

## Year 1: Measurement

### Length and Height

Children compare lengths and heights of objects using language such as "**longer than**", "**shorter than**" and "**taller than**". Children should also be exposed to objects that have the same length or height and use the language of "**is the same**" or "**is equal to**" to compare.



Choose two children to stand side by side.

Ask the rest of the class which child is taller. How do they know?

Ask who is shorter. How do they know?

Repeat with other pairs of children.

Challenge children to find a partner who is taller/shorter than them.

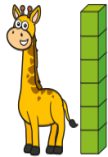


- Complete the sentences.



The train is \_\_\_\_\_ paper clips long.

The giraffe is \_\_\_\_\_ cubes tall.



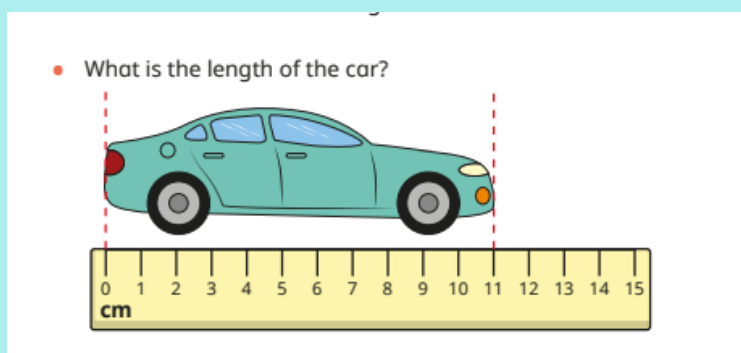
- Max uses cubes to measure the lengths of two ribbons.



- ▶ What is the length of each ribbon?
- ▶ Write **longer** or **shorter** to complete the sentence.  
The plain ribbon is \_\_\_\_\_ than the spotty ribbon.
- ▶ How much longer is one ribbon than the other?

Children then begin to measure the lengths and heights of objects, using non-standard units of measure such as cubes or paper clips.

Building on the previous step, children measure the lengths and heights of objects using a ruler and a standard unit of measure: centimetres. They are introduced to the abbreviation "cm", so that they do not have to write the full word.



### Reasoning and problem solving

Jo, Max and Sam are comparing the lengths of some ribbons.

Jo

Max

Sam

My ribbon is shorter than Max's, but longer than Jo's.

How long could Sam's ribbon be?

11 cm, 12 cm, 13 cm, 14 cm

## Mass and volume

### **Heavier and lighter:**


Children are formally introduced to mass for the first time. They may have some understanding of describing something as heavy or light from their own experience or from previous learning in Reception. Children begin by holding objects to compare them, using the language of "heavier" or "lighter". They then use balance scales to check their comparisons. They need to understand that the heavier object is lower on the balance scale.



Write **heavier** or **lighter** to complete the sentence.



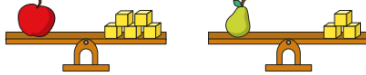
The bottle is \_\_\_\_\_ than the can.

## Measuring Mass

- What is the mass of each object?
 

The mass of the \_\_\_\_\_ is \_\_\_\_\_ cubes.
- Draw cubes to balance the scales.
  - The mass of the muffin is 4 cubes.
 
  - The mass of the can is 9 cubes.
 

## Comparing Mass

- Ron is measuring the mass of fruit using cubes.
 
  - What is the mass of the apple?
  - What is the mass of the pear?
  - Choose a word to complete the sentence.
 

heavier
lighter

The apple is \_\_\_\_\_ than the pear.  
How do you know?

- Children use a variety of non-standard units, such as cubes or bricks, to measure the mass of an object. Building on the previous step, children should understand that when a scale is balanced, objects have the same mass. On a balanced scale, the number of non-standard units on one side tells them the mass of the object on the other side.
- Children compare the masses of two objects, still using non-standard units of measure. Children should know that if, for example, an apple has the same mass as 6 cubes and a banana has the same mass as 4 cubes, then the apple is heavier than the banana.



## Measuring Volume

- 3 cups of sand fill one container.



Complete the sentences.

The capacity of 1 jug is \_\_\_\_\_ cups of sand.

The capacity of 2 jugs is \_\_\_\_\_ cups of sand.

## Comparing Volume



Give children different-sized containers and cups of water as the unit of measure. Ask them to complete the sentences for each set of containers.


Container \_\_\_\_\_ can hold \_\_\_\_\_ cups of water.

Container \_\_\_\_\_ has a greater capacity than container \_\_\_\_\_.

- Children are introduced to volume and capacity for the first time. They begin by exploring practically the idea that capacity is the maximum amount that something can hold. Ensure that they experience a range of different sizes and shapes of containers and begin to make basic comparisons to see which has the greater capacity. Children then explore the concept that volume is the amount of something inside a container. They describe the volume in a container using phrases such as "empty", "nearly empty", "nearly full" and "full".
- To children develop their understanding of volume further and start to compare volumes using the language of "more than" and "less than".
- Children measure the capacity of different containers using non-standard units of measure. They formalise their understanding that the capacity of a container is how much of something it can hold. This can be cups of water or sand, cubes or marbles.

### Reasoning and problem solving

Mo and Sam are comparing the capacities of two jars.



Mo: My jar can hold 15 marbles.

Sam: My jar can hold 12 cubes.

Can you tell which jar has the greater capacity?  
Why?

No

## Year 1: Geometry

### Shape

#### **Recognise, name and sort 3-D shapes:**

- Children start by looking at 3-D shapes, as these are tangible shapes that they can touch and feel to help understand their identifying features. Children are required to name simple 3-D shapes such as cubes, cuboids, cylinders, pyramids, cones and spheres. While some questions require children to write the names of the shapes, at this point the focus should be more on verbally naming and matching. Children should then start to sort 3-D shapes recognise the similarities and differences.



Provide a selection of blocks in different sizes and shapes.



Can children name each shape?

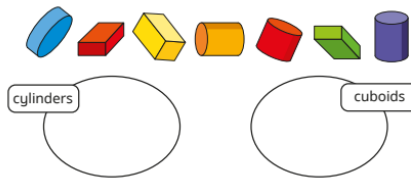
Encourage children to handle the shapes by building towers with different numbers of blocks, asking them to name each shape as they select it.

Challenge children to place their blocks to make the tower as tall as possible.

Which is the odd one out in each group?




Sort the shapes into the groups.




**Recognise, name and sort 2-D shapes:**

Now that children have looked in detail at 3-D shapes, they begin to look at 2-D shapes. They will have experience of 2-D shapes and may already know some of the names. Children are required to name simple 2-D shapes, such as triangles, squares, rectangles and circles.



Show children a picture made of different shapes, for example a boat, a rocket or a house.







Ask children what shapes they can see in the picture.







Ask them how many triangles/squares/rectangles/circles they can count.

Give children shapes to make their own pictures.

Take the class on a shape hunt, looking for circles, squares, rectangles and triangles on the surface of everyday objects.


- Match each shape to its name.
 

			
rectangle	circle	square	triangle
- Which shapes are triangles?  
Which shapes are rectangles?
 

**Patterns:**

Children create patterns with 2-D and 3-D shapes. They should experience both repeating patterns (ABAB) and symmetrical patterns (ABBCBBA). Children use both 2-D and 3-D shapes to complete and make simple patterns, focusing on different shapes, sizes and colours.


- Kay makes a pattern.
 

Say the pattern out loud: rectangle, triangle, circle, rectangle, triangle, circle ...

Which shape comes after the circle?

Which shape comes before the rectangle?
- Ben makes a pattern.
 

He uses 3-D shapes to print 2-D shapes.





Which 3-D shapes can Ben use to continue the pattern?

Use 3-D shapes to make your own print pattern.

### Reasoning and problem solving

Ron and Kim each make a pattern.

Ron 

Kim 

Ron: The patterns are the same.

Kim: The patterns are different.

Who do you agree with?  
Why?


Kim

# Year 1: Geometry

## Position and Direction

### Turns:

Children use the terms "full", "half", "quarter" and "three-quarter" to describe turns. They will be familiar with "half" and "quarter" from the previous block on fractions, but "three-quarter" will be a new concept to them.

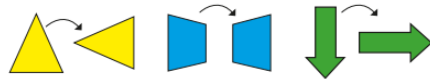


Give children instructions using positional language, for example: "All turn a quarter turn." Ask children if they have all turned the same way? Does it matter?

This could be developed as an everyday routine as the children line up.

Children can then work in pairs to give and follow instructions.

• Match the shapes to the turns.



half turn      quarter turn      three-quarter turn

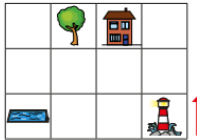


**Position:**

Children are introduced to the terms "**left**" and "**right**" for the first time, although they may have experienced this language outside of the classroom before. Children develop their precision when describing positions by introducing "**forwards**" and "**backwards**". Children build on the directional language developed in previous steps, extending to include "**above**" and "**below**". They use this language to firstly describe the position of objects in relation to each other, for example, "The is above/ below the ".



In a large space, as a class listen to, sing and act out songs and rhymes to reinforce the concept of left and right. Examples include *Cha-Cha Slide* by DJ Casper, *Dem Bones* by James Weldon Johnson and the *Hokey Cokey*, an English folk song.



Tom and Kay are at the lighthouse and facing the top of the grid.

- ▶ Tom moves 2 squares forwards and 1 square left.  
Where is Tom now?
- ▶ Kay moves 2 squares left and 2 squares forwards.  
Where is Kay now?

Describe the journey from the swimming pool to the house.

Here are some shapes.



Write **left** or **right** to complete the sentences.

The triangle is to the \_\_\_\_\_ of the arrow.

The square is to the \_\_\_\_\_ of the circle.

The circle is to the \_\_\_\_\_ of the square.

The circle moves 1 square left.

The triangle moves 2 squares right.

Where are the shapes now?

Here is a tower of cubes.



Complete the sentences.

The top cube is \_\_\_\_\_

The \_\_\_\_\_ cube is purple.

The cube below the yellow cube is \_\_\_\_\_

The cube \_\_\_\_\_ the yellow cube is red.


**Ordinal Numbers:**


It has been included to support children to recognise numbers used to describe the position of something. Ensure that children have experience of not only 1st, 2nd, 3rd, but also identifying and representing other ordinal numbers and using them to explain events. They can record positions using numerals and the endings "st", "nd", "rd" and "th" as well as the words "first", "second", "third", "fourth" and so on. Children may also use the word "last" to denote the final position in a group.






As a class, sing *There Was an Old Lady Who Swallowed a Fly*. Can children order the animals that the lady swallowed? Can they assign each one an ordinal number? Ask which animal was last.




### Reasoning and problem solving


Ron makes a tower of cubes. 

 The bottom cube is green and the top cube is red. I used fewer than 5 cubes.

Which towers could be Ron's?

A  B  C 

D  E  F 

Make another tower that could be Ron's. 

B, D, F

multiple possible answers  
all less than 5 cubes  
with red at the top and green at the bottom

