

























Weight and Mass: Mass Problem Solving

Aim: Compare, describe and solve practical problems for mass/weight. To solve mass problems.	Success Criteria: I can solve problems by measuring mass. I can solve problems by comparing mass. I can use accurate vocabulary to explain my reasoning.	Resources: Lesson Pack Balance scales – 1 per pair Cubes to use as measuring units; e.g. wooden blocks or interlocking cubes. Small toys with a mass of up to ten cubes.
	Key/New Words: Heavy, heavier, heaviest, light, lighter, lightest, the same mass, equal to, balanced, balance, estimate, measure, weight, mass, compare, describe, explain, problem, solve, solution.	Preparation: Mass Problem Solving Activity Sheets – 1 per child Diving into Mastery Activity Cards – as required

Prior Learning: It will be helpful if children are familiar with describing, measuring and comparing mass. The lesson pack [Comparing Mass](#) will support this learning.

Learning Sequence

	Remember It: The Lesson Presentation shows three sets of balance scales holding different coloured paintbrushes balanced with non-standard units. Ask the children to discuss with partners what this tells us about the mass of the purple paintbrush, including its mass and in comparison to the other paintbrushes. The next slide shows a set of toys ordered from the lightest to the heaviest. Read the clue together and ask the children to identify the toy that it refers to. One click will reveal the answer. The second click will present a challenge, inviting the children to give talk partners clues about the mass of toys in the sequence.	
	Paint Problem: The Lesson Presentation shows a table with the mass of different coloured paint pots measured in cubes. One of the numbers has paint spilt on it. The paint pots are below the table ordered from the lightest to the heaviest. Ask the children what they can do to work out the missing number (this is between the two given numbers). One click will reveal the answer. Can the children solve problems by comparing mass?	
	Mass Mix Up: The Lesson Presentation shows a table with the mass of different objects measured in counters. These are arranged below the table from the heaviest to the lightest. Ask the children what they notice (one is missing). Invite the children to work out what is missing and where it should go in the sequence, explaining how they know. Can the children solve problems by comparing mass?	
	Solve the Clues: The Lesson Presentation shows fruit labelled with their mass measured in cubes. These are ordered from the lightest to the heaviest. Two new pieces of fruit are presented along with clues about their mass. Ask the children to work out where they should go in the sequence and what their mass could be (there is more than one possible answer). Can the children solve problems by comparing mass?	
	Match the Mass: The Lesson Presentation shows a balance scale holding a ball balanced with ten cubes. Below this is a table showing different coloured beanbags and their mass measured in cubes. Ask the children which two beanbags make the same mass as the ball and to consider if there could be more than one answer. Each click will reveal a different solution. Can the children solve problems by measuring mass?	
	Make a Mass: The Lesson Presentation shows a balance scale holding a sports bat balanced with nine cubes. The next set of balance scales holds an identical sports bat on one side and a red beanbag on the other. The scales show that the bat is heavier than the beanbag. Below the scale is a table showing the mass of different coloured beanbags measured in cubes. Ask the children which coloured beanbag could go with the red one to balance the bat. Click to reveal the answer. Can the children solve problems by measuring mass?	

	<p>Mass Problem Solving: The children complete the differentiated Mass Problem Solving Activity Sheets. <i>Can the children solve problems by comparing mass? Can the children solve problems by measuring mass?</i></p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="244 136 592 719">  <p>The mass of three toys are shown on a table. One number is missing. Children work out the missing number by checking the toys arranged from the lightest to the heaviest. Another set of toys are arranged from the heaviest to the lightest. Two toys are missing. Children check the table to identify the missing toys and work out where they should be placed. Finally, children find two pairs of toys to make the same mass as 8 blocks.</p> </div> <div data-bbox="624 136 971 719">  <p>The mass of five toys are shown on a table. Two numbers are missing. Children work out the missing numbers by checking the toys arranged from the lightest to the heaviest. A set of six toys are arranged from the heaviest to the lightest. Two toys are missing. Children check the table to identify the missing toys and work out where they should be placed. Finally, children find three pairs of toys to make the same mass as 9 blocks.</p> </div> <div data-bbox="1003 136 1351 775">  <p>The mass of five toys are shown on a table. Two numbers and two toys are missing. Children work out the missing numbers and toys by checking the toys arranged from the lightest to the heaviest. A set of six toys are arranged from the heaviest to the lightest. Three toys are missing. Children check the table to identify the missing toys and work out where they should be placed. Finally, children find all the possibilities of what the mass of a lunch bag can be by adding together different masses.</p> </div> </div>	
	<p>Diving into Mastery: Schools using a mastery approach may prefer to use the following as an alternative activity. These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.</p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="244 931 1356 1167">  <p>Five fruits are presented in a table showing their mass measured in blocks. Alongside this are balance scales holding a pear on one side and another fruit on the other. Children work out which fruit they would add to make the same mass as the pear.</p> <p>A pineapple is shown balanced with nine blocks. Children draw lines to match pairs of labelled fruits to make the same mass.</p> <p>As an additional challenge, children could find the mass of one object, then find two objects that make the same mass. Children will need balance scales, and a selection of classroom objects (no heavier than the mass of ten cubes).</p> </div> <div data-bbox="244 1189 1356 1368">  <p>Children read clues about the mass of fruit and order them from the lightest to the heaviest. They use this to work out which fruit is missing from the balance scales.</p> <p>Children then apply their reasoning skills to investigate true or false challenges.</p> <p>As an additional challenge, children could create their own true or false challenges for friends to investigate. Children will need balance scales and a selection of classroom objects (no heavier than the mass of ten cubes).</p> </div> <div data-bbox="244 1391 1356 1626">  <p>Children read clues about the mass of fruit and order them from the lightest to the heaviest. They use this to work out which fruits are missing from the balance scales.</p> <p>Children then apply their problem solving skills to investigate a find all possibilities challenge where they find different ways to reach a total mass. Any number of items can be used and the same item can be used more than once.</p> <p>As an additional challenge, children could create their own match the mass challenges for friends to investigate. Children will need balance scales and a selection of classroom objects (no heavier than the mass of ten cubes).</p> </div> </div>	
	<p>Check It: The Lesson Presentation shows balance scales holding an empty water bottle and bead on one side and six beads on the other. Children can work out the mass of the water bottle by subtracting one bead from each side. Investigate how they can use their knowledge of the water bottle's mass to balance the scales on the final slide. <i>Can the children use accurate vocabulary to explain their reasoning?</i></p>	

Exploreit

Findit: Children use non-standard units and balance scales to find the mass of different objects. They choose a way to order the objects according to their mass (lightest to heaviest or heaviest to lightest). Children then take turns to give clues about the mass of an object for their friends to identify.

Matchit: Pick an object. Use balance scales and non-standard units to find its mass. How many different pairs of objects can you find to make the same mass?