EARLY FOUNDATIONS

CUSPA

CURRICULUM WITH UNITY SCHOOLS PARTNERSHIP

MATHS

Age 4 – 5

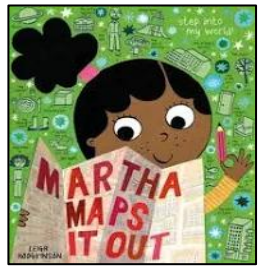
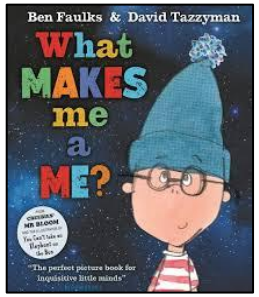
Autumn Block 6

Length and weight

Learning Sequence: Age 4 – 5 Block 6 Length and weight

Foundational knowledge	Order lengths, compare unmarked lengths, connect knowledge of number to length, measure objects using non-standard measurement, recognise that size does not denote weight, know when an object is heavier or lighter.	
Key mathematical language (essential vocabulary)	**Threshold vocabulary** measure longer length shortest unit longest heavier lighter balance prove	**Clarification vocabulary** same different more less order compare weight
Sentence stem	Which is the longest? Which is the shortest? Which is heavier? Which is lighter? Can you make them balance? How? What do you notice?	
Resources required	ribbon plastic bricks dominoes marbles balance scales number track paper plates with dot arrangements	
At the end of this unit, pupils will …	**Know** • objects can be measured and compared • number is connected to length • size does not denote weight	**Be able to** • order and compare lengths • measure objects using non-standard measurement • recognise that size does not denote weight • compare the weight of objects
Prompting questions for thinking hard	Does the length stay the same if I turn the object around in different ways? Can you prove it? How can we find out which object is the heaviest? Is the smallest object always the lightest? Prove it.	

Learning Sequence: Age 4 – 5 Block 6 Length and weight

Opportunities and experiences	Outdoors	Creative	Role Play
 Images in the text provide opportunities to pose questions and ask: • Which road is longer? • Point to the building that is the shortest.  Images in the text provide opportunities for pupils to predict weight, e.g.: • I think that the kite would be lighter than the dog. • I think that the whale would be heavier than the ice-cream.	**Mud kitchen** Provide recipe cards that show objects and a non-standard unit of measure, e.g. marbles. Provide a set of balance scales. Using the cards, pupils make a mixture. Ask: • How many marbles did the leaves weigh? • How could you make your mud pie heavier? • How could you make your mud pie lighter? **Longer or shorter construction** Prepare a wall that is two crates / bricks long. • Can you make a wall that is longer? • Can you make a wall that is shorter?	**Playdough worms** Provide some playdough for pupils to roll into different lengths. • Can you make a longer worm than your teacher? • Can you make a shorter worm than your teacher? **Ribbon** Provide different coloured ribbons that pupils can use to create a picture. Group the ribbons into baskets by colour that are the same length i.e., yellow in one, red in another. Allow pupils time to create a picture. Ask: • What do you notice? • Do the yellow ribbons look the same length? Are they the same length? How could we check?	**Parcel weights** Provide a set of balance scales and different objects. Prepare a basket with objects that can be used as a non-standard measurement, e.g. marbles. Challenge pupils to help the post workers to find the weight of the parcels. • Which one is the heaviest? • Which one is the lightest? **Letter box lengths** Provide pretend letterboxes using pieces of cardboard with different lengths cut out, and different sized envelopes. On each one display a numeral (0 – 5) and a non-standard unit of measurement for pupils to measure in, e.g. plastic bricks. Ask: • Which letter matches which letter box? • Can you prove it?

Learning Sequence: Age 4 – 5 Block 6 Length and weight

Part 1/2					
Connect	**Vocabulary**	**Explain**	**Example**	**Attempt** (checking for understanding)	**Guided**
Lesson 1 – compare lengths					
Show dotty plates (0 – 5). Show me on your fingers one more. Show me on your fingers one less. Repeat.	Instruct the key vocabulary – *measure* (x3): the size of something. Instruct the key vocabulary – *longer* (x3): a bigger space from end to end and *longest* (x3): the biggest space from end to end.	Explain that objects can be measured in different ways. Prepare two pieces of ribbon of different length (different colours but the same width). There are two pieces of ribbon, but they are different. They are different colours. They are also different sizes.	I think that the red one is longer than the blue one. Place the ribbons next to each other (but at different starting points / displaced). This won't work. I need them to be at the same starting point. Repeat and rearrange. The blue one is longer than the red one.	Ask pupils to look at their ribbons. What do you notice? Which ribbon is the longest? Can you prove it?	Ask pupils to use cubes to build a tower of one, three and five. Stand the towers next to each other. What do you notice? Point to the longest tower. Ask pupils to place the towers horizontally, lying on the table. What do you notice? Point to the longest tower. Draw attention to the irrelevance of its orientation – the same tower is always the longest.

Learning Sequence: Age 4 – 5 Block 6 Length and weight

Part 1/2					
Connect	**Vocabulary**	**Explain**	**Example**	**Attempt** (checking for understanding)	**Guided**
Lesson 2 – order lengths					
Present three straws in a fist (disguising that one is shorter than the others). Are the straws the same size? (This will support pupils to know that the length of an object is not changed by it being displaced.)	Instruct the key vocabulary – *length* (x3): how long something is from end to end. Instruct the key vocabulary – *shorter* (x3): a smaller space from end to end and *shortest* (x3): the smallest space from end to end.	Explain that we can order objects by their length.	Prepare three pieces of ribbon – ensure that one is clearly much longer. Place them in different configurations – one pulled straight vertically; one pulled straight horizontally and one in a snake shape. To order these ribbons, I need to put them at the same starting point (use a piece of masking tape). I want to order them from shortest to longest. Model comparing the ribbons and ordering them.	Provide each pupil with three pieces of ribbon. Ask pupils to order them from shortest to longest. Then ask pupils to order the three pieces of ribbon from longest to shortest.	Ask pupils to use cubes to build a tower of one, three and five. Stand the towers next to each other. Can you order the towers from shortest to longest? Can you order the towers from longest to shortest? Now build a tower of four – where would it go in our order of shortest to longest?

Learning Sequence: Age 4 – 5 Block 6 Length and weight

Part 1/2					
Connect	**Vocabulary**	**Explain**	**Example**	**Attempt** (checking for understanding)	**Guided**
Lesson 3 – number is connected to length					
Ask a group of pupils to stand shoulder to shoulder along a classroom wall. Count aloud: this wall is x children long. Point to a different wall. How many children would be needed for the length of that wall?	Instruct the key vocabulary – *unit* (x3): one of something.	Explain that things can be measured in different units. Horses are measured in hands.	Place a piece of ribbon vertically. My unit of measurement is going to be a plastic brick. I must place my bricks at the start of the ribbon. The length of the yellow piece of ribbon is three bricks. Place the same piece of ribbon horizontally. The length of the piece of ribbon is **still** three plastic bricks.	Provide pupils with one piece of ribbon. Place two baskets in the centre that include different objects that are the same size, e.g. plastic bricks and pencils (ensure they are of the same size). Ask pupils to measure their ribbon using the plastic bricks. What is the length? Repeat with pencils. What is the length? What do you notice?	Model laying the ribbon on the desk in a vertical line. Using plastic bricks, model placing the first one at the start of the ribbon. Keep adding until you reach the end. Count aloud the total number of plastic bricks (my turn, your turn). Repeat with a different piece of ribbon. Then repeat with pencils.

Learning Sequence: Age 4 – 5 Block 6 Length & Weight

Part 1/2					
Connect	**Vocabulary**	**Explain**	**Example**	**Attempt** (checking for understanding)	**Guided**
Lesson 4 – measure objects using non-standard units					
Ask a group of pupils to stand with arms outstretched and touching along a classroom wall. Count aloud: this wall is x children long. Point to a different wall. How many children would be needed for the length of that wall? Is this the same or different to yesterday? Why?	Revisit the key vocabulary – *length* (x3): how long something is from end to end.	Explain that when we order objects by their size it can be useful to measure them.	Display a jar, a book and a paintbrush. My unit of measurement is going to be cubes. To order these objects based on their length, I will use cubes to measure them. Place the cubes next to the jar. Count aloud. My total is x cubes. Place the cubes next to the book. Count aloud. My total is x cubes. Place the cubes next to the paintbrush. Count aloud. My total is x cubes. The object that has the longest length is the paintbrush. The object that has the shortest length is the jar.	Give pupils three objects. Ask pupils to measure their objects using dominoes. Ask pupils to point to the object that is the shortest. Ask pupils to point to the object that is the longest.	Give pupils two pieces of ribbon and ask them to lay them vertically from the edge of the table. Ensure that they are straight. Ask pupils to start at the edge of the table and place the dominoes in a vertical line until they reach the top of the ribbon (ensure that the pieces of ribbon can be measured exactly). Ask pupils to point to the ribbon that has the longest length. Ask pupils to point to the ribbon that has the shortest length.

Learning Sequence: Age 4 – 5 Block 6 Length and weight

Part 1/2					
Connect	**Vocabulary**	**Explain**	**Example**	**Attempt** (checking for understanding)	**Guided**

Lesson 5 – flexible content

The purpose of this lesson is to provide teachers with an opportunity to respond to pupil outcomes from the rest of the teaching week. This time should be used strategically to move pupils' thinking forwards. This lesson can be moved to a different position in the week to ensure it is used where and when it is needed. Although not an exhaustive list, below are some suggestions of how this time can be utilised to maximise impact.

Revisit areas in which pupils would benefit from further consolidation.

Respond to pupils' interests.

Deepen pupils' thinking about the subject matter.

Pre-teach vocabulary or background knowledge.

Learning Sequence: Age 4 – 5 Block 6 Length and weight

Part 2/2					
Connect	**Vocabulary**	**Explain**	**Example**	**Attempt** (checking for understanding)	**Guided**
Lesson 1 – introducing weight					
Compare objects in the room – point to the one that is longest. Point to the one that is shortest.	Instruct the key vocabulary – *weight* (x3): how heavy or light something is. Instruct the key vocabulary – *heavier* (x3): harder to lift compared to something else.	Explain that we can find out the weight of an object by measuring it.	Model holding a spoon in one hand and a piece of cotton wool in the other hand. I can feel that the spoon is heavier. Introduce a new object. I can feel that x is heavier.	Ask pupils to use their hands to compare the weight of two objects, e.g. a banana and a cube. Ask pupils to point to the heavier object. Give all pupils a piece of tissue paper. Ask pupils to use their hands to compare the weight of the piece of tissue paper and the banana. Which is heavier? What do you notice?	Instruct the word *heavier* again. Prepare three objects for each pupil that have significantly different weights, e.g. large stone, cube, piece of tissue paper. Model using hands to compare two objects. I can feel that the stone is heavier (my turn, your turn).

Learning Sequence: Age 4 – 5 Block 6 Length & Weight

Part 2/2

Connect	Vocabulary	Explain	Example	Attempt (checking for understanding)	Guided
Lesson 2 – recognise that size does not denote weight					
Pass around the circle three objects (include one that is small but heavy). Then place the three objects in the centre. Ask pupils to point to the heaviest object. Ask pupils to point to the lightest object.	Instruct the key vocabulary – *lighter* (x3): easier to lift compared to something else.	Explain that if something is big it doesn't always mean that it is heavy. If something is small, it doesn't always mean that it is light.	Model holding a piece of paper in one hand and a pebble in the other. The piece of paper is bigger, but it is lighter. The pebble is smaller, but it is heavier. *Paper could be replaced with a balloon. Pebble could be replaced with a small can.	Give pupils a group of objects, e.g. counter, piece of A4 tracing paper, coin, pebble. Allow them time to weigh in their hands and then ask them to place them in front of them. Ask pupils to point to the lighter one and then the heavier one.	Instruct the word *lighter* again. Prepare three objects for each pupil that have significantly different weights, e.g. large stone, cube, piece of A4 paper. Model using hands to compare two objects. I can feel that the stone is heavier than the paper (my turn, your turn). I can feel that the piece of paper is lighter than the cube.
Lesson 3 - compare weights					
Show images of children on a see-saw, a tight-rope walker and a flamingo. What do all these characters need to do?	Instruct the key vocabulary – *balance* (x3): when both parts weigh the same.	Explain that we can measure weight using balance scales. Balance scales can be used to compare the weight of objects. Draw attention to the triangles that need to match to show the scales are balanced.	Model placing a glue stick in one side of the balance scales. I am going to compare the weight of the glue stick to these marbles. I need the scales to balance. Model counting aloud the marbles into the other side of the balance scales, allowing pupils time to notice the movement of the scales. A glue stick weighs the same as x number of marbles.	Put pupils into pairs with a set of balance scales. Give all pupils an object (e.g. pebble) to place in one side of the scales. How many marbles weigh the same as your pebble? Show me on your fingers. Repeat with a different object.	Prepare a set of balance scales for a pair of pupils. Draw attention to the triangles that need to match to show the scales are balanced. Use the same object used in the Attempt phase. Repeat with another object.

Learning Sequence: Age 4 – 5 Block 6 Length and weight

Part 2/2					
Connect	**Vocabulary**	**Explain**	**Example**	**Attempt** (checking for understanding)	**Guided**
Lesson 4 – solve problems					
Give pupils a bean bag – can you balance it on one hand? Can you balance it on your head? Ask pupils to stand on one leg – how long can you balance for?	Instruct the key vocabulary – *prove* (x3): to show if something is right or wrong.	Sometimes we can use our knowledge of measure to help prove if something is right or wrong. Prepare three tubs of the same size as follows: • Tub 1 to include small world bears • Tub 2 to include cotton wool • Tub 3 to be empty Explain that the post worker has said that all the tubs will weigh the same.	Pass the tubs around the circle. They have made a mistake. Together we need to prove it. Place one tub in one side of the balance scales. Draw attention to the triangles that need to match to show the scales are balanced. Count aloud marbles into the other side of the scales until they balance. This tub weighs x number of marbles.	Put pupils into pairs with a set of balance scales. Give pupils tub 2 and ask them to weigh how many marbles tub number 2 weighs. Show me on your fingers. Repeat with tub number 3.	Prepare a set of balance scales for a pair of pupils. Draw attention to the triangles that need to match to show the scales are balanced. Give pupils tub 1 for one side of their scales. Model counting aloud the marbles and ask pupils to add and count aloud with you (my turn, your turn). Repeat with tub 2 and tub 3.

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Part 2/2

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