Progression in Measures

The following outlines a progressive journey for pupils in the area of maths involving measures. Wherever possible, measures are linked to number, fractions and other maths areas.

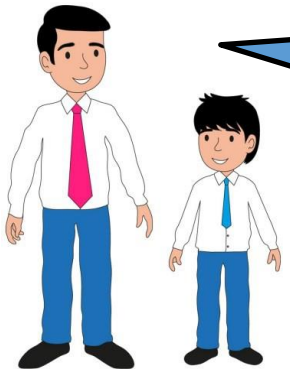
Skills and concepts are usually taught within the maths lesson and then applied appropriately using real life contexts.

Y1 MEASURES

Progression	COMPARING & ESTIMATING

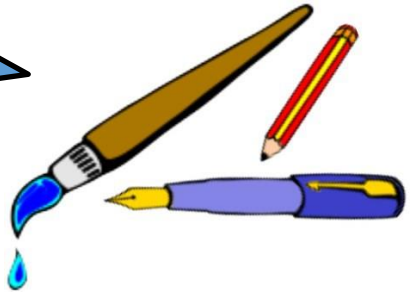
Compare, describe and solve practical problems for:

- lengths and heights [e.g. long/short, longer/ shorter, tall/ short, double/ half]
- mass/weight [e.g. heavy/ light, heavier than, lighter than]
- capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter]
- time [e.g. quicker, slower, earlier, later]

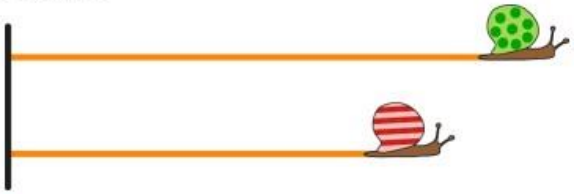


Compare the heights.

Compare the lengths of the pen, pencil and paintbrush.

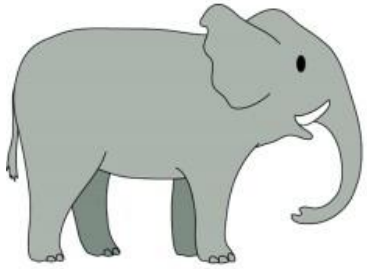


Distance:



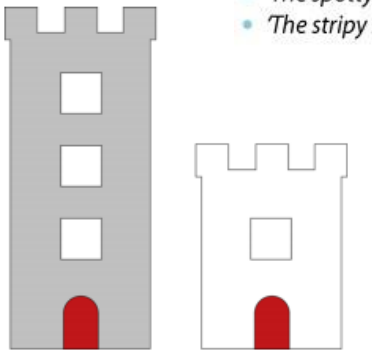
- *'The spotty snail went further than the stripy snail.'*
- *'The stripy snail went less far than the spotty snail.'*

Mass:



- *'An elephant is heavier than a mouse.'*
- *'A mouse is lighter than an elephant.'*

Height:



- *'The grey tower is taller than the white tower.'*
- *'The white tower is shorter than the grey tower.'*

Time:

Who is quicker, slower

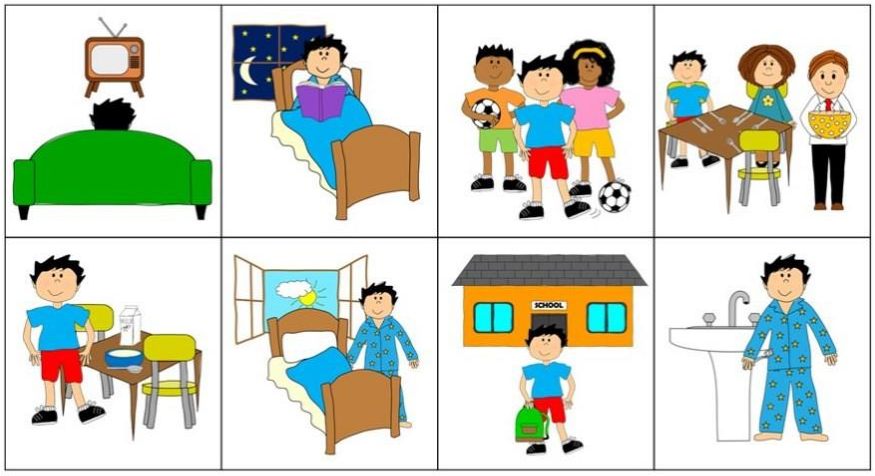
Comparing multiple objects:

'Three rubbers are ___ than two pairs of scissors.'

Capacity:

Show me-

Full, half full, empty, almost full, almost empty.

Progression	COMPARING & ESTIMATING
Sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening].	Put these events in the right order.  ____ bedtime I clean my teeth. I got to school ____ my breakfast. Today is Friday, so ____ we do not come to school. We do PE in the ____ . Can you complete these sentences? Choose words from: after before afternoon morning evening today yesterday tomorrow Can you make some of your own sentences using these words?

Y1

MEASURES

Y1 MEASURES

Progression	MEASURING & CALCULATING

measure and begin to record the following:

- lengths and heights
- mass/weight
- capacity and volume
- time (hours, minutes, seconds)

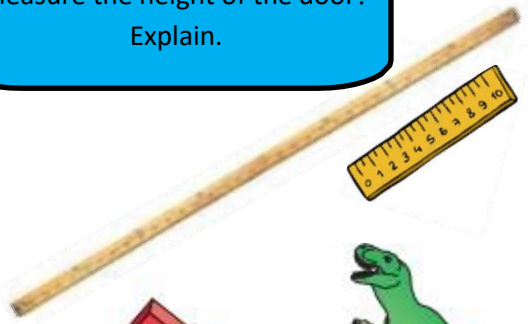
Measure the length/weight of these items using cubes.

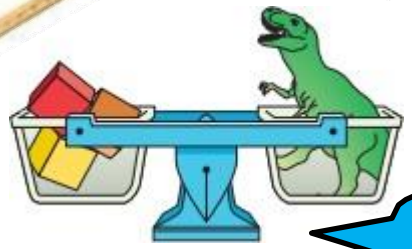
	number of cubes
	
	
	
	

Can you find something that is 11 cubes tall?

20 cubes heavy?

Which of these would be best to measure the height of the door? Explain.





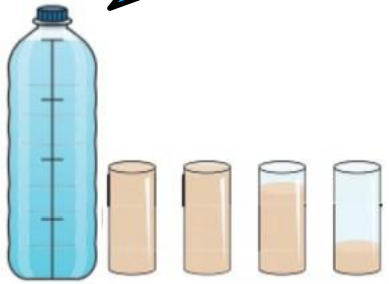
What can you say about the weight of the dinosaur?

How long is the pencil?

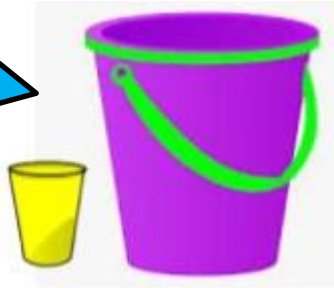
How would you measure how long it took you to do these activities? Choose from:

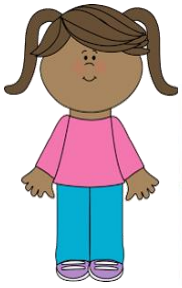
Seconds, minutes, hours

The capacity of the bottle is 4 cups. Do you agree?

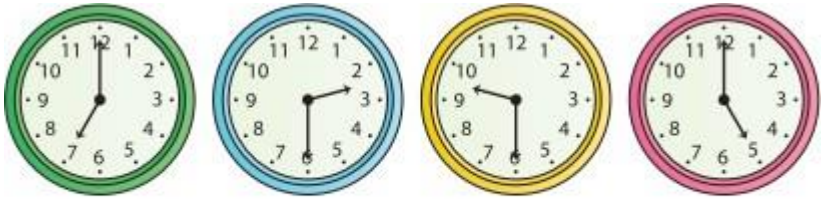


How many cups of water does it take to fill the bucket? Can you predict? Were you right?



Progression	MEASURING & CALCULATING
Recognise and know the value of different denominations of coins and notes.	Can you sort these coins into groups? Explain how you have sorted them. Can you sort them in a different way?  How many pound coins is each     What coin/note has the same value? Sabijah   Sabijah says she has more money. Do you agree? Amy   Which is the odd one out?  5p 10p 2p 8p

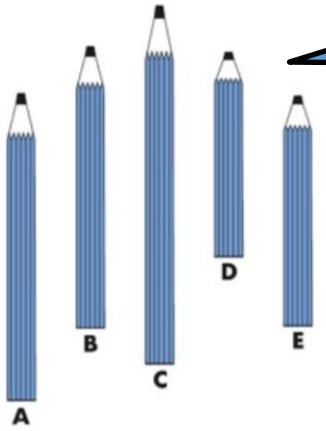
Y1 MEASURES

Progression	TELLING THE TIME
Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. Recognise and use language relating to dates, including days of the week, weeks, months and years	Match the clocks to the correct times.  half past nine | five o'clock | half past two | seven o'clock In what year were you born. What year is it now? Last year? Next year? Put these days in order. Now sort into school days and non-school days. Sunday Thursday | Saturday | Friday Wednesday | Tuesday | Monday Draw hands on these clocks to show: • Half past three • 5 o'clock  What day is it today? Yesterday? Tomorrow? What month is your birthday? Christmas? What month do we start school? What months are the summer holidays? It is January. Next month it will be_____. It is June. Last month it was_____. It is October. What will it be in 3 months time?

Y1 MEASURES

Y2 MEASURES

Progression	COMPARING & ESTIMATING
Compare and order lengths, mass, volume/ capacity and record the results using >, < and =	

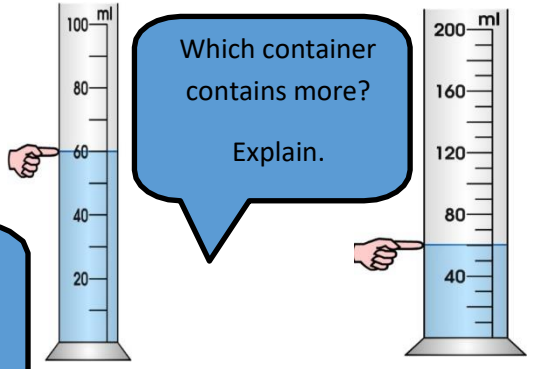


Put the pencils in order from shortest to longest.

Find objects that are longer and shorter than a metre and record them in the table.

Longer than 1m	Shorter than 1m

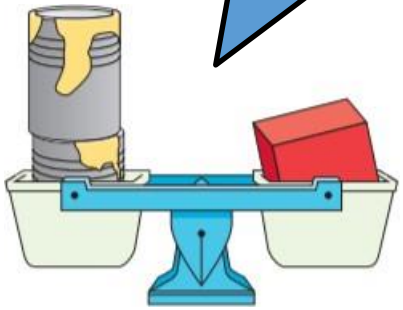
Sarah says the big box must be the heaviest because it is the big-gest. Do you agree?



Which container contains more?

Explain.

If the box weighs 10kg, what does each tin weigh?



Find some different containers and investigate how much water each holds. Order your container from smallest to largest.

Use < > or = in the circle to make these statements correct.

20cm ◯ 12cm

75g ◯ 75kg

15ml ◯ 15 litres

Y2 MEASURES

Progression	COMPARING & ESTIMATING/ TELLING THE TIME/ CONVERTING

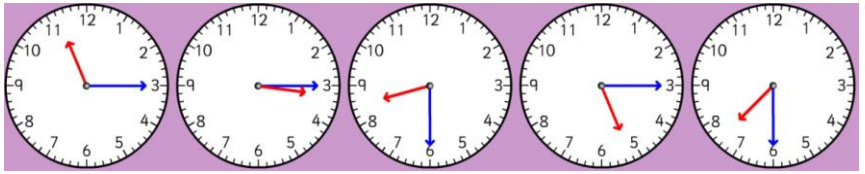
Compare and sequence intervals of time.

Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.

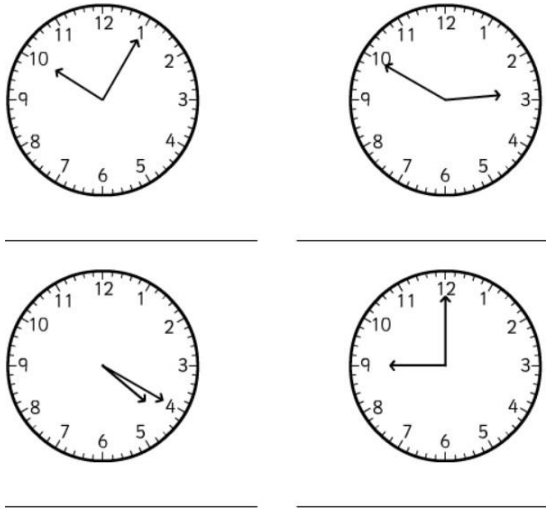
Know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)

Tick the clock that shows a time between 5 o'clock and 7 o'clock.

Match the times to the clocks.



half past 7 | quarter past 11 | quarter past 3 | half past 8 | quarter past 5



Write the times of each of these clocks.

Match the events to the clock times then show each time on your clock.

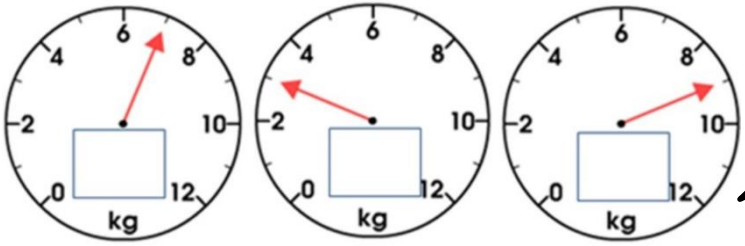
9 o'clock	Lunchtime
Half past 10	Go to school
12 o'clock	Home time
Half past 3	Playtime

Match each card to its equivalent.

1 day	half a day	30 minutes
60 minutes	12 hours	half an hour
24 hours		2 day

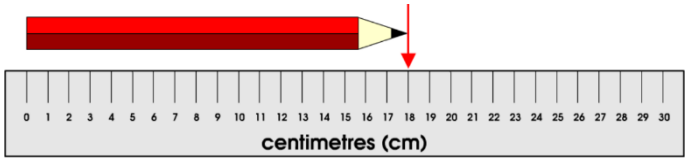
Y 2 MEASURES

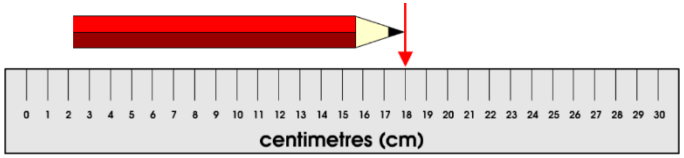
Progression	MEASURING & CALCULATING
Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.	



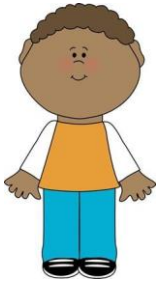
Read the scale on each dial.

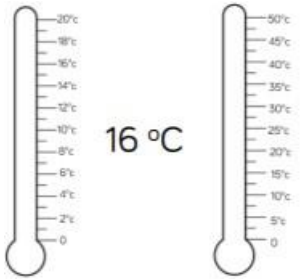
Find some containers and estimate the capacity of each. Now measure the capacity in ml.





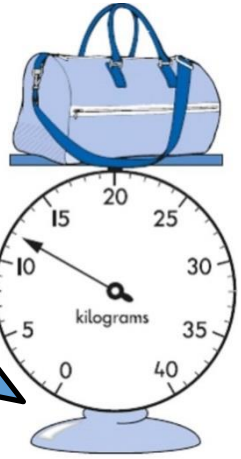
Tom says both these pencils are 18cm long. Do you agree? Explain.





Show these temperatures on the thermometer.

Which of these would you measure in metres?

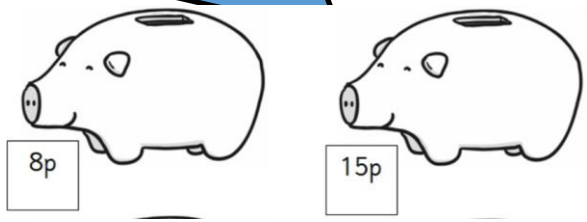


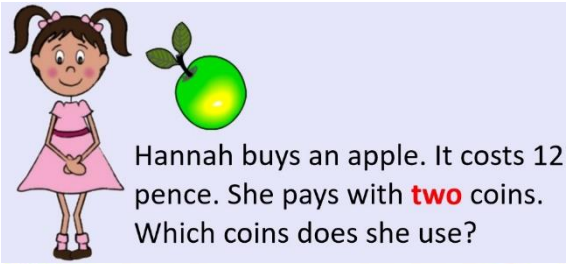
How much lighter than 15 kg is the bag?

Y2 MEASURES

Progression	MEASURING & CALCULATING
Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. Find different combinations of coins that equal the same amounts of money. Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.	

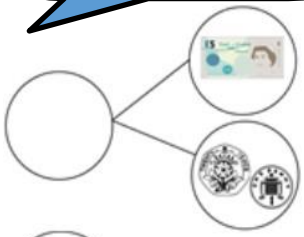
Draw coins in the piggy banks to make the given amounts.

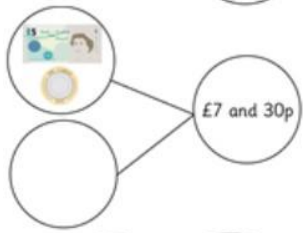


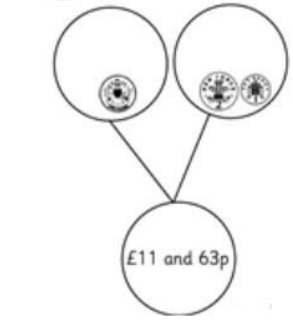


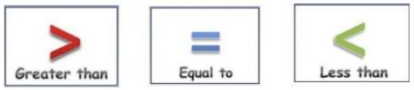
Hannah buys an apple. It costs 12 pence. She pays with **two** coins. Which coins does she use?

Complete the part-whole models.









1	Find the total cost of Post it notes and a stapler.
2	What does it cost altogether for Pencil crayons and post it notes.
3	I bought 2 items. Here is my bar model. What could I have bought? Can you find more than one answer? 20p
	Can you write your own question?

Compare these amounts of money using < > or =

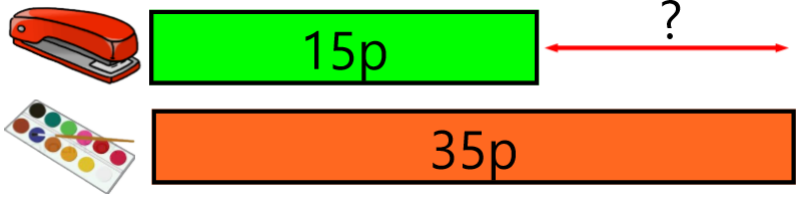
Progression	MEASURING & CALCULATING
Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.	

Y2 MEASURES

The Base 10 represents money.

What amounts are represented here

What is the difference in price between the stapler and the paints?



Sally has four 20p coins.

Does she have enough to ride the dodgems?

I buy the notebook.

How much change do I get if I pay with a twenty pence coin?

I spend 31p exactly.

What 2 items could I buy?

Three items?

I have 30p.

If I buy the pencil crayons, do I have enough to buy the paints?

Explain.

Progression	COMPARING & ESTIMATING
Compare durations of events, for example to calculate the time taken by particular events or tasks.	

Y3

MEASURES

Put the time it takes you to do each of these activities in order, starting with the quickest.

Can you estimate the time it takes you to do each activity?

eat lunch

brush your teeth

blink once

walk to school

2:00 p.m. – 6:00 p.m.	◯	08:00 a.m. – 12:00 p.m.
07:30 a.m. – 09:30 a.m.	◯	11:40 a.m. – 02:40 p.m.
03:30 a.m. – 05:00 p.m.	◯	03:30 p.m. – 05:00 a.m.

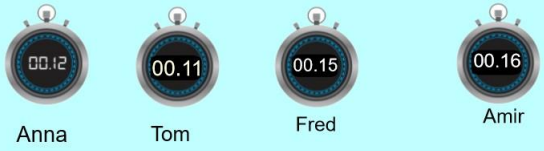
Use < > or = to compare these durations and make the statements correct.

Which journey is the longest?

Which journey is the shortest?

Destination	Train departs	Train arrives
London	08:45	11:35
Leeds	10:05	10:33
Manchester	13:10	14:20

Four children ran a race. Here is their time in seconds.



Who was fastest?

Who was slowest?

GD Who took a quarter of a minute?

Progression	MEASURING & CALCULATING

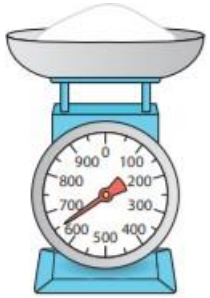
Y 3

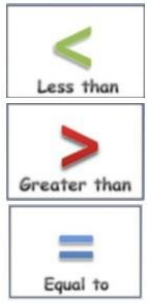
MEASURES

Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) .

What is the weight of the flour?

How much more flour is needed to make 1kg?

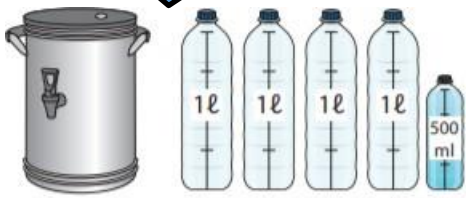


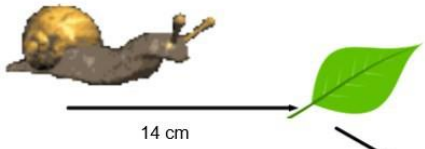


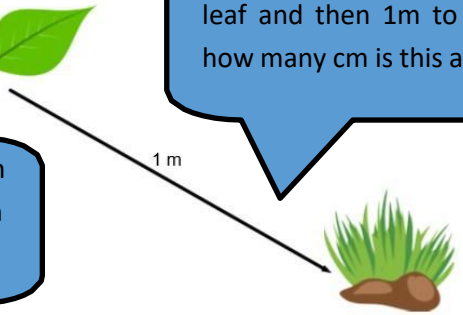
Compare the capacity of the urn and the tea pot using < > or =.

Write the capacity of each.

How much more tea does the urn hold?

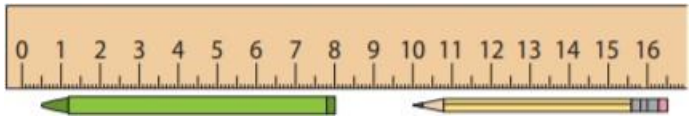




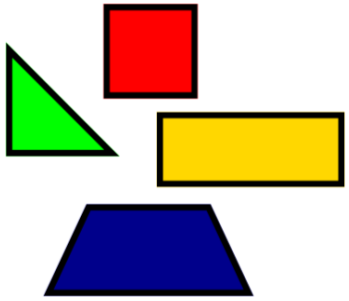


If the snail travels 14cm to the leaf and then 1m to the grass, how many cm is this altogether?

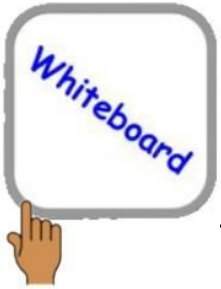
What is the difference in length between the pen and the pencil?



Measure the perimeter of each shape.



Measure the perimeter of simple 2-D shapes .



Show me the perimeter of your whiteboard using your finger.

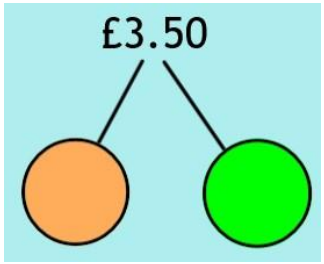
Tick the shapes which you can find the perimeter.

Progression	MEASURING & CALCULATING
Add and subtract amounts of money to give change, using both £ and p in practical contexts.	

Y3

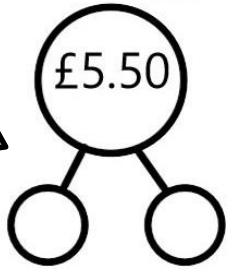
MEASURES

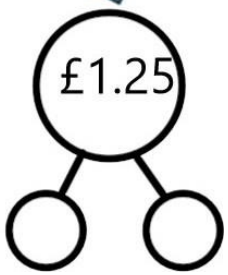
Can you partition the amount into £ and p using the part-whole model.



What is the total cost of the book and the magazine?

How much change would Ali get if he paid for these with a ten pound note?





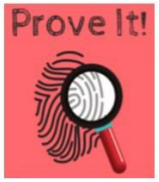
What is the difference in price between the two items?

Cakes cost 35p. How much do three cakes cost?

If I buy a sandwich for £2.20 and a drink for 90p, how much change do I get from £5?

Ella says she has enough money for the doll and the tricycle.

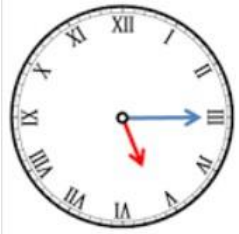
Do you agree?



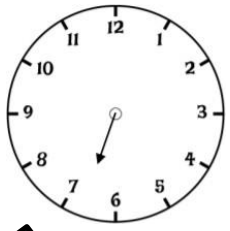
Y3 MEASURES

Progression	TELLING THE TIME/ CONVERTING

Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.



What time is it?



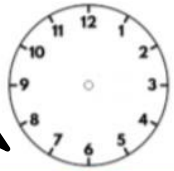
This clock has only an hour hand. What time could it show?

Look at the different months of the year on a calendar. What is the same/ different? Can you sort the months into groups and explain how you have sorted them?

Can you complete the stem sentences?

Write each of these times using am or pm. Now put them in order from earliest to latest.

Show these times on your clock.



There are __ months in a year.
There are __ days in a year.
There are __ days in a leap year which happens every __ years.

Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight. (appears also in Comparing and Estimating)

Place each of these on the timeline. What do you notice?

6 minutes past 3

22 minutes to 8

midnight	breakfast	half past 10 in the morning	afternoon break
bed time	4pm	mid-day	noon

What is the same? What is different?

earliest → latest

Know the number of seconds in a minute and the number of days in each month, year and leap year.

There are __ seconds in a minute.
There are __ minutes in an hour.
There are __ hours in a day.
There are 48 hours in __ days.
There are __ seconds in 3 minutes.

Complete the stem sentences.
Now write one of your own.

Y4 MEASURES

Progression	COMPARING & ESTIMATING
Estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring).	

half of 3 litres

quarter of 2 litres

300ml

Put these amounts in order starting with the smallest. Explain your thinking.

The Smith family's heights are as follows:

Billy 86cm, Amy 0.92m, Mum 1.68m and Dad 177cm.

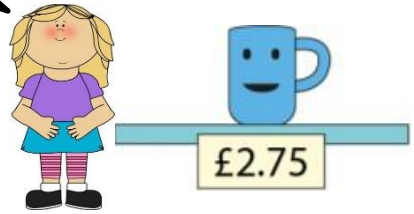
What is the difference in height between Mum and Amy?

What is the total of all their heights?

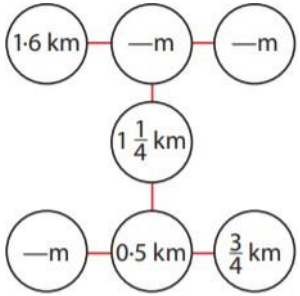
Which would you rather have?

3 x 50p or 7 x 20p?

Anna wants to buy the mug. What is the least number of coins she can use?



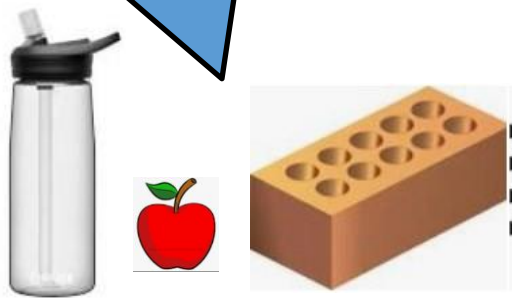
Complete the missing measures so that each line adds up to2.5km.

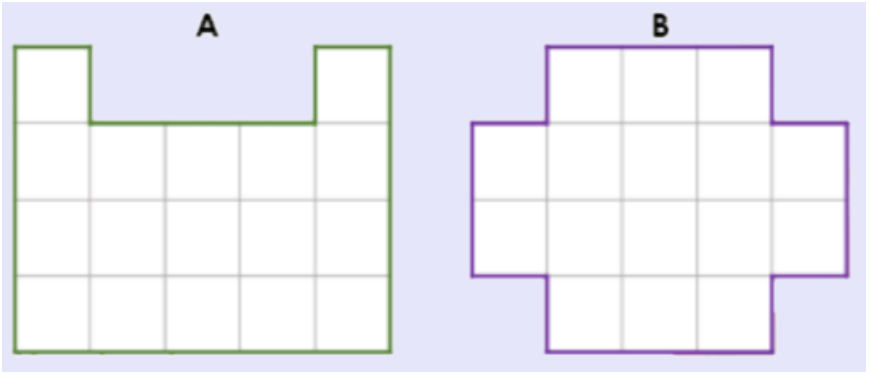
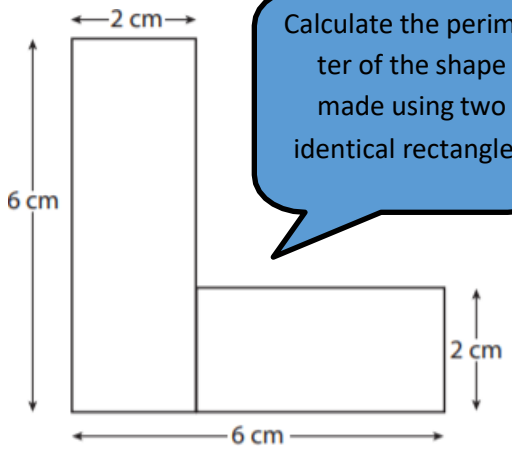
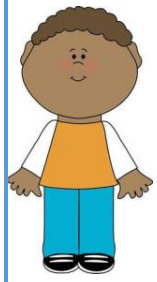
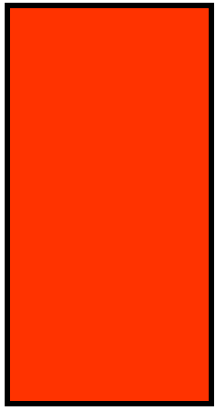
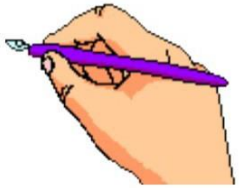


Use round and adjust to add the total cost of the three items.

How much change would you receive from a ten pound note?

Estimate then measure the mass of each object.



Progression	MEASURING & CALCULATING
Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.	Calculate the perimeter of each shape.   Calculate the perimeter of the shape made using two identical rectangles.
Find the area of rectilinear shapes by counting squares	Find the area of these rectilinear shapes by counting the squares.   The square has sides measuring a whole number of metres. Ali says the area cannot be 20 cm². How does he know this? The perimeter of the rectangle is 24cm.If the width is 5cm, what is the length?  Draw three different shapes with an area of 20 square centimetres. 

Y4

MEASURES

Y4 MEASURES

Progression	TELLING THE TIME/ CONVERTING
Read, write and convert time between analogue and digital 12 and 24-hour clocks. (appears also in Converting) solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. (appears also in Converting)	

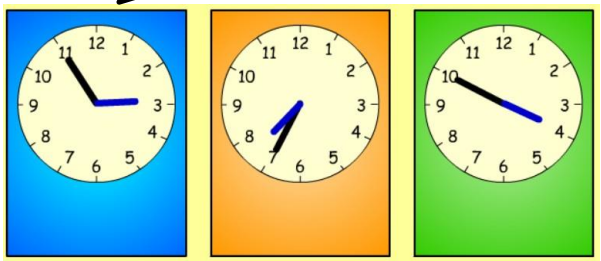
Complete the stem sentence below

The time is _____ past 10

This can also be written as ____ minutes past 10

The digital time is ____ : ____

Match the times to their digital equivalents.



15:50 20:05 14:55 17:25

22:20 23:35 13:40 19:35

9.00	Maths
9.40	Break
10.05	English
11.20	PE
12.35	Lunch
13.45	Topic
15.00	Home time

Look at the clock faces. What would Millie have been doing at school at each of these times?

Which of these statements are true and which are false?

There are 35 days in 5 weeks.

2 minutes is 110 seconds long.

There are 24 months in 2 years.

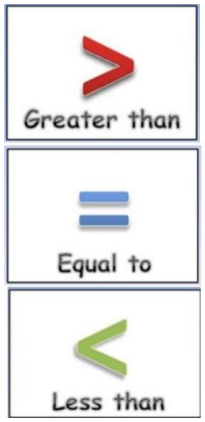
Half a day is 13 hours.

There are more seconds in a minute than minutes in an hour.

Progression	CONVERTING
Convert between different units of measure. (e.g. kilo-metre to metre; hour to minute)	

Y4

MEASURES



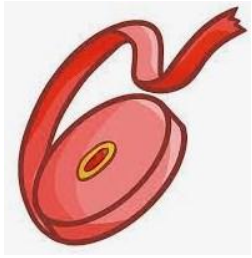
800 cm ◯ 8km

4*l* ◯ 4000*ml*

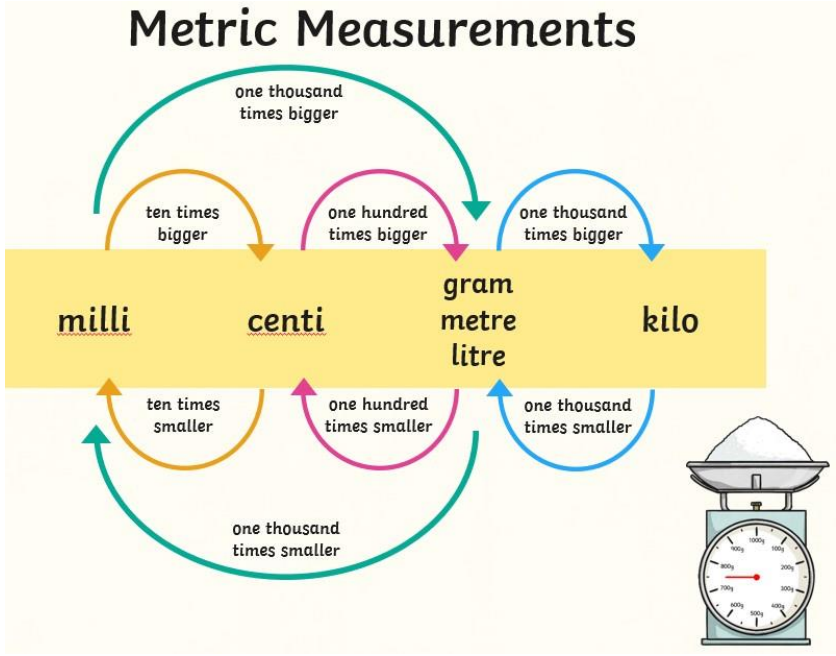
50mm ◯ 500cm

2000g ◯ 20kg

Use < > or = in the circles to make these statements correct.



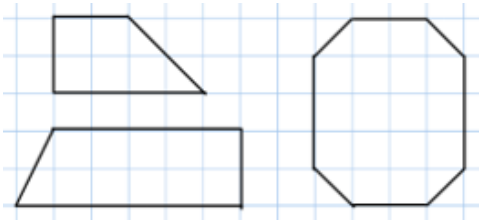
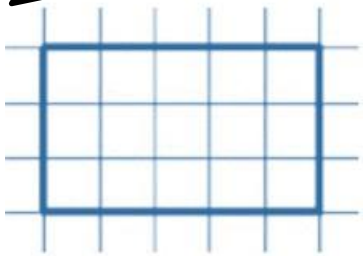
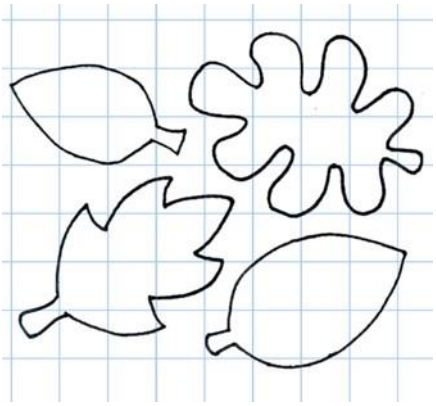
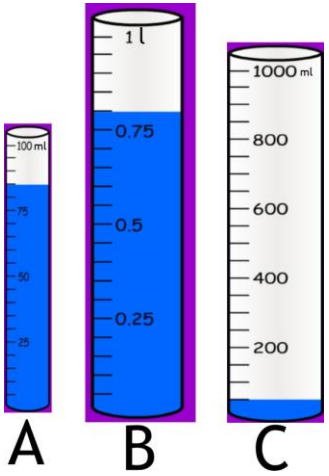
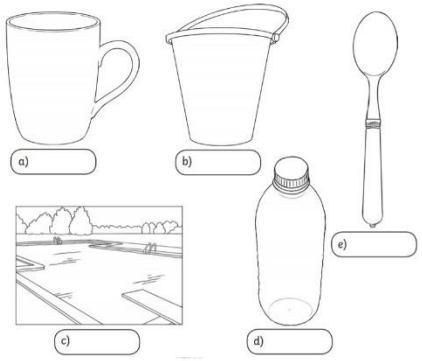
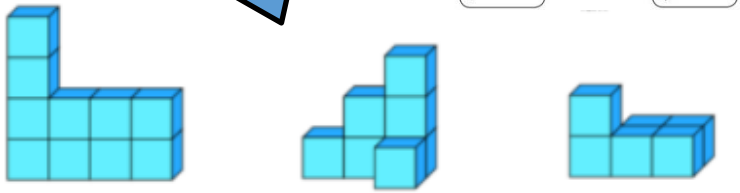
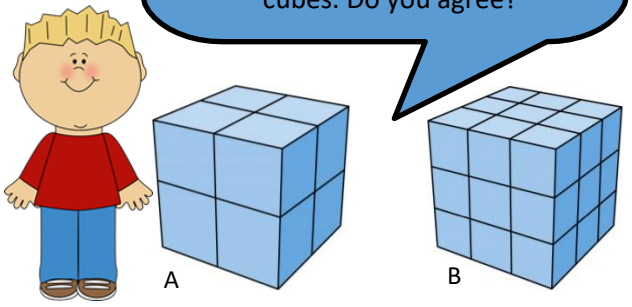
The reel holds 5m of ribbon. How many pieces measuring 10cm can be cut from the reel?



Complete the table to show the hours and minutes conversions.

300 minutes	
	$2\frac{1}{2}$ hours
	1 hour 35 minutes
67 minutes	
	an hour and three quarters

Y5 MEASURES

Progression	COMPARING & ESTIMATING
Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm 2) and square metres (m 2) and estimate the area of irregular shapes. (also included in measuring) *recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) (copied from Multiplication and Division)* Estimate volume (e.g. using 1 cm 3 blocks to build cubes and cuboids) and capacity (e.g. using water)	Calculate the are of these rectangles.   Estimate the area of these irregular shapes. What is the area of this rectangle if each square has sides of 2m?   Put these containers in order staring with the highest capacity.   What is the volume of each of the models?  Shape A has been made using 8 cubes, shape B has been made using 27 cubes. Sam says shape B must have a larger volume because it uses more cubes. Do you agree? 

Progression	MEASURING & CALCULATING
Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling	

Y5 MEASURES

What is the cost of 5 litres of bottled cola and 990ml of canned cola?

1.25 litres
£1.59

330 ml
48 p

This recipe makes 6 shortbread biscuits. If Amy uses 100g of butter, how much flour does she need? How many biscuits will she be able to make?

90g flour
50g butter
60g seeds
30ml water

£1.40 per kg

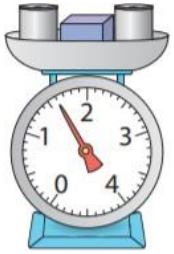
82p per kg

Sam buys 1/4 kg of carrots and 3000g of potatoes.

How much change does he get from £5?

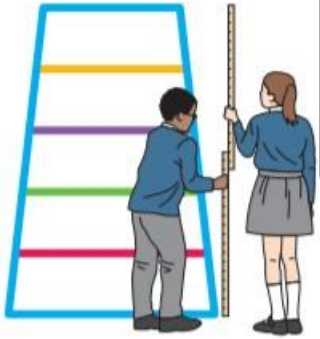
A box weighs 1.3kg.A box and two tins weigh 1.6kg.

How much does a tin weigh?



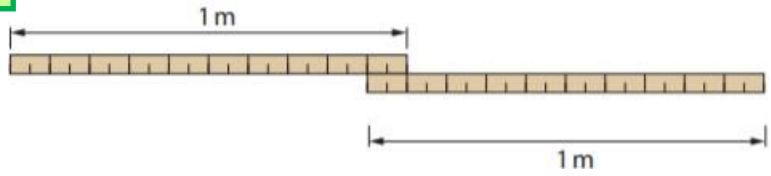
The water melon is cut into 8 equal pieces. What is the weight of each piece?

1.76kg



Joe and Kate are measuring the height of the climbing frame using two metre sticks.

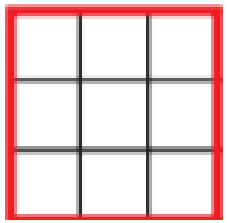
How high is the climbing frame?



Progression	MEASURING & CALCULATING
Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.	

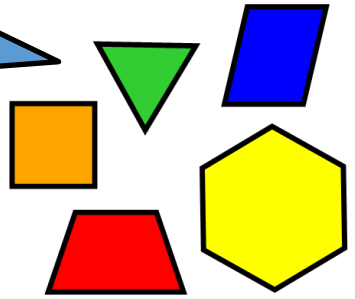
Y5

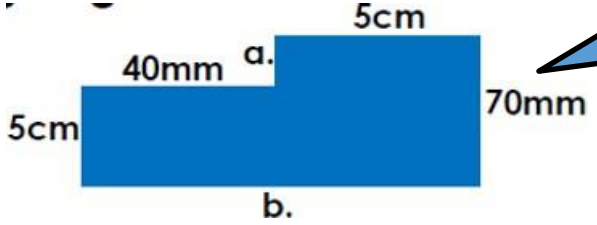
MEASURES



Draw another rectangle with the same perimeter as the square.

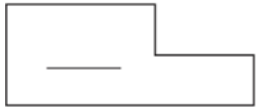
Use the yellow pattern block to make a shape which has a perimeter of 24 units.

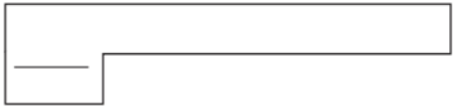




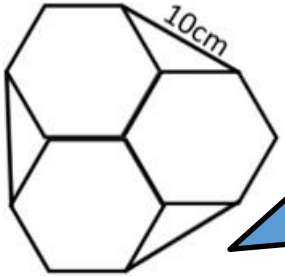
What are the missing lengths a and b?

Measure the perimeter of these rectilinear shapes.



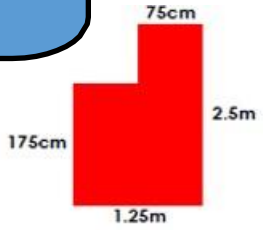


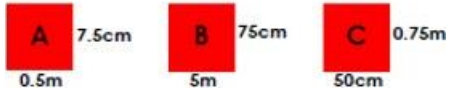
The square and the rectangle have the same perimeter. The square has sides of 9m. What could the length and width be of the rectangle?



The shape is made from regular hexagons with sides 8cm. What is the perimeter of the shape shown?

Which of the shapes will fit into the larger shape to make a rectangle?





Progression	TELLING THE TIME/ CONVERTING
Solve problems involving converting between units of time.	

Y5 MEASURES

$\frac{3}{4}$ of an hour = ☐ minutes

54 months = ☐ years

210 seconds = ☐ minutes

2 ☐ and 35 ☐ = 155 ☐

Complete the boxes to show these time equivalents

Rob's birthday is June 18th. Alex's is 96 hours older.

Charlotte is exactly 3 weeks younger.

When are Alex and Charlotte's birthdays?

Harry has to take 2 tablets every 6 hours.

How long will 32 tablets last?

Five friends run a race.
Their times are shown in the table.

Name	Time
Megan	1 minute 18 seconds
Holly	102 seconds
Charlie	100 seconds
Ruby	1 minute 45 seconds
Joses	95 seconds

Can you work out the order the children finished in?

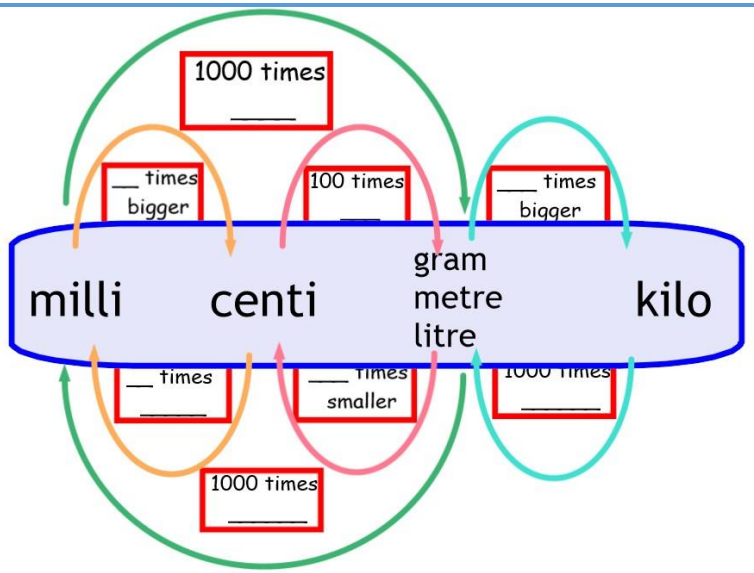
What was the difference between the fastest time and the slowest time?

Y5 MEASURES

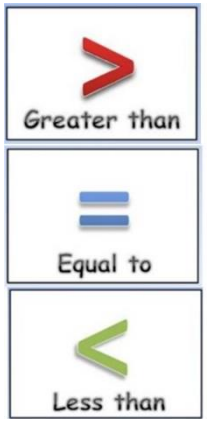
Progression	CONVERTING
Convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	

The worlds longest straw used to drink coca-cola was 75.82m!

How many centimetres does the coke travel before it reaches the mouth?



Use < > or = in each circle to make these statements correct.



$25ml \bigcirc 2\frac{1}{2}l$

$4\frac{3}{4}km \bigcirc 475m$

$0.5\ kg \bigcirc 500g$

$4.39m \bigcirc 500cm$

Complete the stem sentences in each red box to show how to convert each unit of measure.

Out these measurements in order from smallest to largest.

1•2km 1•25km 1205m 1km 50m

Progression	CONVERTING
Understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	

Y5

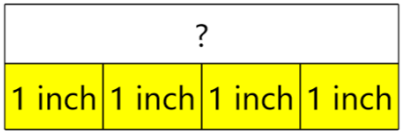
MEASURES

Metric	Imperial

How many metric and imperial measures can you name

Use the equivalent metric and imperial measures to complete these equivalents.

1 inch ≈ 2.5 cm
1kg ≈ 2 lbs
1 pint = 568 ml



If 8 km is approximately 5 miles, complete these approximate distances.

40 miles = _____km
1km = _____miles
20km = _____miles

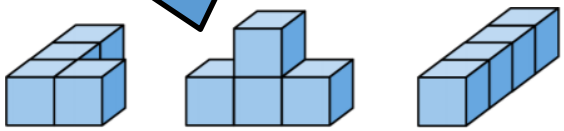
8 lbs ≈ ☐ kg
☐ ml = 3 pints
5.68 l = ☐ pints

Y6 MEASURES

Progression	COMPARING & ESTIMATING
Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3.	

What is the same?

what is different?

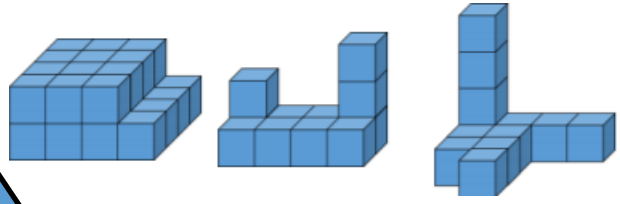


Object	Use cm^3	Use m^3
pencil case		
textbook		
cupboard		
bookcase		

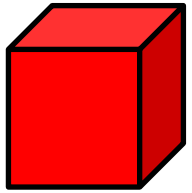
Which unit of volume would you use to measure each of these objects?

Estimate the volume of the paperlips box in cm^3.

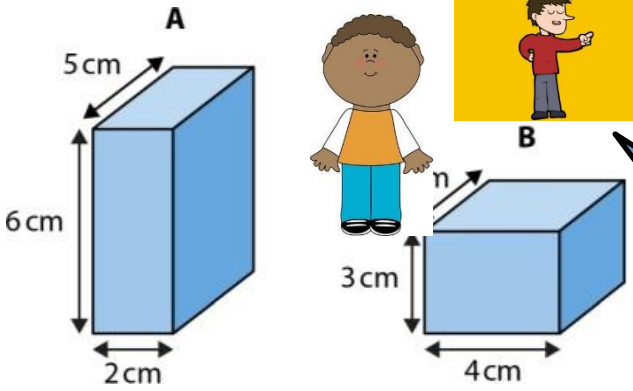
Place the shapes in ascending order based on their volume.



A B C



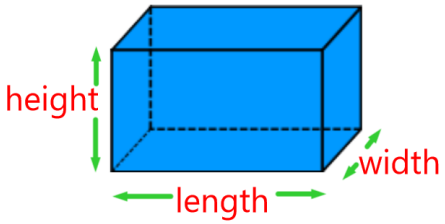
Is it possible to calculate the volume of a cube when you know only the width?



Ben says shape A has a larger volume because it is taller. Do you agree?

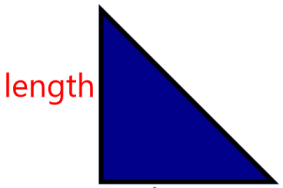
Y6 MEASURES

Progression	MEASURING & CALCULATING
Recognise when it is possible to use formulae for area and volume of shapes.	



Volume = length x width x height

$V = l \times w \times h$

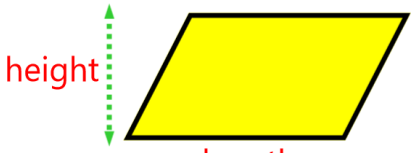


Area = $\frac{1}{2}$ x base x height

$A = \frac{1}{2} \times b \times h$

Area = length x width

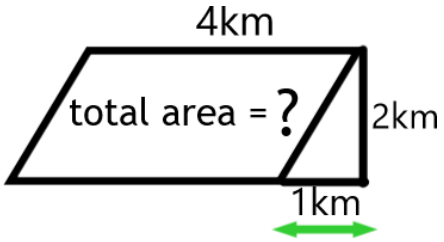
$V = l \times w$

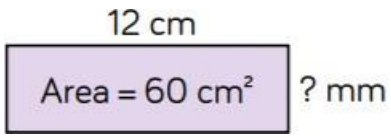


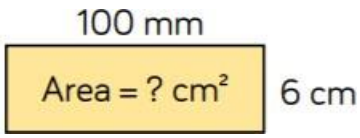
Area = base x height

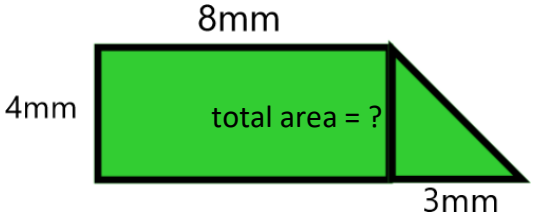
$A = b \times h$

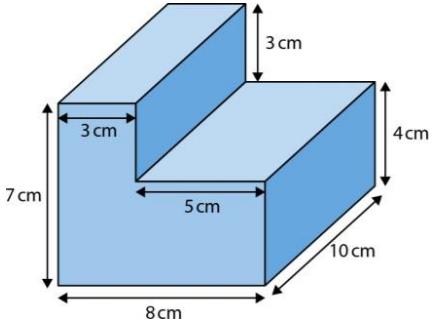
Use the appropriate formulae to find the missing values.

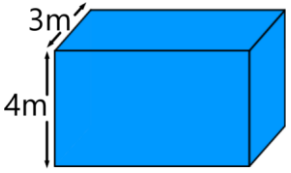












A lorry container has a volume of 60m³. If the width is 3m and the height is 4m, what is the length of the container?

Y6 MEASURES

Progression	MEASURING & CALCULATING/ CONVERTING
Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Converting)	

A shop sells litre bottles of water for 99p each but has an offer for 8x300ml bottles for £2.
If he wants to buy 12L of water, which should he buy and why?

There are 60g of rice in **one** portion.
How many portions are there in a 3kg bag of rice?

Josh is trying to run 10 kilometres in or

Here are the distances he runs on the first three days:
Day 1: 1.6 kilometres
Day 2: 850 metres
Day 3: 2.12 kilometres
How much further does he have to run?

1 pound (lb) = 16 ounces

1 stone = 14 pounds (lbs)

Use this fact to complete:

2 lbs = ___ ounces

___ lbs = 320 ounces

5 stone = ___ lbs

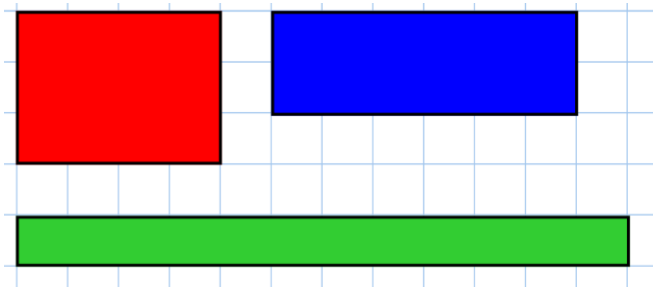
___ stones = 154 lbs

Progression	MEASURING & CALCULATING

Y6

MEASURES

Recognise that shapes with the same areas can have different perimeters and vice versa.

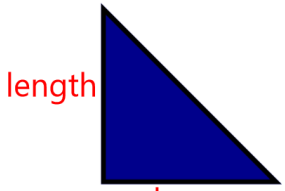


What is the same about these rectangles?

Do you agree with Parky? What can you draw to prove your answer?

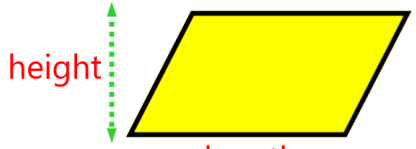
Parky says:
"Rectangles with the same perimeter have the same area".

Calculate the area of parallelograms and triangles



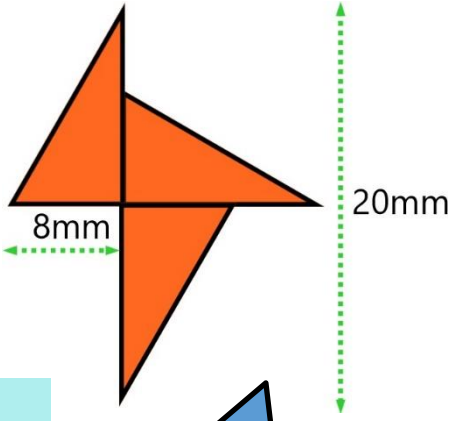
Area = $\frac{1}{2}$ x base x height

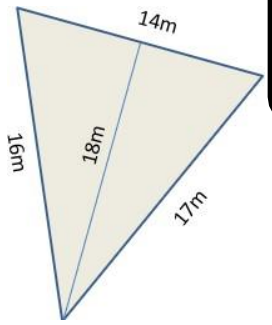
$A = \frac{1}{2} \times b \times h$



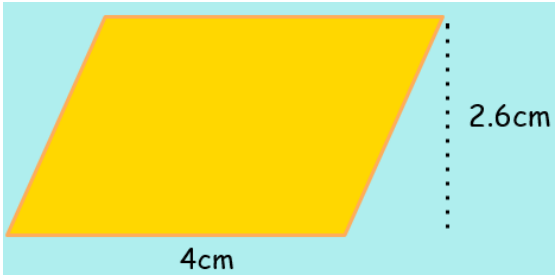
Area = base x height

$A = b \times h$





Calculate the area off these shapes.



The shapes is made from three identical triangles. Calculate its area.

Y6 MEASURES

Progression	CONVERTING

Use, read, write andconvert between standard units, con-verting measure-ments of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal plac-es

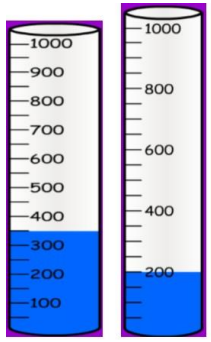
convert between miles and kilome-tres

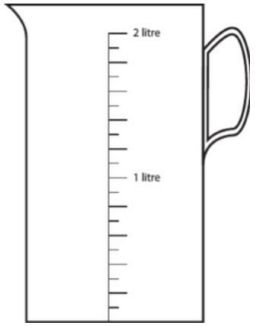
Beth is converting 475m to cm.

Look at her working. Explain what Beth has done wrong.

475 ÷ 100 = 4.75

475m = 4.75cm





Both cylinders are poured into the measuring jug.

Draw the level of water in the measuring jug.

Complete the stem sentences to show how to convert each unit of measure.

To convert metres to centimetres, ...
To convert centimetres to metres, ...
To convert kilograms to grams, ...
To convert grams to kilograms, ...
To convert litres to millilitres, ...
To convert centimetres to millimetres, ...
To convert millimetres to centimetres, ...

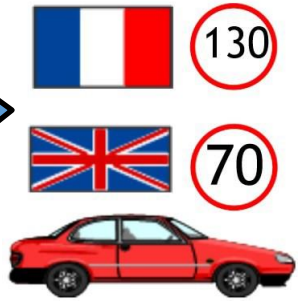
Complete the conversion table.

kg	kg and g	g
0.2 kg		
	2 kg 750 g	
0.3 kg		
		2250 g
0.7 kg		
	1 kg 200 g	
0.07 kg		
		1000 g

8km ≈ 5 miles

In France the speed limit is 130km per hour. In the UK, it is 70 miles per hour.

Where are you allowed to drive the fastest, UK or France?



Children need to know and use the following facts:

- 1 foot is equal to 12 inches
- 1 pound is equal to 16 ounces
- 1 stone is equal to 14 pounds
- 1 gallon is equal to 8 pints
- 1 inch is approximately 2.5 cm