Answers - Metric and imperial units, perimeter, area and volume

Year: Year 5

Answer to Question 1

a. Bigger to smaller, multiply: 3.5 × 1,000 = **3,500 m**.
b. Smaller to bigger, divide: 450 ÷ 100 = **4.5 m**.
c. Multiply: 2.4 × 100 = **240 cm**.
d. Divide: 65 ÷ 10 = **6.5 cm**.
e. 3,200 ÷ 1,000 = **3.2 km**.

Answer to Question 2

a. There are 1,000 g in a kilogram, so divide by 1,000: 4,500 ÷ 1,000 = **4.5 kg**.
b. There are 1,000 ml in a litre, so multiply by 1,000: 2.4 × 1,000 = **2,400 ml**.
c. Millilitres to litres: divide by 1,000. 750 ÷ 1,000 = **0.75 l** (three quarters of a litre).
d. Kilograms to grams: multiply by 1,000. 0.35 × 1,000 = **350 g**.
e. 1.5 × 1,000 = **1,500 g**, a kilogram and a half.

Answer to Question 3

a. 10 × 2.5 = **25 cm**.
b. 3 × 30 = **90 cm**.
c. 40 ÷ 8 = 5, and 5 × 5 = **25 miles**.
d. 5 × 2.2 = **11 lb**.
e. 2 × 570 = **1,140 ml**.

Answer to Question 4

a. 2 × (9 + 4) = 2 × 13 = **26 cm**.
b. 4 × 7 = **28 cm**.
c. 2 × (15 + 6) = 2 × 21 = **42 m**.
d. Half of the perimeter is 15 cm, which is length + width. Width = 15 − 9 = **6 cm**.

Answer to Question 5

a. The area of a rectangle is length × width: 12 × 7 = **84 cm²**. It is the number of 1

cm squares that would cover it.
b. 15 × 9 = 135 (10 × 9 = 90 and 5 × 9 = 45). The area is **135 m²**.
c. A square is a rectangle with equal sides: 8 × 8 = **64 cm²**.
d. Work backwards: length × width = 56, so width = 56 ÷ 8 = **7 cm**. Check: 8 × 7 = 56.

Answer to Question 6

a. Bottom layer: 4 × 3 = 12. Two layers: 12 × 2 = **24 cm³**.
b. Bottom layer: 5 × 2 = 10. Two layers: **20 cm³**.
c. Bottom layer: 3 × 3 = 9. Three layers: 9 × 3 = **27 cm³**.
d. 12 × 3 = **36 cm³**.

Answer to Question 7

a. 2 × (60 + 40) = 2 × 100 = **200 m**.
b. 1 km = 1,000 m. 1,000 ÷ 200 = **5 laps**.
c. 3 × 200 = **600 m** = **0.6 km**.
d. 200 × 8 = **£1,600**.

Answer to Question 8

a. Area = length × width = 5 × 4 = **20 m²**.
b. Each square metre costs £12, so 20 × 12 = **£240**.
c. The strip goes all the way round, so we need the perimeter: 5 + 4 + 5 + 4 = 2 × (5 + 4) = **18 m**.
d. Each length is 2 m: 18 ÷ 2 = **9 lengths**, with nothing left over.

Answer to Question 9

a. 1 pint ≈ **570 ml**.
b. 2.2 lb ≈ **1 kg** and 2 kg ≈ 2 × 2.2 = **4.4 lb**.
c. 6 × 2.5 = **15 cm**.
d. 2 × 570 = **1,140 ml**, which is **more than 1 litre** (1,000 ml) by 140 ml.

Answer to Question 10

a. 12 × 8 = **96 m²**.
b. 4 × 3 = **12 m²**.
c. 96 − 12 = **84 m²**.
d. 84 ÷ 20 = 4.2, so he needs **5 bags** (4 bags are not enough).

Answer to Question 11

a. The bottom layer is 10 cubes along and 5 cubes across: 10 × 5 = **50 cubes**.
b. The tank is 4 cm deep, so there are 4 layers of 50 cubes: 50 × 4 = **200 cm³**.
c. Each 1 cm³ holds 1 ml, so the tank holds **200 ml**.
d. There are 1,000 ml in a litre: 200 ÷ 1,000 = **0.2 litres** (one fifth of a litre).

Answer to Question 12

a. 64 ÷ 8 = 8, and 8 × 5 = **40 miles**.
b. The satnav gives about 40 miles, which is the same as the sign. **Yes**, they agree.
c. 64 ÷ 12 = 5.33, so about **5 litres** (a little more).
d. 5 × £1.50 = **£7.50** (about £8 with the extra).

Answer to Question 13

a. 2 × (25 + 10) = **70 m**.
b. 25 × 10 = **250 m²**.
c. 4 × 25 = **100 m**. 1,000 − 100 = **900 m** short.
d. 70 × 6 = **£420**.

Answer to Question 14

a. 2 × 1,000 = **2,000 g**.
b. 750 g = 0.75 kg. 2 + 0.75 + 1.5 = **4.25 kg**.
c. 1.5 × 2 = **£3**.
d. 5 − 4.25 = 0.75 kg = **750 g**.

Answer to Question 15

a. 6 × 3 = **18 m²**.
b. 2 × 1 = **2 m²**.
c. 18 − 2 = **16 m²**.
d. 16 ÷ 8 = **2 tins**.
e. 2 × £14 = **£28**.

Answer to Question 16

a. 10 × 8 = 80 and 4 × 3 = 12, so 80 − 12 = **68 m²**.
b. 10 + 3 + 4 + 5 + 6 + 8 = **36 m** (same as the rectangle 2 × (10 + 8)).

c. 36 × 9 = **£324**.
d. **68 plants**.
e. 68 ÷ 2 = **34 m²**.

Answer to Question 17

a. 6 × 4 = **24 cubes**.
b. 24 × 3 = **72 cubes**.
c. 72 × 2 = 144 g = **0.144 kg**.
d. 100 − 72 = **28 cubes**.
e. Second box: 5 × 5 × 4 = 100 cubes. 100 − 72 = 28. The **second box holds 28 more cubes**.

Answer to Question 18

a. 2 × (8 + 4) = 2 × 12 = **24 m**.
b. 11 × 1 = **11 m²**; 10 × 2 = **20 m²**; 9 × 3 = **27 m²**; 8 × 4 = **32 m²**; 6 × 6 = **36 m²**.
c. The **6 m by 6 m square** has the greatest area, 36 m².
d. The **11 m by 1 m** pen has the smallest area, 11 m².
e. The 11 m pen is the longest but has the smallest area (11 m²), while the 6 m pen is shorter but has the biggest area (36 m²). So he is **wrong**.

Answer to Question 19

a. 3.5 l = **3,500 ml**; 1,250 ml; 0.75 l = **750 ml**.
b. 3,500 + 1,250 + 750 = **5,500 ml** = **5.5 litres**.
c. 5,500 ÷ 250 = **22 cups**.
d. 30 × 250 = 7,500 ml. 7,500 − 5,500 = 2,000 ml = **2 litres** more.
e. 2 pints ≈ 1,140 ml, which is much less than 5,500 ml. **No**, she is not right.

Answer to Question 20

a. 2 × 1,000 = **2,000 cm³**.
b. 20 × 10 = **200 cm²**.
c. Each 1 cm layer of water has a volume of 200 cm³. 2,000 ÷ 200 = **10 cm deep**.
d. The rise of 1 cm over the base is a layer of 200 cm³. So the stone has a volume of **200 cm³**.