White Rose Maths

Spring - Block 5

Length & Height

Overview

Small Steps

- Measure length (cm)
- Measure length (m)
- Compare lengths
- Order lengths
- Four operations with lengths

NC Objectives

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.

Compare and order lengths, mass, volume/capacity and record the results using >, < and =.

Measure Length (cm)

Notes and Guidance

Children measure to the nearest centimetre using a ruler or tape measure.

They measure both length and height and focus on the importance of measuring from 0 rather than the end of the ruler or tape measure.

Mathematical Talk

What is the length?

How can the numbers on the ruler help us?

How do you know you have drawn a line that is 5cm long? How can you check?
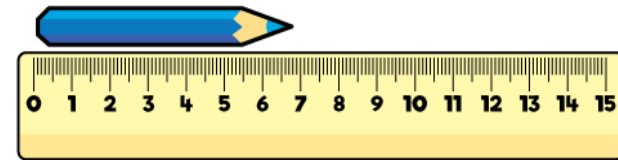
Why is it important to start measuring from 0 on the ruler?

Varied Fluency

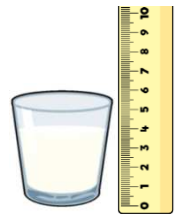Choose a variety of objects and practice measuring them using a centimetre ruler.
Remember to line up the object to the 0 mark on the ruler.

e.g. How long is the pencil to the nearest centimetre?

How tall is the glass?
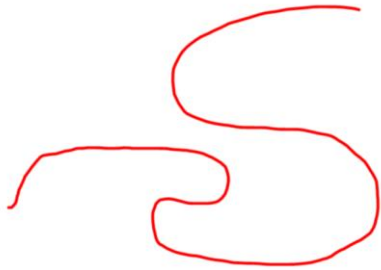
What other objects can you find to measure the height of?

Draw a line that is:

- 5 cm long
- 8 cm long
- Longer than 4 cm but shorter than 7 cm.
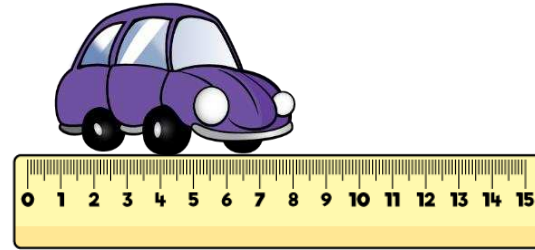
Reasoning and Problem Solving

How long is this piece of string?
How could you find out?

Does the length change if you change the orientation?

The length will not change if you change the orientation so it will be easier to measure if you put it in a straight line.

Mo has used the ruler to measure the length of the car.

Mo says the car is 8 centimetres long.
Do you agree?
Explain your answer.

Mo is incorrect because he has not lined the car up with the 0 marker. If he had measured from 0 he would see that the car is 7 cm long.

Measure Length (m)

Notes and Guidance

Children begin to measure larger objects using metres. They think about whether it is better to measure items in centimetres or metres and discuss the reasons why.

Children do not yet convert from metres to centimetres; however they may see that 100 centimetres is the same as 1 metre and measurements can be written as mixed units e.g. the child is 1 metre and 25 centimetres tall.
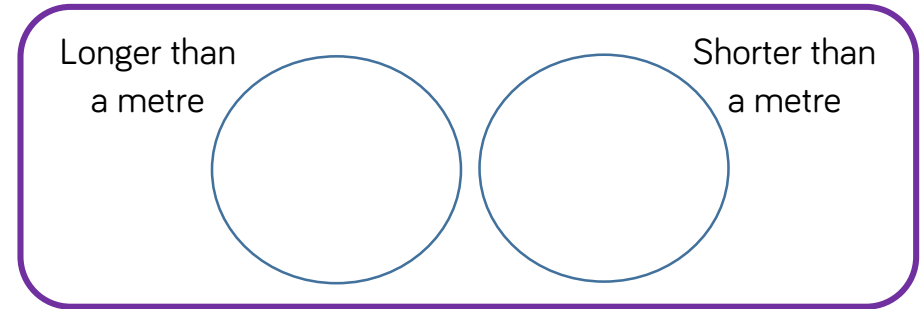
Mathematical Talk

When would it be appropriate to use metres?

Why is more efficient to use metres instead of centimetres for longer objects/distances?

What equipment would you use to measure longer objects/distances?

Varied Fluency

Use a metre stick to measure objects in your classroom and place them into the groups.

Longer than a metre   Shorter than a metre

Can you find anything that is exactly one metre?

Use a metre stick to count up in 10 cm blocks. What do you notice about 100 cm?
Possible responses: it is the same a metre, 1 m is written, it is the end of the stick.

Measure the length of the school hall.
Record the length in metres and centimetres, e.g. 15 metres and 13 centimetres.
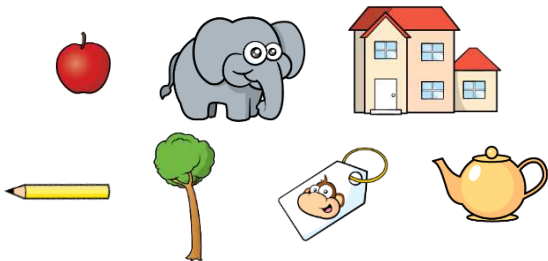
Reasoning and Problem Solving

Usain Bolt can run 100 m in 9.58 seconds (just under 10 seconds).

How far do you think you can run in 10 seconds? Do you think it will be more or less than 100 m?

Measure how far you and your friends can run in 10 seconds.
Record your answers in metres and centimetres.

Children will have a variety of answers. They could measure using different equipment including metre sticks and trundle wheels.

Circle the objects that you would measure in metres. Tick the objects that you would measure in centimetres.

Circle elephant, school and tree

Amir has a metre stick.

He wants to measure the length of his classroom.

I can't measure the length of the classroom because my metre stick isn't long enough.

Explain to Amir how he could measure the length of his classroom.

Amir can measure the length of the classroom by putting a marker at the end of the metre stick and then starting again at that point, moving his metre stick as he measures.

Compare Lengths

Notes and Guidance

Children compare lengths of objects using comparison language and symbols. They use language such as longer than, shorter than, taller than, longest, shortest and tallest.

Children only compare using the same unit of length in a question. However, the same number but different unit of measure could also be used to check that children understand metres are bigger than centimetres.

Mathematical Talk

Which is longer: 10 centimetres or 10 metres?

Which symbols can we use to compare lengths?

What is the difference between using taller than and longer than? When would we use taller than instead of longer than?

Varied Fluency

Compare the lengths using **longer than**, **shorter than**, or **the same as**.

15 cm is		60 cm
Sixty metres is		60 m
96 m is		69 m
80 cm is		80 m

Use < , > or = to complete the statements.

7 metres ◯ 17 metres

18 cm ◯ 18 m

32 cm ◯ 32 centimetres

Choose 2 objects from your classroom. Estimate the length of each object. Then measure both objects and compare the lengths using <, > or =
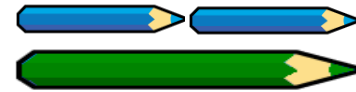Try this again, but this time measuring your friends' heights.

Compare Lengths

Reasoning and Problem Solving

Compare the measurements using $<$, $>$ or $=$

55 cm + 10 cm ◯ 55 cm − 10 cm

42 m + 6 m ◯ 42 m + 7 m

6 cm − 5 cm ◯ 6 m − 5 m

80 m − 5 m ◯ 70 m + 5 m

$>$

$<$

$<$

$=$

A green pencil is twice as long as a blue pencil.

Using this, complete the statements using **longer than, shorter than** or **equal to.**

3 green pencils are _____ 2 blue pencils

2 green pencils are _____ 5 blue pencils

4 green pencils are _____ 8 blue pencils

3 green pencils are longer than two blue pencils.
2 green pencils are shorter than 5 blue pencils.
4 green pencils are equal to 8 blue pencils.

Order Lengths

Notes and Guidance

Children order more than two lengths from shortest to longest and vice versa. This will help them recap their understanding of ordering numbers to 100

Children will order given lengths as well as ordering objects by measuring each length themselves.

They will use the language of shorter, shortest, longer and longest to describe the order.
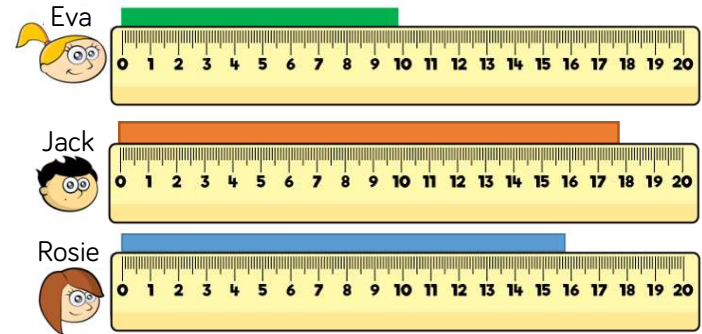
Mathematical Talk

How is ordering lengths similar to ordering numbers on a number line? Can we use a number line to help us?

Can we estimate which object is the longest before measuring?

Varied Fluency

Eva, Jack and Rosie are comparing the length of ribbons. Complete the sentences.

_____ has the longest ribbon.

_____ has the shortest ribbon.

_____ 's ribbon is shorter than _____'s.

_____'s ribbon is longer than _____'s.

Choose five objects in your classroom.
Measure them using a ruler.
Order the objects from longest to shortest.
Write at least three sentences to describe the objects using the words **longer**, **longest**, **shorter** and **shortest**.

Order Lengths

Reasoning and Problem Solving

Four children are measuring their heights.

Eva is taller than Rosie, but not as tall as Mo.

Dexter is taller than Mo.

Write down their names in order of their heights, starting with the shortest.

Shortest: Rosie
Eva
Mo
Tallest: Dexter

Dora says,

The taller you are, the longer your shoes are.

Measure the height of people in your class and measure the length of their shoes.

Is Dora correct?

Children will find different results depending on their class.

Four Operations with Lengths

Notes and Guidance

Children draw on their skills of the four operations and apply their understanding to length.

They solve one-step and two-step problems relating to length and use concrete and pictorial representations to calculate efficiently.
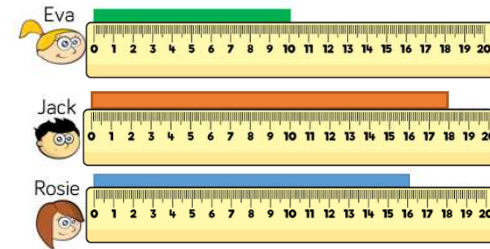
Mathematical Talk

Can you draw a bar model to help to decide which operations to use?

What are the key words in the question?

Can you ask and answer any different questions using the objects and information given?

Varied Fluency

Eva, Jack and Rosie each have a piece of ribbon.

- How much longer is Jack's ribbon than Eva's?
- Jack and Rosie put their ribbons together. How long are they altogether?
- Eva cuts three more ribbons of the same length as hers. What is the total length of all four ribbons?
- Eva cuts her ribbon in half. What is the length of each piece?

Teddy has a toy train and a toy plane.
The train is 28 cm long. The plane is 16 cm longer. How long is the plane?

The toy train is double the length of a toy car. How long is the toy car?

Draw bar models to help you.

Reasoning and Problem Solving

Here is a strip of orange paper.

A blue strip is four times longer than a orange strip.

The strips are joined end to end.

50 cm

How long is the orange strip?

How long is the blue strip?

The orange strip is 10 cm long and a blue strip is 40 cm long.

There are 3 teddies in a box.

The brown teddy is 15 cm taller than the yellow teddy.

The yellow teddy is 3 cm shorter than the pink teddy.

The pink teddy is 42 cm tall.

How tall are the brown and yellow teddies?

How much taller is the brown teddy than the pink teddy?

The yellow teddy is 39 cm tall.

The brown teddy is 54 cm tall.

The brown teddy is 12 cm taller.