

Spring Block 4

# Length and height

## Small steps

Step 1

Compare lengths and heights

Step 2

Measure length using objects

Step 3

Measure length in centimetres

# Compare lengths and heights

## Notes and guidance

In this small step, children compare lengths and heights of objects using language such as “longer than”, “shorter than” and “taller than”.

Children understand that height is a type of length and that the language they use changes, depending on what type of length they are describing and comparing.

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.

At this stage, children only compare the lengths and heights of pairs of objects. Ordering lengths and heights is covered later in Key Stage 1

## Things to look out for

- Children may confuse the words “longer” and “taller”.
- If children do not line up the objects they are comparing, they may decide incorrectly which is longer/taller.
- Children may think that two different objects cannot be equal in length/height.

## Key questions

- Which object is longer? How do you know?
- Which object is taller? How do you know?
- Which object is shorter? How do you know?
- What is the difference between “longer” and “taller”?
- Why is it important that you line the objects up before you compare them?
- Can two different objects have the same length? How do you know?

## Possible sentence stems

- \_\_\_\_\_ is longer than \_\_\_\_\_
- \_\_\_\_\_ is taller than \_\_\_\_\_
- \_\_\_\_\_ is shorter than \_\_\_\_\_
- Before I can compare lengths or heights, I need to make sure that ...

## National Curriculum links

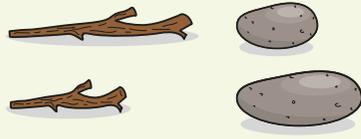
- Compare, describe and solve practical problems for: lengths and height; mass/weight; capacity and volume; time

# Compare lengths and heights

## Key learning



Tell children to find two objects, for example a stick and a pebble.



Ask which object is longer/shorter. How do they know?  
Challenge them to find another object that is longer/shorter than the objects they have.



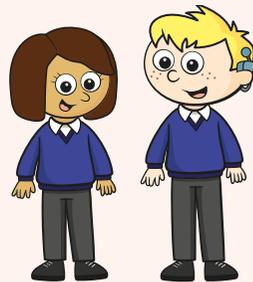
Choose two children to stand side by side.

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

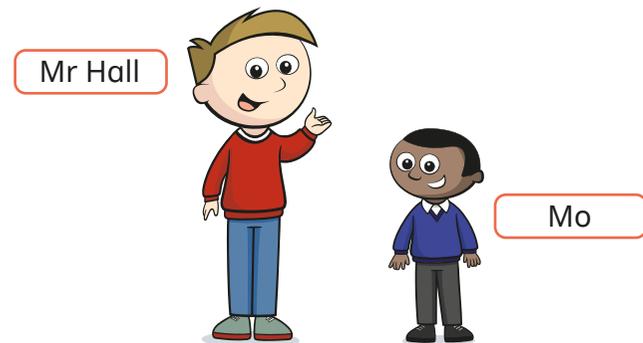
Ask who is shorter.  
How do they know?

Repeat with other pairs of children.

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



- Mr Hall and Mo are comparing their heights.



Choose a word to complete each sentence.

taller

shorter

- ▶ Mr Hall is \_\_\_\_\_ than Mo.
- ▶ Mo is \_\_\_\_\_ than Mr Hall.
- Write **longer** or **shorter** to compare the ribbons.



- ▶ The plain ribbon is \_\_\_\_\_ than the stripy ribbon.
- ▶ The stripy ribbon is \_\_\_\_\_ than the plain ribbon.

# Compare lengths and heights

## Reasoning and problem solving

Jo, Max and Sam are comparing the heights of Ron and Mrs Lee.

Mrs Lee

Ron

Jo: Mrs Lee is taller than Ron.

Max: Ron is shorter than Mrs Lee.

Sam: Mrs Lee is longer than Ron.

Improve the children's sentences to make them more accurate.

Jo: Mrs Lee is **taller** than Ron.  
 Max: Ron is **shorter** than Mrs Lee.  
 Sam: Mrs Lee is **taller** than Ron.

Kay thinks that the pencils are the same length.

How can Kay check if she is correct?

Line up the pencils at one end.

Ask children to find an object in the classroom that is longer than their rubber, but shorter than their pencil.

Ask them to find a classmate who is shorter than them, but taller than someone else.

multiple possible answers

# Measure length using objects

## Notes and guidance

In this small step, children begin to measure the lengths and heights of objects, using non-standard units of measure such as cubes or paper clips. As in the previous step, they explore both lengths and heights.

It is important that children know that in order to measure the length of something they need to use a consistent unit of measure. They should see that it is not useful to measure the length of something using a range of objects, for example a combination of cubes and paper clips. Similarly, the chosen unit of measure should be equal in size, for example all the paper clips must be the same.

Learning from the previous step is consolidated, as children make comparisons of lengths they have measured. They should see that for accurate comparisons they must use a consistent unit of measure, for example cubes for both items.

## Things to look out for

- Children may think that they can use a combination of different objects to measure a length.
- When comparing lengths, children may think that they can use a different unit of measure for each item.

## Key questions

- What could you use to measure the length/height of this object?
- Why do you have to use objects that are the same size to measure something?
- What would happen if you chose a different unit to measure the object?
- Where do you need to start/end measuring?
- Which object is longer/taller/shorter? How do you know?
- How much longer/taller/shorter is the \_\_\_\_\_ than the \_\_\_\_\_?

## Possible sentence stems

- The length/height of the \_\_\_\_\_ is \_\_\_\_\_ cubes.
- The \_\_\_\_\_ is longer/taller/shorter than the \_\_\_\_\_
- The \_\_\_\_\_ is \_\_\_\_\_ cubes longer/shorter than the \_\_\_\_\_

## National Curriculum links

- Compare, describe and solve practical problems for: lengths and height; mass/weight; capacity and volume; time
- Measure and begin to record the following: lengths and heights; mass/weight; capacity and volume; time

# Measure length using objects

## Key learning



Ask children to find some objects, for example small sticks or pebbles.

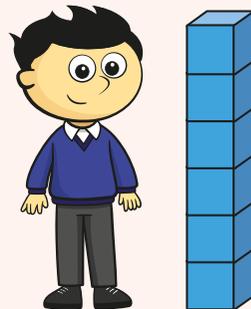


Ask them to measure the lengths of the objects using a non-standard unit of measure, for example cubes, bricks, paper clips or rubbers.



Ask children to measure each other's heights using a non-standard unit of measure, for example building blocks or sticks of equal length. Children may find it easier to lie on the floor rather than stacking the objects in a tall tower.

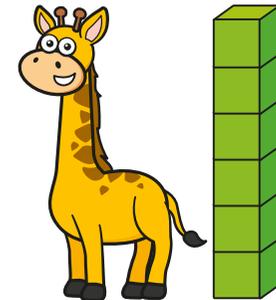
Ask children what would happen if they changed the unit of measure. Will the number of objects they use change? Why? Will the person's actual height change? Why?



- Complete the sentences.

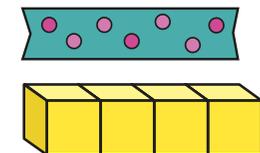
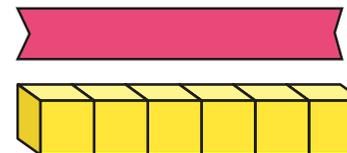


The train is \_\_\_\_\_ paper clips long.



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

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

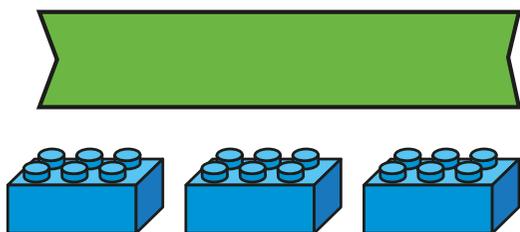


- ▶ What is the length of each ribbon?
- ▶ Write **longer** or **shorter** to complete the sentence.  
The plain ribbon is \_\_\_\_\_ than the spotty ribbon.
- ▶ How much longer is one ribbon than the other?

# Measure length using objects

## Reasoning and problem solving

Mo is measuring the length of the ribbon.

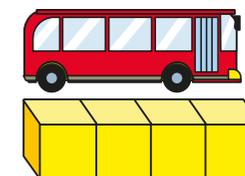
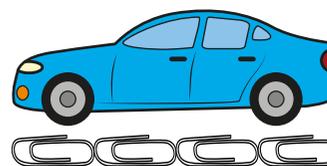


The ribbon is 3 bricks long.

Mo has left gaps between the units of measure (bricks).

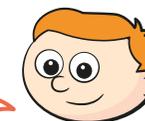
What mistake has Mo made?

Tiny and Ron are measuring the length of a car and a bus.



Tiny

The car and the bus are the same length, because there are 4 paper clips and 4 bricks



Ron

The car and the bus are not the same length.

Who do you agree with?

Why?



Ron

# Measure length in centimetres

## Notes and guidance

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.

Discuss with children why it is helpful to have a standard unit of measure that can be used around the world. Model how to align a ruler with the object being measured. Also show how to look to the nearest whole centimetre when measuring objects that are not an exact number of centimetres.

Learning from the first step is consolidated, as children make comparisons of lengths they have measured.

### Things to look out for

- Children may measure from the start of the ruler rather than from zero.
- Children may just look at the final number without ensuring that the ruler is lined up so that zero is at the beginning of the object.
- For measures that are not an exact number of centimetres, children may be unsure what to do.

## Key questions

- What does “cm” mean?
- Why is it helpful to have a standard unit of measure?
- Where do you need to begin measuring from?
- How does using a ruler help you to compare the lengths/ heights of objects?
- Which object is longer/taller/shorter? How do you know?
- How much longer/taller/shorter is the \_\_\_\_\_ than the \_\_\_\_\_?
- What could you do if the object is not lined up exactly with a number on the ruler?

## Possible sentence stems

- The \_\_\_\_\_ is \_\_\_\_\_ cm long/tall.
- The \_\_\_\_\_ is longer/taller/shorter than the \_\_\_\_\_

### National Curriculum links

- Compare, describe and solve practical problems for: lengths and height; mass/weight; capacity and volume; time
- Measure and begin to record the following: lengths and heights; mass/weight; capacity and volume; time

# Measure length in centimetres

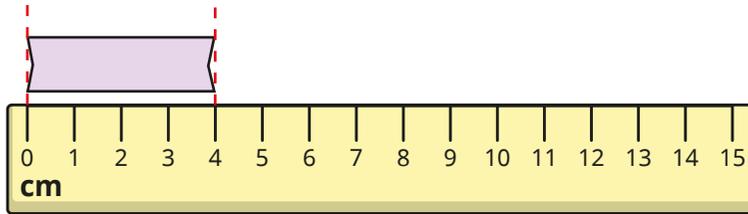
## Key learning



Tell children to find some objects, for example small sticks or pebbles, that they will be able to measure using a ruler.

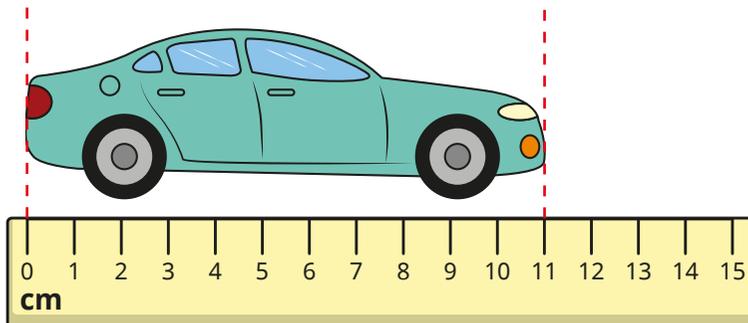
Ask children to measure the lengths of the objects in centimetres.

- How long is the ribbon?

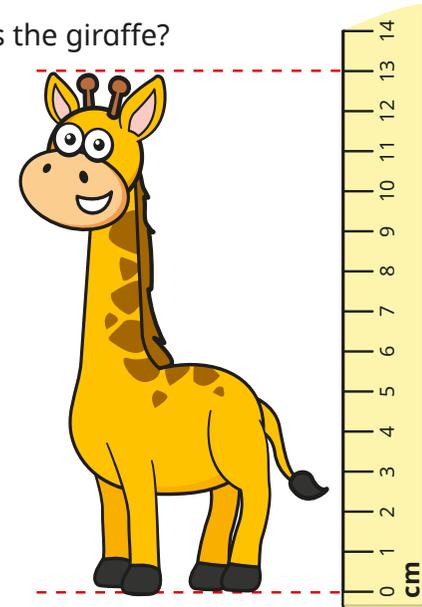


The ribbon is \_\_\_\_\_ cm long.

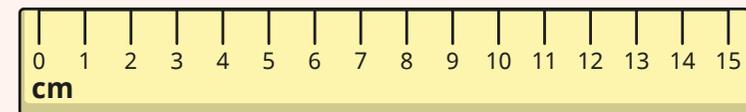
- What is the length of the car?



- How tall is the giraffe?



Give children a pair of objects, such as pencils of different lengths. Ask them to measure the length of each object.

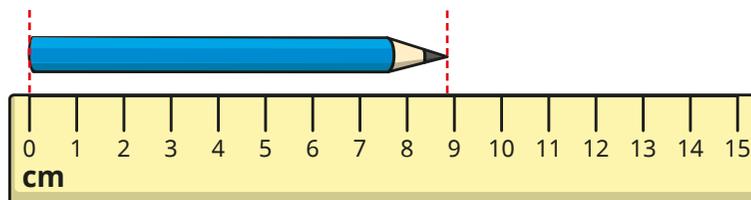


Ask which object is shorter and which is longer.

# Measure length in centimetres

## Reasoning and problem solving

Tiny is measuring the length of the pencil.



The length of the pencil is about 8 cm because it doesn't get to 9 cm.

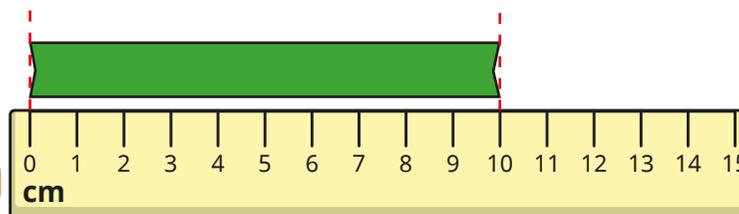
Do you agree with Tiny?  
Why?

No

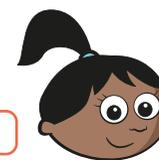
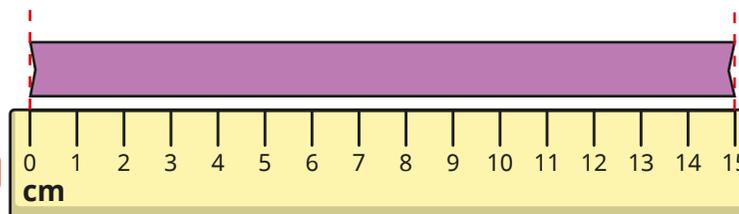
Jo, Max and Sam are comparing the lengths of some ribbons.



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