Make a shake

Annotation

Jessie shows that she is able to read and record metric abbreviations and identify the metric units that they relate to. She is able to name the appropriate device for measuring weight or capacity. During the measuring process, she shows that she understands the need for precision and ensures that she bends down enough to read the scale at eye-level. She is also able to determine the value of an interval on a scale that is not numbered.

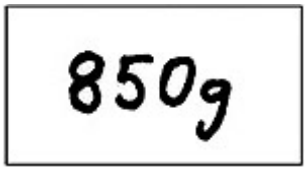
Problem: Make a Shake

The teacher gives the student a container of *Make a Shake* filled with coloured liquid, kitchen scales and a plastic measuring jug. Then the teacher asks the student to weigh and measure the contents of the container and record the information on a sticky label.

Student Response

Jessie places the full *Make a Shake* container on the kitchen scales and determines its weight.

She writes:

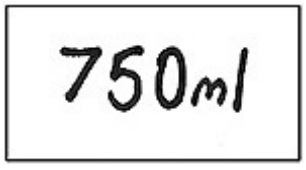


Teacher: How did you work that out?

Jessie: I knew that each big mark was 100 grams and the pointer was halfway between the eighth and ninth mark.

Jessie then tips the contents of the *Make a Shake* into a measuring jug and bends down so that she is reading the scale at eye-level.

She writes:



Teacher: How did you work that out?

Jessie: It is halfway between 700 and 800 so it is 750 millilitres.

Birthday cake decorations

Annotation

Regan understands that “perimeter” means the outside boundary. He is able to use his knowledge of the properties of a square to determine that only two measurements are required to calculate the perimeter of an object.

Problem: Birthday cake decorations

The teacher shows the student the square top of a birthday cake and gives the student a ruler. The teacher explains that a ribbon needs to be placed around the edge of the cake to finish the decorations. The teacher first asks the student to identify the perimeter of the cake and then asks him to measure the perimeter to find out what length of ribbon is required.

Where is the perimeter of the cake?

Student Response

Regan: Around the outside.

Regan measures the first side and records 24 centimetres. He then measures the second side and records 24 centimetres.

Teacher: How long do you think the next side will be?

Regan: 24 centimetres.

Teacher: Why?

Regan: Because it’s a square and all the sides are the same length.

Regan then calculates the perimeter of the birthday cake using a mental strategy.

It’s 24 centimetres four times, so it’s 96 centimetres of ribbon.

The new key

Annotations

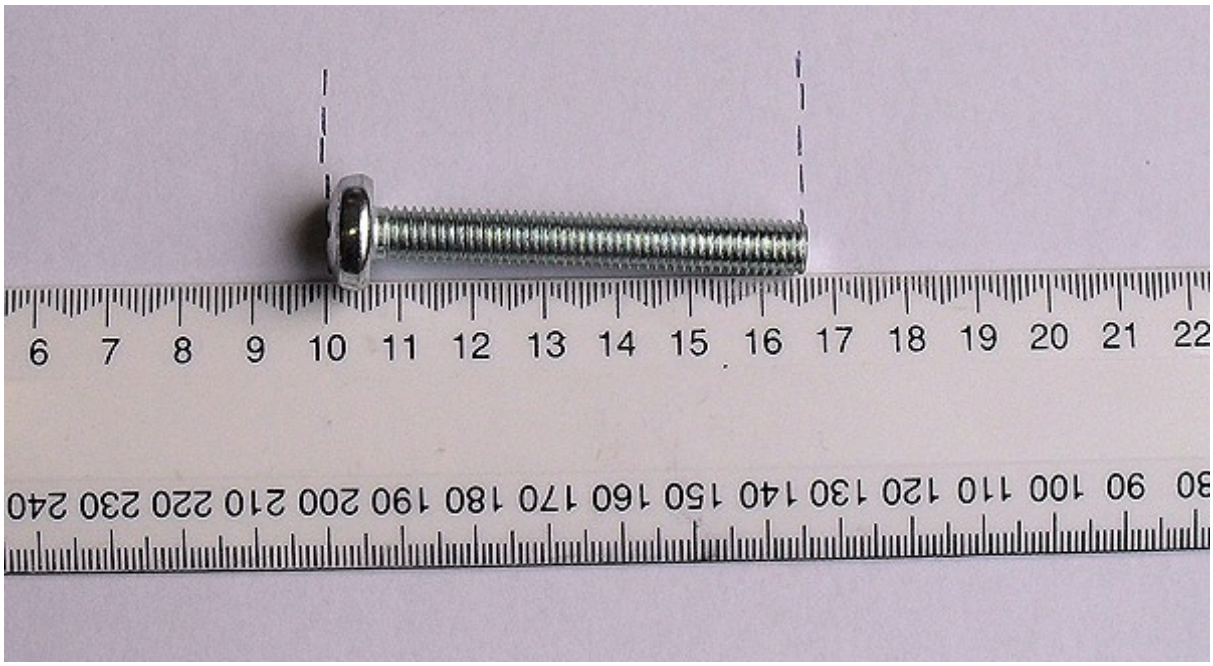
Emily understands that any point on an equal interval scale can be used as the zero point, and she can use and interpret a scale on a ruler. She demonstrates this understanding by treating the 10-centimetre mark as the start or zero point on a broken ruler and accurately measures the length of an object.

Problem: The new screw

The teacher tells the student that the school caretaker needs a new screw for the classroom door. The teacher gives the student a broken ruler and asks:

How long is the old screw in centimetres?

Student Response



Emily: 6.5 centimetres.

Teacher: How did you work out?

Emily: I placed one end on the 10. The other end goes to 16.5, so the screw is 6.5 centimetres long.

Kitchen tiles

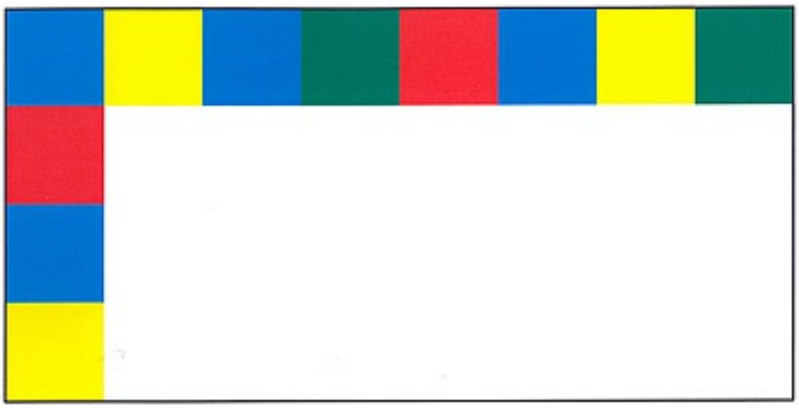
Annotation

Josie is able to use an array structure to work out the area of a rectangle. She understands that the number of rows in one column of the rectangle determines the number of rows in the whole rectangle, and she uses multiplication to calculate the rectangle's area.

Problem: Kitchen tiles

The teacher tells the student that the kitchen floor is to have tiles laid down on its surface. The teacher shows the student the array model and asks:

Some tiles have already been laid on the kitchen floor. How many tiles will be needed to cover the whole floor?



Student Response

Josie:	32 square tiles.
Teacher:	How did you work that out?
Josie:	I counted the number along the top and the number down the side, and I multiplied them. It's 4 times 8.

Estimation and benchmarks for length

Annotation

Jordan can use a mental image of her fingernail as a reference or benchmark for 1 centimetre and uses this image to support her estimation of the length of a line that is 8 centimetres long. As she draws the line, she mentally pictures repetitions of her fingernail placed along it. She is able to measure the line she has drawn with precision. She takes care when aligning the 0 on the ruler with the start of her line, and she is able to determine that the line is 9.3 centimetres long. She is able to convert centimetres to millimetres.

Problem: Estimation and benchmarks for length

The teacher asks the student:

How long is 1 centimetre?

Student Response

Jordan shows how long using a distance between her thumb and forefinger.

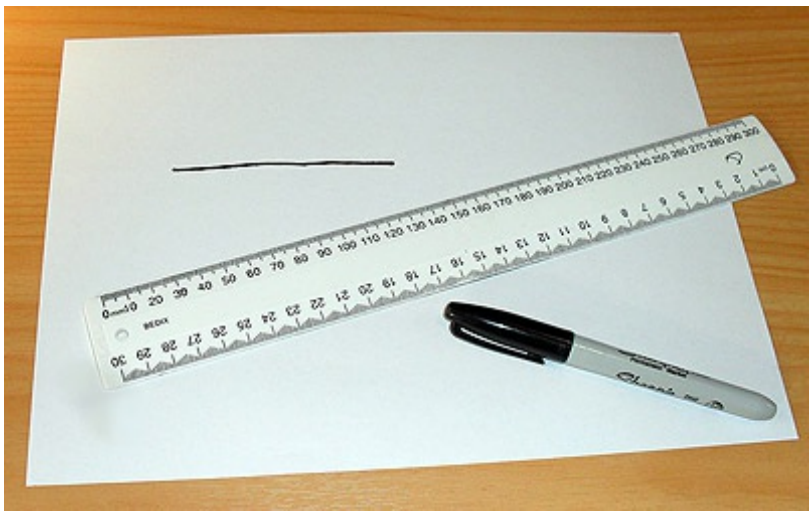
Teacher: Do you have a particular object that you think of when you think of a 1-centimetre length?

Jordan: My fingernail.

Teacher: Without using a ruler, can you draw me a line that is 8 centimetres long?

Jordan draws a line.

Teacher: Use this ruler to measure your line. How long is it?



Jordan: It is 9.3 centimetres

Teacher: Do you know how many millimetres that is?

Jordan: 93.

Cuboids

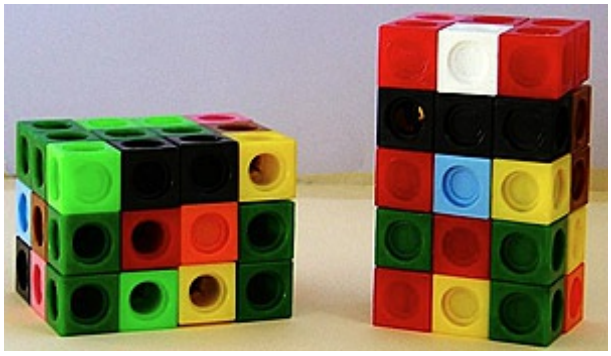
Annotation

Susie works out and compares the volume of each of two cuboids by correctly calculating the number of cubes in one layer, and adding each layer to get the total. She understands that the structure of the cuboid includes some unseen cubes in the layered arrays.

Problem: Cuboids

The teacher shows the student two cuboids and asks:

Which cuboid has the greater volume or takes up more space?



Student Response

Susie: A.

Teacher: How did you work that out?

Susie: There are 12 cubes in this layer (pointing to the top layer). And there are three layers, so that's 12 + 12 + 12, which is 36.

Teacher: Could you have counted them all?

Susie: No, because some are in the middle that you can't see.