

Unit 14: Weight, volume and temperature

Comparing mass

→ pages 87–89

1. lighter, heavier, heavier
2. square > triangle, triangle > star (or triangle > star, square > triangle)
3. a) missing numbers from left to right: 2, $\frac{1}{2}$, 5
b) triangular prism, sphere
4. Children should have numbered the items from left to right: 2, 1, 3.

Reflect

The statements mean:

The tin is heavier than the bag (or the bag is lighter than the tin).

The box is lighter than the bag (or the bag is heavier than the box).

This means that the tin is heavier than the box (or the box is lighter than the tin).

Measuring mass in grams (1)

→ pages 90–92

1. 15, 40
2. Children should have found three of the following five combinations:
25 g + 25 g
25 g + 10 g + 10 g + 5 g
25 g + 10 g + 5 g + 5 g + 5 g
10 g + 10 g + 10 g + 10 g + 5 g + 5 g
10 g + 10 g + 10 g + 5 g + 5 g + 5 g + 5 g
3. a) 40, 55. The pear has a mass of 32 g.
b) Children should have drawn the needle pointing to 95 g.
4. a) The mass of 10 cubes should be double the mass of 5 cubes.
b) The actual measurement of 15 cubes should be three times the mass of 5 cubes.

Reflect

Children could have explained the methods in different ways, e.g.

Rav needs to place the cheese on the scales and read off the measurement the arrow points to.

Alia needs to estimate how much cheese will have a mass of 30 g, cutting off her estimate. She needs to weigh the piece she has cut off and then add more to or remove pieces from this until the scales show 30 g.

Measuring mass in grams (2)

→ pages 93–95

1. Missing numbers:
a) clockwise round the scale: 700 g, 800 g, 900 g
b) from left to right along the scale: 0 g, 500 g, 1000 g (or 1 kg)
2. 100 g, 400 g, 1000 g (or 1 kg)
3. a) 100, 300, 700
b) Children should have drawn needles pointing at the following masses: 400g, 600 g, 0 g (1000 g)
4. 200, 250. Bag A is heavier.

Reflect

Children could have explained their reasoning in different ways, e.g.

The black-spotted guinea pig weights just over 600 g. The golden guinea pig weights just under 600 g. This means that the black-spotted guinea pig is heavier than the golden guinea pig but they both have a mass of 600 g when given to the nearest 100 g.

Measuring mass in kilograms

→ pages 96–98

1. a) 3 kg, 15 kg, 30 kg
b) hedgehog < dog, dog > badger, fox < dog
2. Children should have drawn arrows pointing to:
a) 8 kg, 12, kg, 20 kg
b) 28 kg, 32 kg, 20 kg
3. Children should have circled:
2 kg, 20 g, 200 g
4. From lightest to heaviest: B, C, A

Reflect

Children could have chosen many different objects to complete the sentences, e.g.

A pen and a ruler each have a mass of less than 1 kg.

A large cake and a litre of orange juice each have a mass of approximately 1 kg.

A small dog has a mass of approximately 10 kg.

Comparing volume

→ pages 99–101

- more, more, less
- B, A, C
- 2, 10, 5
- Children should have matched:
A (half filled) < 10 cups
B (filled) = 10 cups
C (half filled) > 10 cups
D (three-quarters filled) > 10 cups
- There are 11 spoonfuls of rice left in the packet.

Reflect

Children could have suggested different methods, e.g.

You could compare the weights of each container of rice using scales.

You could pour rice from one container into another, having emptied the second container. If the rice from the first container will not all fit then the first container holds more rice. If the rice fits with space left over then the second container holds more rice. You will need to test each container against other containers until you are sure of the order.

Measuring volume in millilitres (I)

→ pages 102–104

- 50 ml
 - 70 ml
 - 10 ml
 - 5 ml
- Children should draw the level of water:
 - 20 ml: 2nd line from bottom
 - 90 ml: 2nd line from top
 - 20 ml: 20 ml mark
 - 90 ml: 90 ml mark

- $20 \div 5 = 4$ teaspoons
 - $40 \div 5 = 8$ teaspoons
- 40
 - Children should have drawn a mark to show 30 ml (3rd line from bottom)
- 40, 50, 70

Reflect

Children could have suggested different methods, e.g.

Fill up a teaspoon and put the liquid in a container. Do this 4 times altogether and you will have 20 ml because each teaspoon holds 5 ml.

Pour liquid into a measuring jug until it reaches the 20 ml mark.

Measuring volume in millilitres (2)

→ pages 105–107

- Missing numbers from top to bottom
 - 1000 ml (or 1 litre), 900 ml, 800 ml
 - 800 ml, 400 ml, 200 ml
- 400
 - 700
 - 300
- D
 - B, C (either way round); some children may also write D or E, as with these jugs Kasim would have enough liquid and there would be some left over.
- 700 ml is 500 ml and 200 ml added together, so Jack could fill both bottles and then he will have 700 ml altogether.
 - The simplest solution is that Kat could fill the 200 ml bottle and pour it into the jug four times.

Some children may also work out that Kat could start by filling the 500 ml bottle, then use it to fill the 200 ml bottle. 500 subtract 200 is 300, so there would be 300 ml left in the big bottle, which Kat would then pour into the jug. Kat would then refill the 500 ml bottle and empty this into the jug. 300 add 500 is 800, so this gives her the 800 ml she needs.

Reflect

Children should have matched the bottle to 250 ml, the cup to 110 ml, and the bucket to 700 ml.

Children should have used their previous experience of these objects and their relative capacities to support their decisions, e.g.

If you pour the liquid from a bottle into a cup, you can usually fill up a cup and still have some liquid left. So, a bottle is likely to have a larger capacity than a cup.

It would take several bottles to fill a bucket, a bucket is likely to have a larger capacity than a bottle.

Measuring volume in litres

→ pages 108–110

- 8, 15, 29
- B: $40 - 10 = 30$ l
C: $25 - 10 = 15$ l
D: $30 - 10 = 20$ l
 - A, C, 3
- Children should have circled: 5 l, 250 ml, 100 l
- 7 subtract 4 is 3, so Ollie could fill the 7 l bucket and then pour water into the 4 l bucket until it is full. This would leave him with 3 l in the big bucket.
 - Ollie could fill the 4 l bucket and pour this into the 7 l bucket. If he fills the 4 l bucket again and pours water into the 7 l bucket, he will only be able to pour in 3 l until it is full because 4 l and 3 l make 7 l. So, he will have 1 l left in the small bucket.

Reflect

Children could have written many different things, e.g.

I have learned that 1000 ml is the same as 1 litre.

I have learned how to read measuring jugs.

I have learned how to estimate the capacity of containers.

Measuring temperature using a thermometer

→ pages 111–113

- 25 °C
 - 19 °C
 - 20 °C
 - 23 °C
- Warmest to Coolest: 11 °C, 8 °C, 4 °C, 2 °C or B, A, C, D

- Check the accuracy of children's drawings, which should show the following temperatures:

Paris 23 °C, Warsaw 25 °C, London 14 °C, Madrid 28 °C, Lisbon 30 °C, Rome 29 °C

- Madrid is 5 degrees warmer than Paris.
Warsaw is 5 degrees cooler than Lisbon.
Lisbon is 2 degrees warmer than Madrid, or Warsaw is 2 degrees warmer than Paris.
- Children could have written different answers, e.g.
London is 9 degrees cooler than Paris.
Lisbon is 1 degree warmer than Rome.

Reflect

Children should have estimated any reasonable spring or summer temperature, e.g.

I estimate that the temperature is 25 °C because the sun is shining so it looks like it is a hot day.

I estimate that the temperature is 20 °C because I think it is spring because of the flowers and it is sunny so it is quite a warm spring day.

Reading thermometers

→ pages 114–116

- Children should have drawn lines up to:
 - the top mark
 - the 5th mark from the bottom
 - the 3rd mark from the bottom
- Children should have ticked the middle thermometer.
- Children should have ticked:
 - 2nd thermometer
 - 1st thermometer
 - 1st thermometer
 - 1st thermometer
- Children should have matched:

Beach → 30 °C
Fridge → 4 °C
Pan → 90 °C
Autumn day → 10 °C

Reflect

Children could have explained how they read the scales on a thermometer in different ways. E.g.

I start by working out the value of each space between the marks. I work out whether each space is worth 1 degree, 2 degrees, 5 degrees, 10 degrees or 20 degrees by counting up in equal steps (of 1, 2, 5, 10 or 20) from zero along the marks and seeing which count matches the next given temperature. Once I know what each space is worth I can use this and the marked temperatures to work out what temperature the thermometer is showing.



End of unit check

→ pages 117–118

My journal

Children could have completed the statements in more than one way, e.g.

First I work out the mass of B which is $10 + 10 - 5$, or 15 kg.

Then I notice that 3 lots of A are the same as B so A is $15 \div 3$, or 5 kg.

Next I notice that 5 lots of A equal B + C, so C must be $25 - 15$, or 10 kg.

Power puzzle

Children should have noted that a jug containing 0 ml of water weighs the same as the jug, a jug containing 100 ml of water weighs 100 g more than the mass of the jug, a jug containing 200 ml weighs 200 g more and so on. This should help them to realise that 1 ml of water weighs 1 g.