

# Years $1\frac{1}{2}$

## Small Steps Guidance and Examples

Block 3 – Length & Height

**White**  **RoseMaths**

# Year 1 /2– Yearly Overview







	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value				Number: Addition and Subtraction				Geometry: Shape	Measurement: Money		
Spring	Number: Multiplication and Division (Y1: Place Value to 50 included)				Number: Fractions			Measurement: Length and Height	Measurement: Mass, Capacity and Temperature		Consolidation	
Summer	Year 1: Place Value within 100 Year 2: Statistics		Geometry: Position and Direction	Problem solving and efficient methods		Measurement: Time			Investigations		Consolidation	

# Overview

## Small Steps

### Year 1

### Year 2

 Compare lengths and heights	
 Measure length (1)	Measure length (cm)
 Measure length (2)	Measure length (m)
	Compare lengths
	Order lengths
	Four operations with length

# Compare Lengths & Heights

## Notes and Guidance

Children use and understand the language of length such as long, short, longer, shorter, tall, small, taller, smaller etc. They recognise this language will change depending on what type of length they are describing and comparing.

They will understand that height is a type of length. Children should also be exposed to lengths that are equal to one another.

## Mathematical Talk

Which person is taller/shorter?  
Which pencil is shorter/longer?

Are we measuring the height or length of something?  
What is the same? What is different?

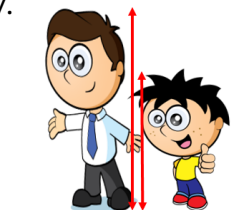
How can we describe the height of the houses?

## Varied Fluency

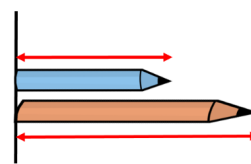
- 1 Use the words **taller** and **shorter** in the sentence stems to compare the height of the man and the boy.

The man is  than the boy.

The boy is  than the man.



- 2 Use the words **longer** and **smaller** in the sentence stems to compare the length of the blue pencil and the orange pencil.



The blue pencil is  than the orange pencil.

The orange pencil is  than the blue pencil.

- 3 Choose the correct word from the word bank to create your own sentence to compare the height of the two houses.



longer	taller	higher
long	equal	smaller
shorter	small	same

# Compare Lengths & Heights

## Reasoning and Problem Solving

Some children are comparing the height of the woman and the boy.

Demi



The woman is tall than the boy.

Neve



The boy is short than the woman.

Harpreet



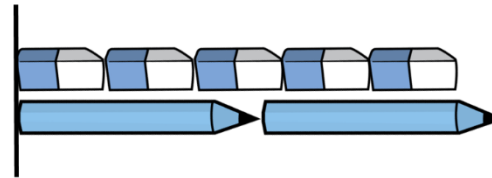
The woman is longer than the boy.

Can you improve their sentences to make them more accurate?

Possible answer:

Demi – the woman is **taller** than the boy.  
 Neve – the boy is **shorter** than the woman.  
 Harpreet – the woman is **taller** than the boy.  
 Taller is a better word than longer because we are **comparing height**.

How many sentences can you write to compare the erasers and the pencils?



Using classroom equipment, can you find an object which is longer than your rubber but shorter than your pencil?

Can you find a friend who is shorter than you but taller than your other friend?

Possible answer:

Two pencils are longer than five rubbers.  
 One pencil is shorter than three rubbers.  
 Etc.

Children could explore other items and situations where they are asked to compare more than two objects.

## Measure Length (1)

### Notes and Guidance

Children use non-standard units such as cubes, hands and straws to measure length and height.

They recognise that different non-standard units are more suitable for measuring the length and height of different objects.

They need to understand that non-standard units should be exactly in line with the object to get an accurate measurement.

### Mathematical Talk

What other things could you use to measure how long a pencil is?

Would you use the same piece of equipment to measure the length of the classroom? Why?

What could you use to measure how tall you are?

How much longer is the pencil than the rubber?  
How much shorter is the rubber than the pencil?

### Varied Fluency

- 1 Use cubes to measure the length of objects around your classroom. Write sentence for each object.

The pencil is  cubes long.



The  is  cubes long.

- 2 Tom is 5 sticks tall.  
Choose a suitable piece of equipment to measure how tall your friend is.



- 3 Which is longer – the pencil or the rubber?



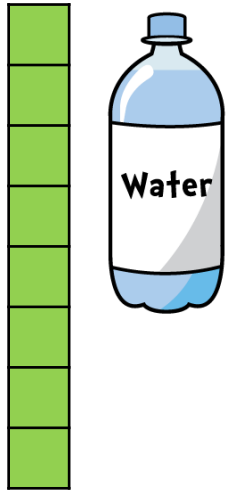
The  is longer than the

Choose a piece of equipment to work out how much longer the object is.

# Measure Length (1)

## Reasoning and Problem Solving

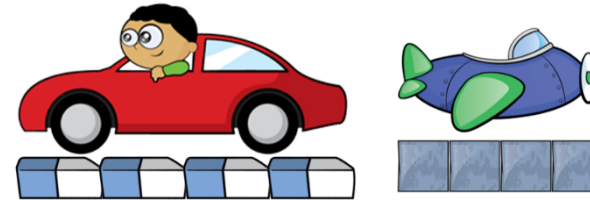
True or false?



The water bottle is 8 cubes tall.  
Explain your answer.

False because the cubes should be level with the bottom of the water bottle. The water bottle is 5 cubes tall.

Sally measures the length of two toys.



She says,



The toys are the same length.

Do you agree with Sally?  
Explain your answer.

Sally is wrong. Both toys are 4 units long, but the rubber and the cubes are different lengths so the toys are not the same length.

## 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?

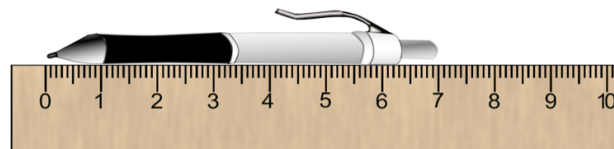
How do you know you have drawn a line that is 5cm long? How can you check?

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:

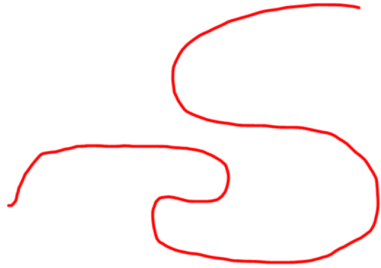
- 5 centimetres long
- 8 centimetres long
- Longer than 4 centimetres but shorter than 7 centimetres,



# Measure Length (cm)

## Reasoning and Problem Solving

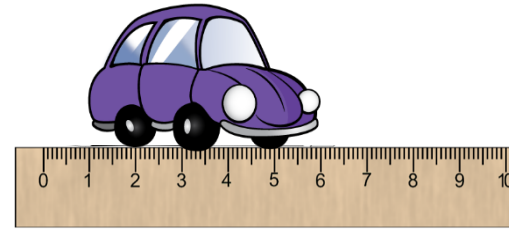
How long is this piece of string?  
How could you find out?



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

The string will stay the same length if you put it in a straight line. It will be easier to measure if you put it in a straight line too.

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.

Zac 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 5 cm long.

## Measure Length (2)

### Notes and Guidance

Children build on prior knowledge of measuring length and height using non-standard units and apply this to measuring using a ruler.

They should be able to understand that objects can vary in length and size, so a standard unit of measurement is required.

It is important that children know to measure from 0 cm.

### Mathematical Talk

What do the numbers on the ruler mean? (1 cm etc)

Where should we place the end of the object to start measuring?

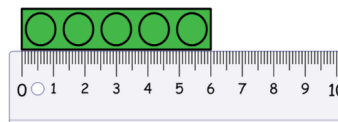
Does the ruler look like anything else we have used? (number line)

Can you count how many cm the \_\_\_\_\_ measures?

How does using a ruler help us to compare objects?

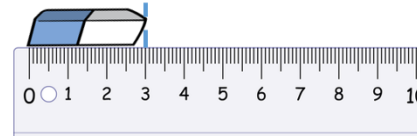
### Varied Fluency

- 1 How long is the building block?



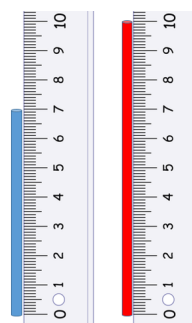
The building block is  cm long.

- 2 What is the length of the rubber?



The rubber measures  cm.

- 3 Which straw is the tallest?



The blue straw is  cm tall.

The red straw is  cm tall.

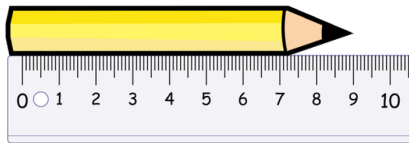
The  straw is the tallest.

The  straw is the shortest.

# Measure Length (2)

## Reasoning and Problem Solving

Chris measures the length of the pencil.



He says,



The length of the pencil is 9 cm.

Do you agree with Chris?  
Explain why.

Chris is wrong because he has started measuring from the end of the ruler not from 0

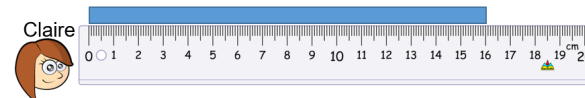
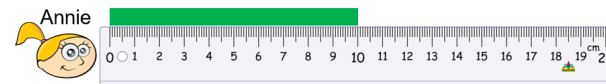
Annie, Jack and Claire are comparing ribbons that they have.

Unfortunately, Jack has misplaced his ribbon.

He says,



My ribbon is shorter than Claire's, but longer than Annie's.



What length could Jack's ribbon be?

Possible answers:

- 11 cm
- 12 cm
- 13 cm
- 14 cm
- 15 cm

## 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?

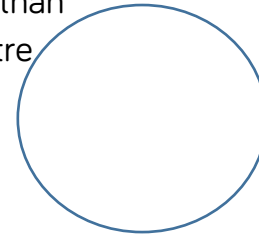
Why is more efficient to use metres instead of centimetres for longer objects/distances?

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

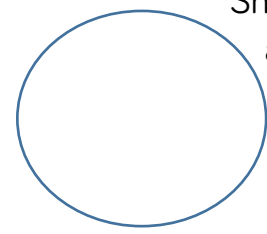
### Varied Fluency

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

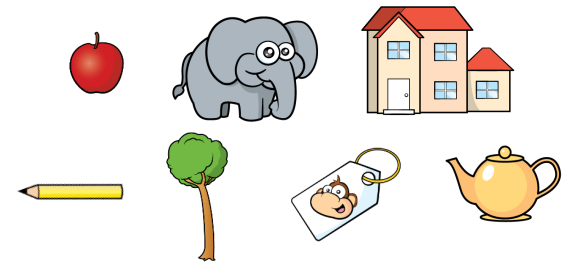
Longer than  
a metre



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.

# Measure Length (m)

## 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?

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.

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.

Harry 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 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	<input type="text"/>	67 cm
Sixty metres is	<input type="text"/>	60 m
96 m is	<input type="text"/>	69 m
80 cm is	<input type="text"/>	80 m

- 2 Complete the statements.

7 metres	<input type="radio"/>	17 metres
18 cm	<input type="radio"/>	18 m
32 cm	<input type="radio"/>	32 centimetres
42 m	<	<input type="text"/>

- 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.

# Compare Lengths

## Reasoning and Problem Solving

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

55 cm + 10 cm	<input type="radio"/>	55 cm – 10 cm	$>$
42 m + 6 m	<input type="radio"/>	42 m + 7 m	$<$
6 cm – 5 cm	<input type="radio"/>	6 m – 5 m	$<$
80 m – 5 m	<input type="radio"/>	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.

3 green pencils are longer than two red pencils.  
2 green pencils are shorter than 5 red pencils.  
4 green pencils are equal to 8 red 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 the length of each themselves to order accurately.

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

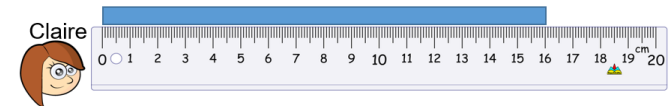
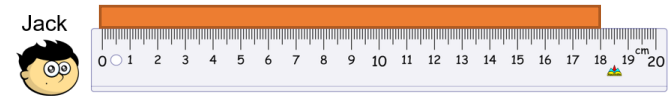
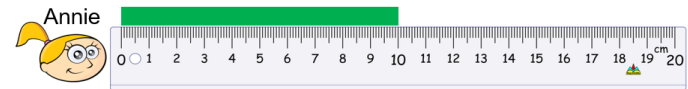
### Mathematical Talk

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?

## 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**.



# Order Lengths

## 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.

Shortest: Katie  
Lucy  
Tim  
Tallest: Gary

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?

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 and two step problems relating to length and use concrete and pictorial representations to calculate efficiently.

### Mathematical Talk

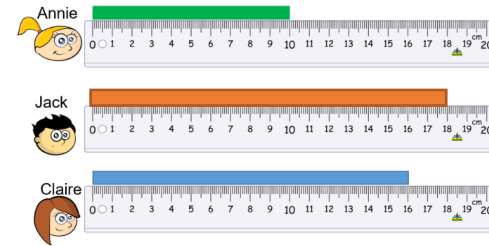
Can you draw a bar model to help to decide which operations to use?

Which is the key language in the question?

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

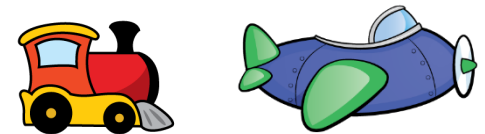
## Varied Fluency

- 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?



# Four Operations with Lengths

## 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?

A purple 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?

The yellow teddy is 39 cm tall.

The brown teddy is 54 cm tall.