We are learning about length and height

Activity 1 – Measure length in centimetres (cm)

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 line the object up at 0 on the ruler?

Varied Fluency

1 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 pen to the nearest centimetre?

2 How tall is the glass?

What other objects can you find to measure the height of?

3 Draw a line that is:

- 5 centimetres long
- 8 centimetres long
- Longer than 4 centimetres but shorter than 7 centimetres,

Reasoning and Problem Solving

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

Does the string change length when you put it in a straight line?

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

Zac says the car is 6 centimetres long.
Do you agree?
Explain your answer.

Activity 2 – Measure Length in Metres (m)

You may not have a metre stick at home, but you might have a tape measure in your sewing box? Alternatively, you could cut a piece of string or wool to a 1m length or make it by sticking strips of paper together. Children need to know that 1m = 100cm and it is useful if they can visualise how long a metre is.

Measure Length (m)

Notes and Guidance

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

Children do not convert from metres to centimetres however they may start to 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?

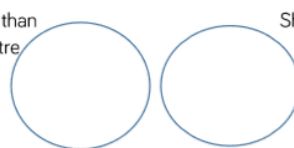Why is more efficient to use metres instead of centimetres for longer objects/distances?

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

Varied Fluency

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

Longer than a metre   Shorter than a metre

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

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

N.B. for number 1 you could use objects around your home instead of the classroom. For number 3 you could measure something else, like the length of your garden or a room in your house. You would need 2 metre sticks or home-made versions (string, wool, paper) and you would need to place them end to end, then keep swapping them over (if that makes sense!).

Reasoning and Problem Solving

Harry 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 Harry how he could measure the length of his classroom.

Activity 3 – Compare Lengths

Children are already familiar with the 'greater than', 'less than' and 'equal to' signs.

< , > , =

The open side of the sign goes towards the bigger number, while the pointy end goes towards the smaller number. E.g. 15cm is greater than 10cm, so we could put our signs this way, 15 > 10, or this way, 10 < 15.

Compare Lengths

Notes and Guidance

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

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

Mathematical Talk

Which is longer, a centimetre or a metre?

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

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

15 cm is		67 cm
Sixty metres is		60 m
96 m is		69 m
80 cm is		80 m

2 Complete the statements.

7 metres ◯ 17 metres

18 cm ◯ 18 m

32 cm ◯ 32 centimetres

42 m < [   ]

3 Choose 2 objects from your classroom. Measure both objects and compare the lengths using <, > or =
Try this again, but this time measuring your friends heights.

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 the size of a red pencil.
Using this, complete the statements using **longer than, shorter than** or **equal to.**

- 3 green pencils are [   ] 2 red pencils.

- 2 green pencils are [   ] 5 red pencils.

- 4 green pencils are [   ] 8 red pencils.

Activity 4 – Order Lengths

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 the length of each themselves to order accurately.

They will use the language shortest and longest to describe the order.

Mathematical Talk

How is comparing 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?

Reasoning and Problem Solving

Four children are measuring their heights.

Lucy is taller than Katie, but not as tall as Tim.

Gary is taller than Tim.

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

Varied Fluency

1 Annie, Jack and Claire are comparing the length of ribbons. Complete the sentences.
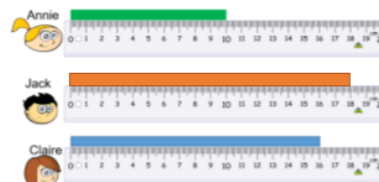
[_____] has the longest ribbon.

[_____] has the shortest ribbon.

[ ] cm < [ ] cm < [ ] cm

2 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**.

Suzie says,

The taller you are, the longer your shoes are.

Suzie

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

Is Suzie correct?

For the 'Suzie says' problem, you could measure and compare the people in your family. It would be worth pointing out that taller people probably will have longer shoes, but this wouldn't always necessarily be the case!

Activity 5 – Four Operations with lengths

The four operations means addition (+), subtraction (-), multiplication (X) and division.

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 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?

Which is the key language in the question?

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

Reasoning and Problem Solving

Here is a strip of purple paper.

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

The strips are joined end to end.

50 *cm*

How long is the purple strip?

How long is the blue strip?

Varied Fluency

1. Annie, Jack and Claire each have a piece of ribbon.

   - How much longer is Jack's ribbon than Annie's?
   - Jack and Claire put their ribbons together, how long are they altogether?
   - Annie cuts three more ribbons to the same length as hers, what is the length of all four ribbons?

2. Ted 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?

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

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?