Reasoning and Problem Solving
Step 3: Calculate with Metric Measures

National Curriculum Objectives:

Mathematics Year 6: (6M5) Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
Mathematics Year 6: (6M9) Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

Differentiation:

Questions 1, 4 and 7 (Problem Solving)
Developing Solve a word problem using numbers with up to 1 decimal place.
Expected Solve a word problem using numbers with up to 3 decimal places, sometimes including 1 zero as a place holder, and including halves and quarters as fractions.
Greater Depth Solve a word problem using numbers with up to 3 decimal places, using a number of zeros as place holders, and including any fractions and percentages.

Questions 2, 5 and 8 (Problem Solving)
Developing Make a statement true by arranging digit cards using numbers with up to 1 decimal place. All digit cards required.
Expected Make a statement true by arranging digit cards using numbers with up to 3 decimal places, sometimes including 1 zero as a place holder. All digit cards required.
Greater Depth Make a statement true by arranging digit cards using numbers with up to 3 decimal places, using a number of zeros as place holders. Not all digit cards required.

Questions 3, 6 and 9 (Reasoning)
Developing Explain if a statement is correct using numbers with up to 1 decimal place.
Expected Explain if a statement is correct using numbers with up to 3 decimal places, sometimes including 1 zero as a place holder, and including halves and quarters as fractions.
Greater Depth Explain if a statement is correct using numbers with up to 3 decimal places, using a number of zeros as place holders, and including any fractions and percentages.

More Year 6 Converting Units resources.

Did you like this resource? Don't forget to review it on our website.

Calculate with Metric Measures

1a. A sign in the petrol station reads:

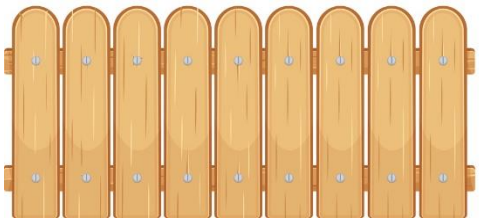
Petrol: £1 per 1.8L

Diesel: £1 for 1,650ml

How many more ml of petrol do you get per £1 than diesel?

D PS

1b. A plank of wood is 30cm in width. The whole fence is 6m long.



How many planks are there in the fence?

D PS

2a. Arrange the digit cards to make the following statement true.

[?] [8] [?] cm > [0] [.] [?] m

[8] [4] [9]

D PS

2b. Arrange the digit cards to make the following statement true.

[0] [.] [?] kg < [?] [6] [?] g

[8] [0] [7]

D PS

3a. A lift can hold up to 500kg. An average person weighs 70kg. Marcus says,

> Eight people can get in the lift together.

Is he correct? Explain your answer.

D R

3b. Twelve 1L bottles of water are delivered. It takes 6,250ml to fill the tank. Libby says,

> I will have 6L of water left.

Is she correct? Explain your answer.

D R

Calculate with Metric Measures

4a. A fish tank needs 3.75L of water to fill it. The tank has to be filled using a jug that holds $\frac{3}{4}$ of a litre.

How many jugs will it take to fill the tank?

E PS

Calculate with Metric Measures

4b. There is a gap in the fence that is 275cm wide. This plank of wood is $\frac{1}{4}$ m wide.

How many planks of wood will fill the gap?

E PS

5a. Arrange the digit cards to make the following statement true.

0	.	?	kg	>	?	0	?	g

7	0	5

E PS

5b. Arrange the digit cards to make the following statement true.

?	.	5	L	>	?	5	?	ml

5	4	7

E PS

6a. A piece a ribbon wrapped around a jar measures 10cm. Diana buys a length of ribbon and says,

This length is 2.75m and will be long enough to wrap 30 jars.

Is she correct? Explain your answer.

E R

6b. One battery weighs 12g. Filipo weighs a bag of batteries and says,

A bag of batteries weighs 0.204kg. I must have 18 batteries.

Is he correct? Explain your answer.

E R

Calculate with Metric Measures

7a. Mum bought the wrong curtains. They are 208cm long, which is $\frac{3}{5}$ of a metre too short.

How long should the curtains have been in metres?

GD

PS

Calculate with Metric Measures

7b. In January, a baby dragon weighed 3.5kg. By the end of February, it had gained 35% of that weight.

How heavy (in grams) was the baby dragon by the end of February?

GD

PS

8a. Jayne has 3.85L of lemonade. Dom has 40% more than her. Show his measurement compared to Jayne's using the digit cards.

5 ? ? 0 ml > ? . 8 ? L

3 9 5

GD

PS

8b. The length of the football pitch is approximately 120m and is 5 times the length of a cricket pitch. Show the two lengths using the digit cards.

? . ? 2 km > ? . 0 ? ? km

0 1 2 4

GD

PS

9a. Each child brings in a tin of food for the Harvest festival. A tin weighs 405g. There are 30 children in the class. Jacob says,

$\frac{2}{3}$ of the tins will weigh 8.1kg.

Is he correct? Explain your answer.

GD

R

9b. Genevieve has 6 litres of milk and uses 2,250ml. She says,

We will still have $\frac{5}{8}$ of the milk for our breakfast tomorrow.

Is she correct? Explain your answer.

GD

R

Reasoning and Problem Solving
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Developing

1a. 150ml

2a. 984cm > 0.8m; 889cm > 0.4m; 988cm > 0.4m

3a. Marcus is incorrect, because 8 x 70kg is greater than 500kg (560kg).

Expected

4a. 5 jugs

5a. 0.7kg > 500g; 0.7kg > 005g; 0.5kg > 007g

6a. Diana is incorrect because the length needed for 30 jars is 30 x 10cm = 300cm or 3m

Greater Depth

7a. 2.68m

8a. 5,390ml > 3.85L

9a. Yes, Jacob is correct because 30 x 405g = 12,150g. Two thirds of this is 8,100g 8.1kg.

Reasoning and Problem Solving
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Developing

1b. 20

2b. 0.7kg < 860g

3b. Libby is incorrect, because 12 litres – 6,250ml is less than 6 litres (5.75L).

Expected

4b. 11 planks

5b. 4.5L > 750 ml; 4.5L > 557ml; 5.5L > 457ml; 7.5L > 455ml; 7.5L > 554ml

6b. Filipo is incorrect because the weight of 18 batteries is 18 x 12g = 216g (0.216kg). He has 17 batteries.

Greater Depth

7b. 4,725g

8b. 0.12km > 0.024km

9b. Yes, Genevieve is correct because there will be 3,750ml left which is five eights of 6 litres.