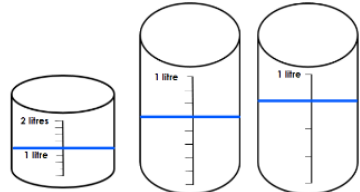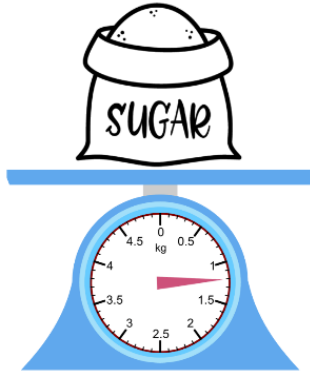# Year 4 maths – Summer 2 Week 1 beginning: 1.6.20

Theme	Mass, Volume, and Length (Lesson 1 of 11) Measuring Mass	Mass, Volume, and Length (Lesson 2 of 11) Measuring Mass	Mass, Volume, and Length (Lesson 3 of 11) Converting Units of Mass	Mass, Volume, and Length (Lesson 4 of 11) Measuring Volume	Mass, Volume, and Length (Lesson 5 of 11) Measuring Volume
Factual fluency (to aid fluency)	Practise reading scales on a thermometer.	Compare these units of mass. Which one is most appropriate?	Practise your rounding skills here.	Compare these units of volume. Which one is the most appropriate?	Remind yourself how to convert between decimals and fractions.
Problem/ activity of the day Remember, just like in class, you can still show the depth of your knowledge LINK	(Lesson 1 resources below) **MAKING LINKS:** We learnt about the difference between mass and weight in Year 3. **THINK: (support below)** Can you help me with this problem? The mass of a bag of sugar is 1 kg and 200g. How heavy is it in kg? How can we write the mass of the sugar in kg only? Now estimate the mass of the bag of sugar to the nearest kg. **SEE: (model below)** Video here **DO:** Answer the questions below.	(Lesson 2 resources below) **MAKING LINKS:** Yesterday, we learnt how to measure mass in kg and then estimated the mass of items to the nearest kg. **THINK: (support below)** Pick 2 bags of popcorn that weigh the same. Julie picks bags A and B. Dev picks bags A and C. Ollie picks bags B and C. Who is correct? **SEE: (model below)** Remember 1kg = 1000g Video here **DO:** Answer the questions below.	(Lesson 3 resources below) **MAKING LINKS:** So far, we have learnt how to measure mass in kg. Today we are going to learn how to convert kg to g. **THINK: (support below)** Jasmine wants to make burgers at a BBQ. She needs about 4.5kg of mince to make 20 burgers. Does she have enough mince to make her burgers? **SEE: (model below)** **DO:** Answer the questions below.	(Lesson 4 resources below) **MAKING LINKS:** We learnt how to measure volume and capacity in Year 3. **THINK: (support below)** Which container has the greatest amount of water? Which container has the least amount of water? **SEE: (model below)** **DO:** Answer the questions below	Lesson 5 resources below **MAKING LINKS:** Yesterday, we learnt how to measure the volume of liquid in a container in tenths. Today we are going to learn how to find the volume of a liquid in a container in hundredths. **THINK: (support below)** My friend says that the volume of bubble bath in this container is 0.4L. I'm not sure. I think the volume of bubble bath in this container is 0.04L. Who is correct? How do you know? **SEE: (model below)** **DO:** Answer the questions below
Methods, tips, clues & checks	Day 1 resources and answers (below)	Day 2 resources and answers (below)	Day 3 resources and answers (below)	Day 4 resources and answers (below)	Day 5 resources and answers (below)

See below for resources to support you to THINK-SEE-DO

Quality First Education Trust

THINK:

The mass of a bag of sugar is 1kg and 200g. How heavy is it in kg?
How can we write the mass of the sugar in kg only?

Now estimate the mass of the sugar to the nearest kg.

DO:

1. For each of these items, write the mass in kg.

a. A potato weighs about 900g.
b. A bag of carrots weighs about 1kg and 700g.
c. A fish weighs about 2kg and 200g.
d. A pineapple weighs about 800g.
e. A bag of flour weighs about 3kg and 600g.

2. For each of the items above, estimate the mass of each item to the nearest kg. Draw a number line for each one to prove you are correct.
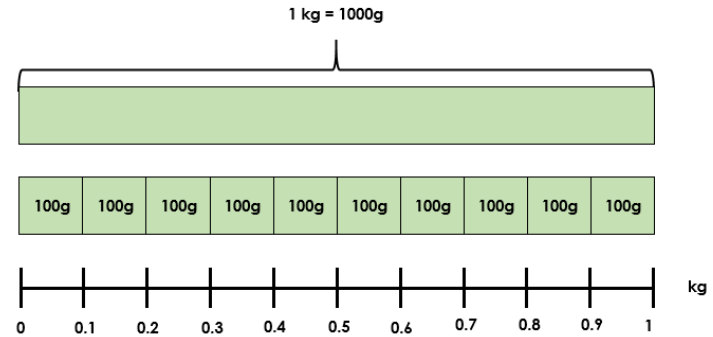
Deepening:
What is mass?
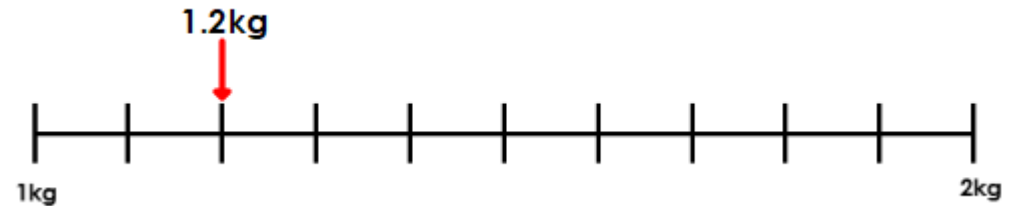Can you explain using the example of a ping pong (table tennis) ball which is hollow and a golf ball which is solid?

SEE: VIDEO HERE

1. What is the mass of the bag of sugar?

1 kg = 1000g

The mass of the bag of sugar is about 1.2kg because I have one whole kg and 2 tenths of a kg.

2. Estimate the mass of the sugar to the nearest kg.
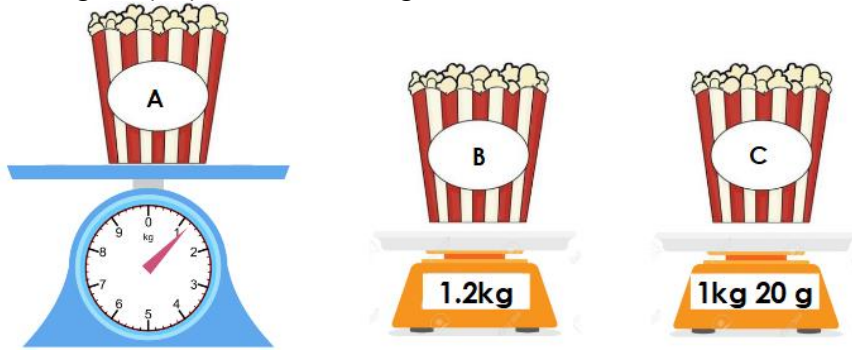
1.2kg

1kg   2kg

1.2 kg is closer to 1kg than 2kg.

1.2kg is therefore approximately equal to 1kg (to the nearest kg).

We write our estimate like this: **1.2kg ≈ 1kg** (to the nearest kg).

Quality First Education Trust

THINK:

Pick 2 bags of popcorn that weigh the same:

A

B

C

1.2kg   1kg 20 g

Julie picks bags A and B.
Dev picks bags A and C.
Ollie picks bags B and C.

Who is correct?

DO:

1. Find the mass of each of these items in kg:

a. A bag of pears weighs about 1kg 500g
b. A bag of flour weighs about 1kg 100g
c. A fish weighs about 2kg 800g
d. A chocolate cake weighs about 3kg 400g
e. A new born baby weighs about 4kg 300g.

2. Find the mass of each of these items in kg. Which item has the same mass as the parcel?

A parcel weighs about 2kg 800g
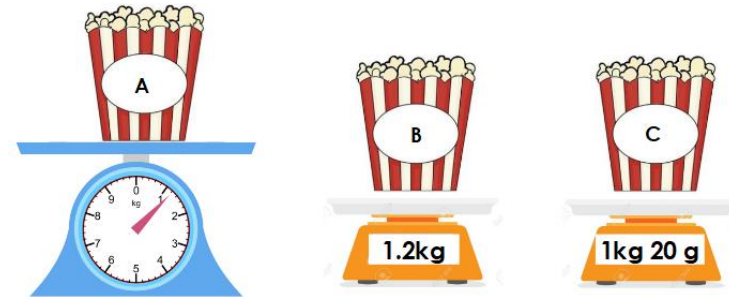A pumpkin weighs about 2.8kg
A watermelon weighs about 2kg 80g.

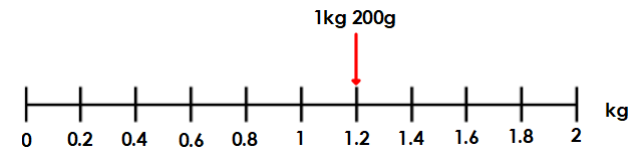**3. Write an explanation to show how you solved Question 2.**

Deepening:
Which is greater: 91kg or 910g?
Explain how you know.

SEE: VIDEO HERE

Remember 1kg is equal to 1000g

A

B

C

1.2kg   1kg 20 g

1 kg = 1000g

| 200g | 200g | 200g | 200g | 200g |

$\frac{1}{5} = \frac{2}{10}$ ➔ Two tenths = **0.2**

1kg 200g

0   0.2   0.4   0.6   0.8   1   1.2   1.4   1.6   1.8   2   kg

The mass of bag A is 1kg 200g or 1.2kg and the mass of bag B is 1.2kg.

Therefore, Julie picks 2 bags of popcorn which weigh the same.

Quality First Education Trust

THINK:

Jasmine wants to make burgers at a BBQ. She needs about 4.5kg of mince to make 20 burgers. Does she have enough mince to make her burgers?

DO:

1. Find the mass of each of these items in g:

a. A watermelon weighs 3kg.
b. A bag of apples weighs 1kg 500g
c. A chocolate cake weighs 2kg 850g
d. A bag of potatoes weighs 4kg 300kg
e. A pair of pumpkins weigh 7kg 420g

2. Jasmine receives 2 parcels for her birthday.

Parcel A   Parcel B

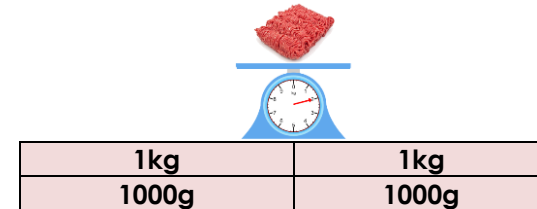**Parcel A weighs 1kg 580g and Parcel B weighs 1058g. Which parcel is heavier?**

Deepening:

Write your own word problems for someone in your family to solve. Remember – you want them to have a go at converting kg to g.

SEE:

To solve this problem, Jasmine needs to convert each of the measurements into grams (g).

Look at the first scale. The mass of the mince is about 2kg:

1kg	1kg
1000g	1000g

2kg = 2000g because 1 kg = 1000g.

Look at the second scale. The mass of the mince is about 450g. Jasmine doesn't need to convert this measurement because it is already written in grams.

Look at the packet of mince. The mass of the mince is about 1 kg 200g. I know that 1 kg is the same as 1000g so I can say that the mass of the packet of mince is 1000g + 200g = 1200g.

Now Jasmine has converted each of the measurements into grams, she can add them all up to see if she has enough mince to make her burgers.

2000g + 450g + 1200g = 3650g.

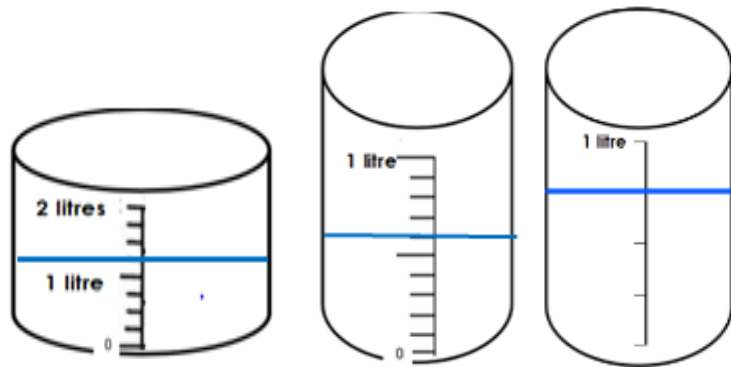**Jasmine needs about 4.5kg of mince.**
I know that 1000g = 1kg. Jasmine has 3000g of mince so she has 3kg plus another 650g.
Therefore, Jasmine does not have enough mince to make 20 burgers.

Quality First Education Trust

THINK:

Which container has the greatest amount of water?
Which container has the least amount of water?

DO:

Use the sheet below to record your answers. If you can't print it, draw each container and use a ruler to draw on the scale – count the number of intervals (smaller lines) on the scale before drawing them on your own scale!

1. Water is poured into different measuring cylinders. On each cylinder, show the volume of water by drawing the line on the correct increment on the scale.

2. Billy buys bottles of banana and strawberry smoothie. Each bottle contains 0.25L of liquid. How many bottles should Billy buy to fill container A? How many bottles should Billy buy to fill container B?
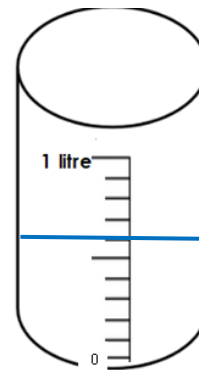
Deepening:

Put these amounts in order starting with the largest:
Half of 3 litres
Quarter of 2 litres
300ml
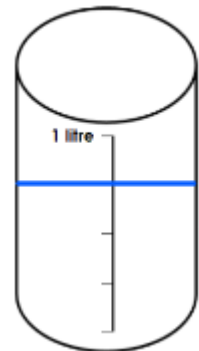
Explain your thinking. How do you know you are correct?

SEE:

Volume is the amount of 3D space an object occupies or takes up.

1 litre (l)									
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

The volume of the water in this container is less than 1L but more than half a L.

The volume of the water in this container is **0.6L**

1 litre (l)			
0.25	0.25	0.25	0.25

The volume of the water in this container is less than 1L but more than half a L. We know that 0.5 is the same as half and we can see that the volume is greater than half.

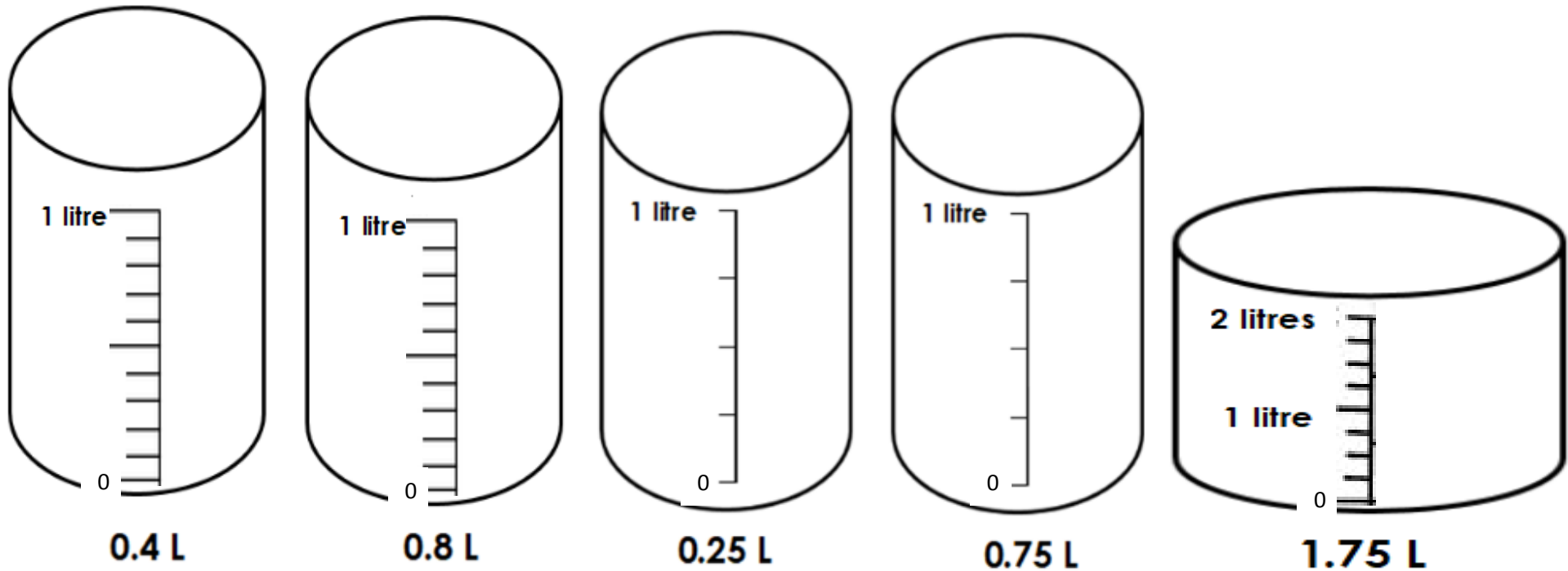The volume of the water in this container is **0.75L**

The volume of the water in this container is more than 1L but less than 2L. The scale on this container is increasing in increments of 0.25L.

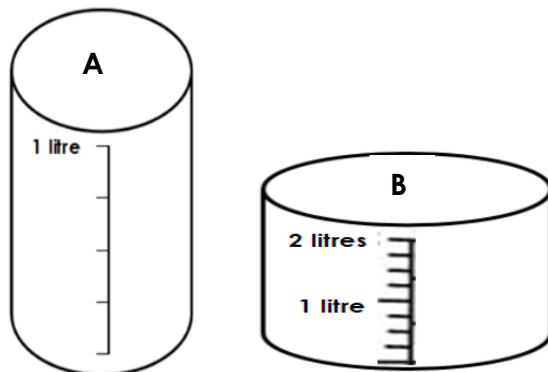The volume of the water in this container is **1.25L**

Top Tip – Look carefully at the scales! What are the scales increasing by?

Quality First Education Trust

1. Water is poured into different measuring cylinders. On each cylinder, show the volume of water by drawing a line on the correct increment on the scale.

1 litre	1 litre	1 litre	1 litre	2 litres
				1 litre
0	0	0	0	0
0.4 L	0.8 L	0.25 L	0.75 L	1.75 L

2. Billy buys bottles of banana and strawberry smoothie. Each bottle contains 0.25L of liquid. How many bottles should Billy buy to fill container A? How many bottles should Billy buy to fill container B?

A

1 litre

B

2 litres

1 litre

Quality First Education Trust

THINK:

My friend says that the volume of bubble bath in this container is 0.4 litres. I'm not sure. I think the volume of bubble bath in this container is 0.04 litres. Who is correct? How do you know?

Bubble Bath 40ml

DO:

Use the sheet below to record your answers. If you can't print it, have a go at drawing the different containers and use a ruler to draw on the scale – count the number of intervals (smaller lines) on the scale before drawing them on your own scale!

1. Find the volume of water in litres.

2. What is the volume of each liquid in litres?

Deepening:
You are given a tap and two containers – container A and container B.
Suppose container A holds 300ml when full and container B holds 1 litre. Explain how to measure exactly 100ml.
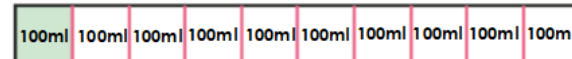
SEE:

This bar represents 1 litre.
1 litre is = 1000ml

1 litre = 1000ml

To find tenths of a litre, I need to divide this bar into ten parts. 1000ml ÷ 10 = 100ml.
This bar represents tenths of a litre. Each tenth is worth 100ml.

| 100ml | 100ml | 100ml | 100ml | 100ml | 100ml | 100ml | 100ml | 100ml | 100ml |

The volume of bubble bath in the container is 40ml. I know that 40ml is less than 100ml. I know that 40ml will fit into one of the tenths so I need to divide my bar again into hundredths.
100ml ÷ 10 = 10ml.
This bar represents hundredths of a litre. Each hundredth is worth 10ml.

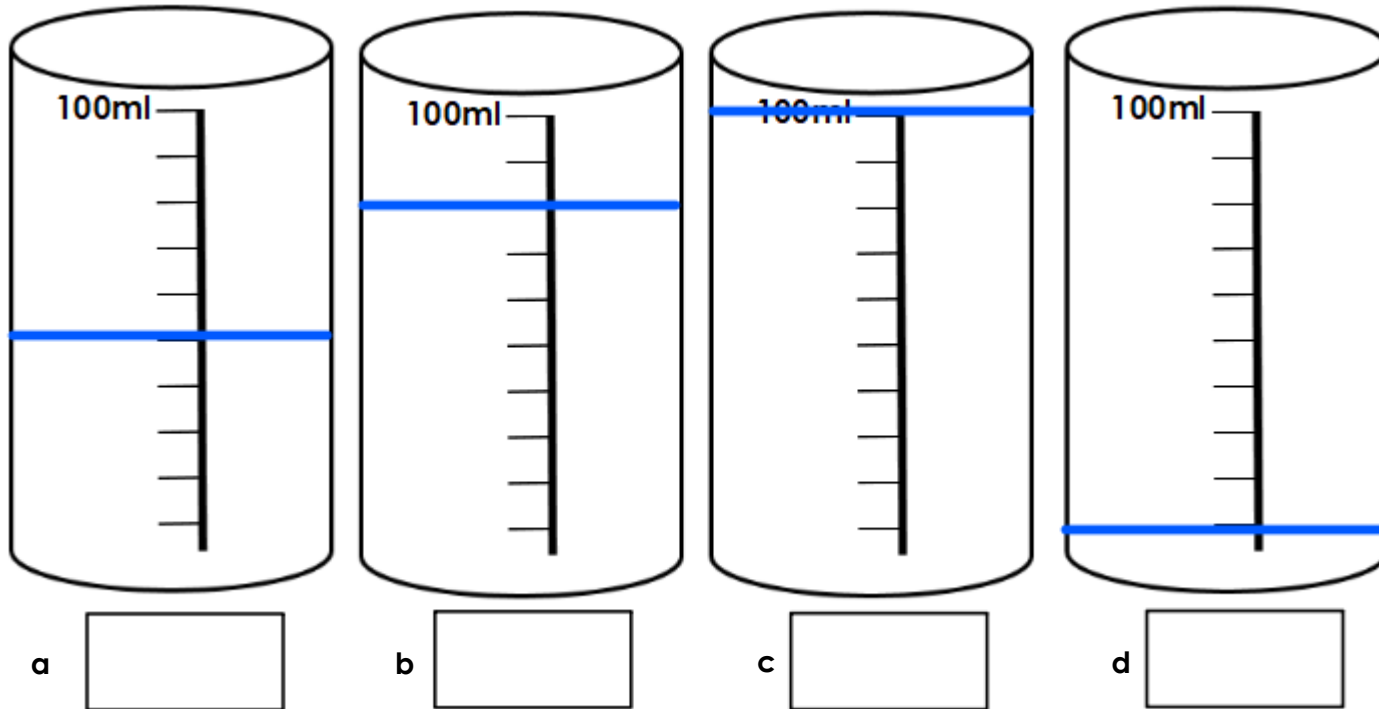I can use my knowledge of decimals now to help me solve the problem.
I know that one hundredth = 0.01
I need to count 4 hundredths because I have 40ml of bubble bath. 40ml is the same as 4 hundredths of a litre so I can say that 40ml = 0.04 litres.
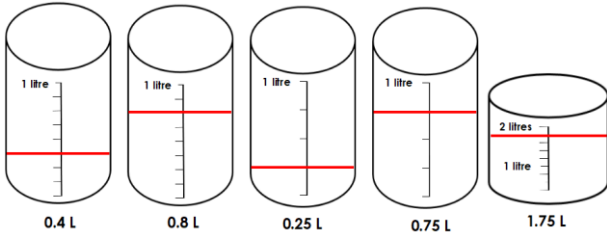
That means that I am correct!

Quality First Education Trust

1. Find the volume of water in litres.

100ml	100ml	100ml	100ml

a   b   c   d

2. What is the volume of each liquid in litres?
a. The volume of a bottle of orange juice is 1300ml.
b. The volume of a bottle of banana smoothie is 850ml.
c. The volume of a bottle of lemonade is 2250ml.
d. The volume of a bucket of seawater is 3450ml.
e. The volume of a bottle of washing up liquid is 820ml.

Quality First Education Trust

ANSWERS:

Day 1

Question 1
a. 0.9kg
b. 1.7kg
c. 2.2kg
d. 0.8kg
e. 3.6kg

Question 2
a. 0.9kg ≈ 1kg
b. 1.7kg ≈ 2kg
c. 2.2kg ≈ 2kg
d. 3.6kg ≈ 4kg

Deepening:
Mass is the amount of matter (or substance) that makes up an object. The more matter something has, the more it will weigh. Think about a golf ball and a ping pong ball. Both are the same size, but a golf ball is solid and a ping pong ball is hollow. As the golf ball is solid, it contains more matter (or substance) than a ping pong ball and because it contains more matter, its mass is greater. A golf ball is heavier because it contains a greater amount of mass than a ping pong ball.

Day 2

Question 1
a. 1.5kg
b. 1.1kg
c. 2.8kg
d. 3.4kg
e. 4.3kg

Question 2
A parcel weighs 2kg 800g which is the same as 2.8kg.
A pumpkin weighs 2.8kg. The parcel and the pumpkin weigh the same amount.

Question 3
Share your explanations with your teacher.

Deepening:
91kg is greater than 910g.

We know 1kg is equal to 1000g so 91kg is equal to 91000g.

If we compare 91000g with 910g then 91000g is heavier so 91kg is heavier.

Day 3

Question 1
a. 3000g
b. 1500g
c. 2850g
d. 4300g
e. 7420g

Question 2
Parcel A weighs 1kg 580g.
I know that 1kg = 1000g.
1000g + 580g – 1580g.

Parcel B weighs 1058g.

1580g > 1058g

Parcel A is heavier.

Deepening:
Send your word problems to your teacher for checking.

Day 4

Question 1

Question 2
Billy needs to buy 4 bottles of smoothie to fit in container A

0.25 x 4 = I L

Billy needs to by 8 bottles of smoothie to fit in container B. I know this because container B can hold twice the volume of liquid that container A can hold. So if I need 4 bottles to fill a 1 litre container, I need to double the number of bottles I need to fill a 2 litre container.

Deepening:
Half of 3 litres = 1.5 litres or 1500ml
Quarter of 2 litres = 0.5 litres or 500ml
300 ml = 0.3 litres.

If I use the ml measurements, I can compare them and order them. I can see that 1500ml is greater than 500ml or 300ml so 1500ml is the greatest. 300ml is smaller than 500ml, so 500ml is the second greatest and 300ml is the smallest amount.

Day 5

Question 1
a. 0.05L
b. 0.08L
c. 0.1L
d. 0.01L

Question 2
a. 1.3L
b. 0.85L
c. 2.25L
d. 3.45L
e. 0.82L

Deepening:
100 = 1000 – 3 x 300.
So fill container B with 1000ml of liquid (1L = 1000ml)and use it to fill container A which holds 300ml of liquid 3 times (3 x 300ml = 900ml)

This would leave 100ml in container B.