw angles using a protractor?



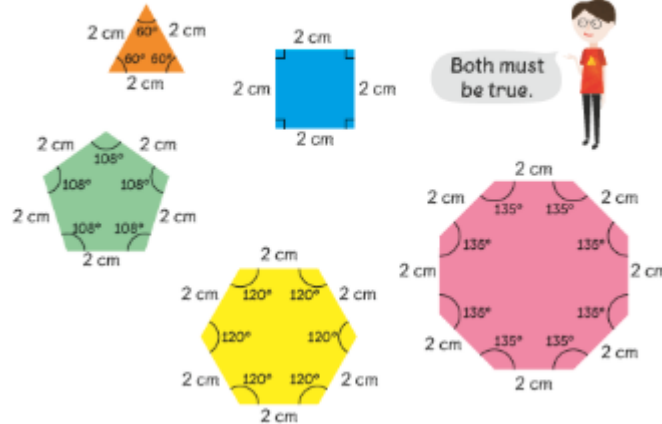
Can you measure angles using a protractor?

$$\angle a + \angle g = 180^\circ$$



Can you recognise angles on a straight line add up to 180° ?

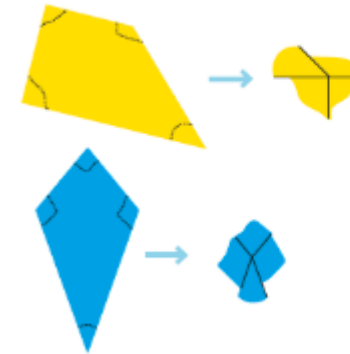
A regular polygon is a polygon with all sides of equal length and all angles equal.



Both must be true.

Can you recognise and investigate regular polygons?

The sum of the four angles in any quadrilateral is 360° .

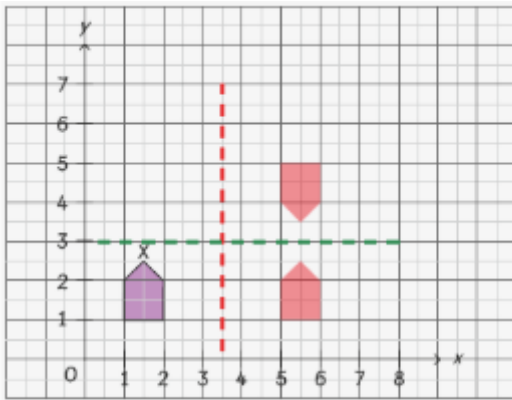


Angles at a point add up to 360° .



Can you recognise the angles in a quadrilateral add up to 360° ?

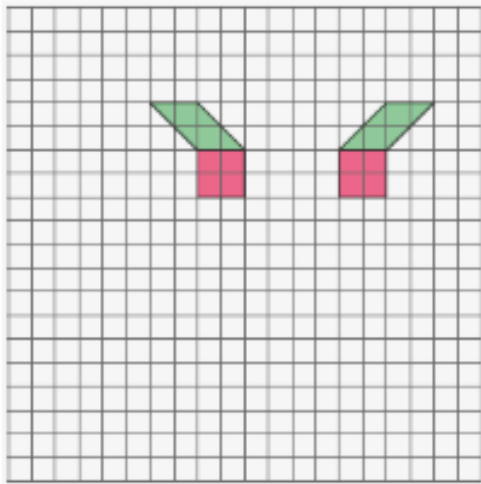
Year 5 Violet Knowledge Organiser: Position & Movement



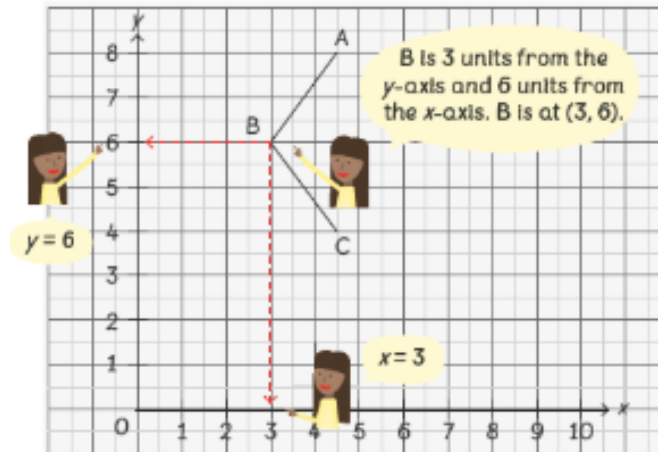
(a) The polygon is first reflected in the vertical line .
X reflects to Y($5\frac{1}{2}$, $2\frac{1}{2}$).

(b) The image is then reflected in the horizontal line .
Y reflects to Z($5\frac{1}{2}$, $3\frac{1}{2}$).

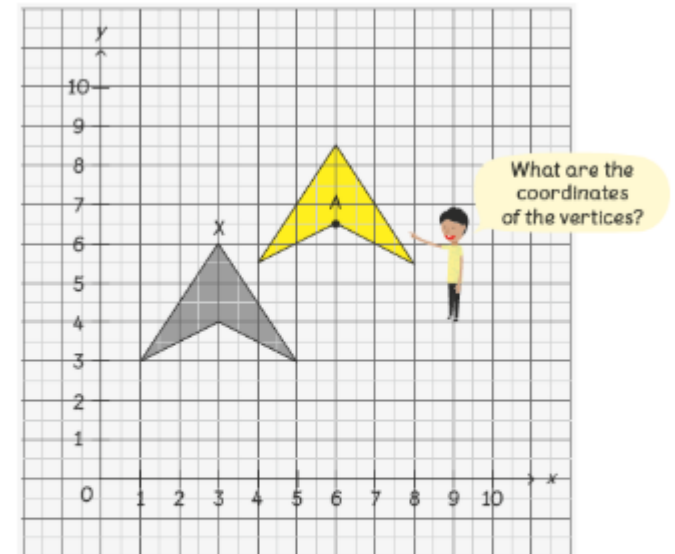
Can you describe reflections and reflect a shape more than once?



Can you describe reflections?



Can you name and plot points?



The figure is translated 3 units to the right and $2\frac{1}{2}$ units upwards.

As a result, the point X moves from (3, 6) to (6, $8\frac{1}{2}$).

Can you describe the position of a shape following a translation?

Year 5 Violet Knowledge Organiser: Measurements

10 mm = 1 cm
 10 mm = 1 cm
 30 mm = 3 cm

30 ÷ 10

Can you convert cm to mm and vice versa?

8 inches = 20 cm

1 inch = 2.54 cm

2 inches = 5 cm
 4 inches = 10 cm
 8 inches = 20 cm

2 inches is about 5 cm.

2 kg = 4.4 lbs
 2 kg = 2.2 lbs + 2.2 lbs
 = 4.4 lbs

Can you convert between some imperial and metric measures, such as inches, pounds and pints?

1 m = 100 cm
 5 m = 500 cm

0.1 m = 10 cm
 0.8 m = 80 cm

5 × 100 = 500

5.80 m = 580 cm

5.80 m = 5 m 80 cm

Can you convert cm to m and vice versa?

60 g = 0.06 kg

1000 g = 1 kg

100 g = $\frac{1}{10}$ kg = 0.1 kg

10 g = $\frac{1}{100}$ kg = 0.01 kg

60 g = 0.06 kg

60 g is not 0.6 kg.

1000 g = 1 kg

0.6 kg = 600 g

0.1 kg = 100 g

0.6 kg = 600 g

1 tenth

Can you convert between units of mass?

Stockholm °C

The reading is 10 °C below 0 °C.
 The temperature in Stockholm is -10 °C.

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0

-10 is 10 less than 0.

Can you read the temperature on a thermometer?

4.9 km

4 km 0.9 km = 900 m

4.9 km = 4 km 900 m

1000 m = 1 km
 100 m = 0.1 km

0.1 km = 100 m
 0.9 km = 900 m

4009 m

4000 m 9 m

4009 m = 4 km 9 m

1000 m = 1 km
 4000 m = 4 km

4000 ÷ 1000 = 4

Can you convert m to km and vice versa?

3 years 8 months = 44 months

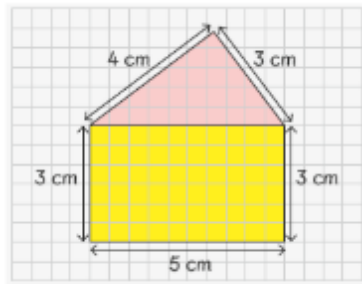
1 year = 12 months

3 years = 3 × 12 months
 = 36 months

3 years 8 months = 36 months + 8 months
 = 44 months

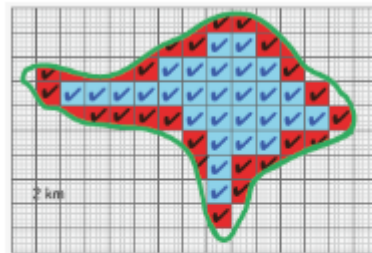
Can you convert units of time such as days into weeks, weeks into months, months into years and vice versa?

Year 5 Violet Knowledge Organiser: Area & Perimeter



Perimeter = 18 cm

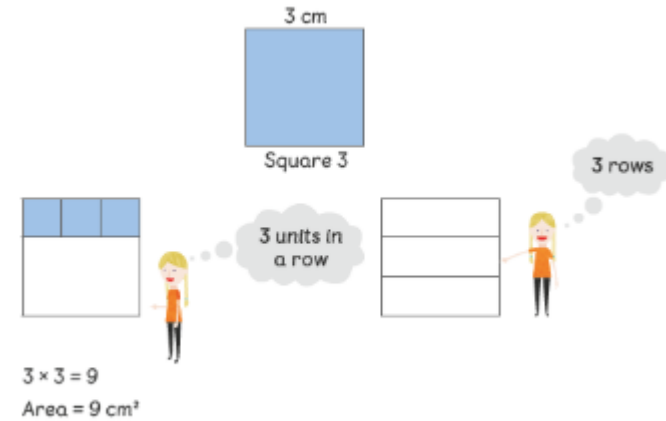
Can you find the perimeter of shapes?



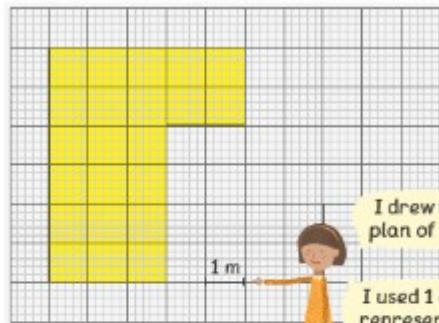
$$\begin{aligned} \text{Area} &= 51 \times 4 \text{ km}^2 \\ &= 204 \text{ km}^2 \end{aligned}$$

An estimate for the area of the island is 204 km².

Can you estimate the area of irregular shapes?



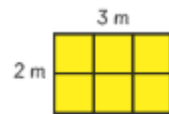
Can you measure the area of squares and rectangles?



Is it possible to find the perimeter of [person]’s room?

We call '1 cm = 1 m' the scale, and sometimes shorten this by writing '1 m' above a segment 1 cm in length - like this: 1 m.

Can you use scale diagrams to find the perimeter of shapes?

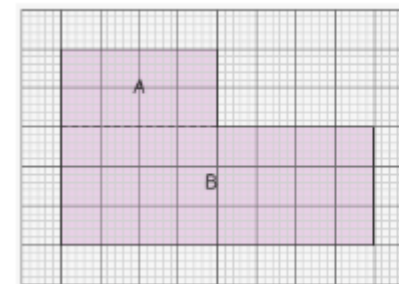


$$\begin{aligned} \text{Area} &= 2 \times 3 \text{ m}^2 \\ &= 6 \text{ m}^2 \end{aligned}$$

3 [square] in one row

Scale: 1 cm represents 1 m

Can you measure the area in square metres?



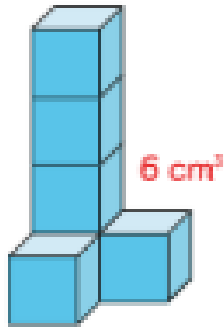
$$\begin{aligned} \text{Area of A} &= 2 \times 4 \text{ cm}^2 \\ &= 8 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of B} &= 3 \times 8 \text{ cm}^2 \\ &= 24 \text{ cm}^2 \end{aligned}$$

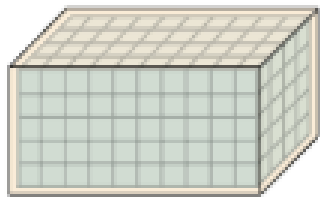
$$\begin{aligned} \text{Area of } \text{[L-shape]} &= 8 \text{ cm}^2 + 24 \text{ cm}^2 \\ &= 32 \text{ cm}^2 \end{aligned}$$

Can you measure the area of rectilinear shapes?

Year 5 Violet Knowledge Organiser: Volume



Can you find the volume of 3-D shapes?



There are 40 unit cubes in one layer. There are 5 layers.

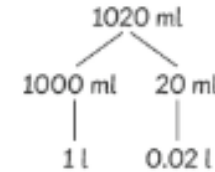
$$\begin{aligned} \text{Volume} &= 5 \times 40 \text{ cm}^3 \\ &= 200 \text{ cm}^3 \end{aligned}$$

We say the **capacity** or volume of the box is 200 cm³.



Can you find the volume of cuboids?

Write the volume in litres. Use decimals.



$$1020 \text{ ml} = 1.02 \text{ l}$$

1000 ml	= 1 l
100 ml	= 0.1 l
10 ml	= 0.01 l
20 ml	= 0.02 l



1 l = 1000 ml



$$\begin{aligned} 1 \frac{2}{5} &= 1 \frac{4}{10} = 1.4 \\ 1 \frac{2}{5} \text{ l} &= 1.4 \text{ l} \end{aligned}$$

1.02 l < 1.2 l < 1.4 l

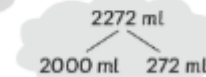


Can you compare and convert units of volume?

$$4 \text{ pints} = 2 \text{ l } 300 \text{ ml}$$



$$\begin{aligned} 4 \text{ pints} &\approx 4 \times 568 \text{ ml} \\ &= 2272 \text{ ml} \\ &= 2 \text{ l } 272 \text{ ml} \end{aligned}$$



5	6	8
x		4

	3	2
	2	4
	2	0
	2	0
	2	0
	2	0

2	2	7

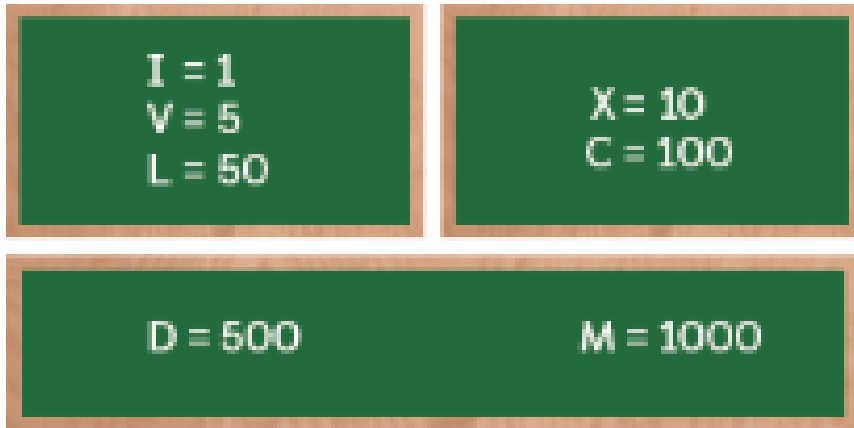
2	2	7

4 pints is about 2 l 300 ml.



Can you convert metric and imperial units of volume?

Year 5 Violet Knowledge Organiser: Roman Numerals



Can you write roman numerals to 1000?

Write 100, 200 and 300 in Roman numerals.

1 = I	10 = X	100 = C
2 = II	20 = XX	200 = CC
3 = III	30 = XXX	300 = CCC

Write 400 and 500 in Roman numerals.

5 = V	50 = L	500 = D
4 = IV	40 = XL	400 = CD

1 less than 5



10 less than 50



100 less than 500

