Old Town Infant School and Nursery

Coastal Learning PARTNERSHIP

# MATHS MEDIUM TERM PLANNING

| Year 2 – Measure: Mass, Capacity & Temperature (Approximately 2 weeks) | |
|---|---|
| **Objectives from Progression Document** | **choose and use the appropriate standard unit to estimate mass (kg/g)**<br>**measure mass (kg/g) to the nearest appropriate unit, using scales**<br>**compare and order mass, and record the results using >, < and =**<br>**choose and use appropriate standard units to estimate and measure capacity (litres/ml) using measuring vessels**<br>**estimate and measure capacity (litres/ml), to the nearest appropriate unit, using measuring vessels**<br>**compare and order volume/capacity and record the results using >, < and =**<br>**estimate and measure temperature (°C), using thermometers** |
| **Previous Learning** | **Compare and describe mass and weight, e.g. heavy/light, lighter than**<br>**measure and begin to record mass/weight**<br>**solve practical problems for mass/weight**<br>**measure and begin to record capacity and volume**<br>**Compare and describe capacity and volume,** e.g. full/empty, more than, less than, half, half full, quarter<br>**solve practical problems for lengths and heights**<br>**solve practical problems for capacity and volume**<br>**compare and describe temperature e.g. hot/warm/cold, hotter/colder** |
| **Vocabulary** | grams, kilograms, millimetres, litres, temperature, degrees, full, half full, empty, capacity, volume, mass thermometer, scales, degrees Celsius, °C |
| **Key fact(s)** | To know that a kilogram (kg) is heavier than a gram (g)<br>To know that capacity is how much a container can hold<br>To know that volume describes how much a container is holding<br>To know that capacity can be measured in millilitres and litres<br>To know that litres are larger than millilitres<br>To know that temperature can be measured using a thermometer |
| **Number facts for fluency** | Revision of all multiplication and division facts for 1x; 2x; 5x; 10x |
| **DfE Ready to Progress Guidance Pages**<br>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897806/Maths_guidance_KS_1_and_2.pdf | **2MD–1** Multiplication as repeated addition, pages 69-71 |
| **NCETM Ready to Progress Exemplification**<br>https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/ | **2MD–1** Multiplication as repeated addition |
| **Problem Solving and Reasoning Skills Objectives** | check work for mistakes, including considering appropriate units |
| **Pre-assessment:** | Year 1 measure – compare, describe and measure using non-standard units |

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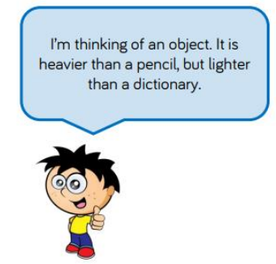
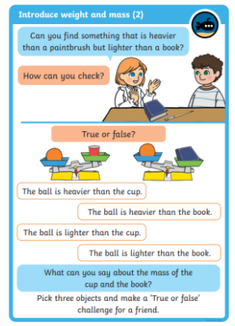
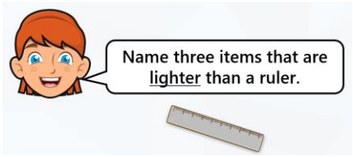
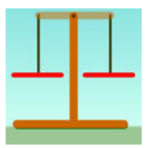
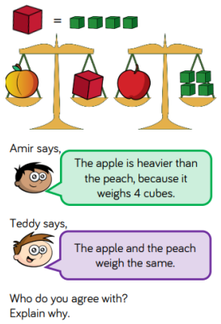
## Sequence of Learning

*Scheme of learning and teaching resources available within the spring term of White Rose*

| White Rose Small Steps | Learning Intention | Key Questions | Sentence Stems | Problem-solving links | Comments | Extension and Greater Depth Opportunities |
|---|---|---|---|---|---|---|
| Compare mass | To compare the mass of objects, using 'heavier' and 'lighter' | What does "heavier" mean?<br>What does "lighter" mean?<br>What does "< / > / =" mean?<br>How do you use a balance scale?<br>Which object is heavier/lighter? How do you know?<br>Which object has the greater/smaller mass? How do you know? | The ___ is heavier than the ___.<br>___ > ___<br>The ___ is lighter than the ___.<br>___ < ___ | Order, Order! (maths.org) Enables lots of discussion around relative lengths, times and masses. | Children may not be able to use balance scales accurately.<br>Children may need to revise the use of inequality symbols.<br>Children may think that the larger the object, the greater its mass must be. |  <br>What object could Jack be thinking of?<br>Prove it.<br>How many objects can you think of?<br>  |
| **Measure mass in grams (2MD 1)** | **To measure mass in grams using balance scales and circular scales** | What is mass?<br>What objects can you find the mass of?<br>What object do you think has a similar mass to 1g/ 10g/100g?<br>How do you find the mass of an object using balance scales?<br>How are circular scales different from balance scales?<br>How can you find the mass of an object if the arrow is not pointing to a number shown on the scales? | The arrow is pointing to ___.<br>The ___ has a mass of ___g.<br>The arrow is pointing between ___ and ___, so the ___ has a mass of about ___g. | | Children should only measure items up to 100g, as numbers above 100 are not covered in Year 2.<br>Balance scales may not be accurate or may not be used accurately, which could lead to confusion.<br>Children may not read circular scales accurately, particularly if the arrow is not pointing to a number. |  <br>  |
| **Measure mass in kilograms (2MD 1)** | **To measure mass in kilograms using balance scales and circular scales** | What is mass?<br>Which is greater, a kilogram or a gram?<br>What types of objects would you measure in kilograms?<br>What object do you think has a similar mass to 1kg/ 10kg?<br>How can you find the mass of an object using balance scales?<br>How can you find the mass of an object if the arrow is not pointing to a number shown on the scales? | The mass of ___ is ___kg.<br>The arrow is between ___kg and ___kg.<br>The mass of the object is about ___kg. | | Children may not understand the difference between kilograms and grams. | Have a look at the sets of four quantities below. Can you rank them in order from smallest to largest?<br><br>To help you decide, you may need to find extra information or carry out some experiments.<br><br>Can you convince us that your order is right?<br><br>  <br>**Mass**<br>Of a blown-up balloon<br>Of a bar of chocolate<br>Of a loaf of bread<br>Of your teacher |
| Four operations with mass | To solve problems involving mass | Do you need to add or subtract to solve the problem?<br>How can you write this as a number sentence?<br>How can you represent this using a bar model/ part-whole model?<br>Is there more than one way to solve the problem?<br>What do you need to do first? How do you know? | To find the total mass, I need to ___ the mass of ___ and ___.<br>To find the mass of ___, I need to ___ from the total mass.<br>First, I need to... Then, I need to... | | Children may select the incorrect operation to complete the calculation.<br>Children may use inefficient strategies to complete calculations.<br>Support may be needed to break down multi-step problems into smaller steps. | |
| Compare volume and capacity | To use the words full, empty, more and less to compare volume | What is volume/capacity?<br>What is the difference between volume and capacity?<br>Which container has the greater/smaller capacity? How do you know?<br>Which container is holding the greater/smaller volume?<br>Which symbol should you use <, > or =? How do you know?<br>How could you check to see which container is holding the greatest/smallest volume? | The volume of liquid in A is ___ than the volume of liquid in B.<br>The capacity of container A is ___ than the capacity of container B. | Compare the Cups (maths.org) Compare cups. Enable concept of capacity to be reinforced. | Children may need reminding of language associated with volume and capacity from earlier learning.<br>Children may not be able to identify/explain the difference between volume and capacity.<br>Children may think it is impossible to compare the capacities of two different-sized/shaped containers. |  <br>Who do you agree with?<br>Explain why.<br><br>  <br>How many cubes does the teddy bear weigh?<br>Explain how you know. |

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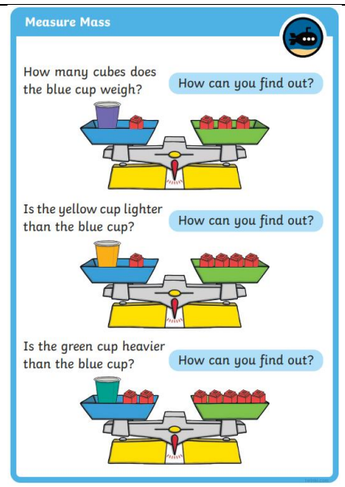
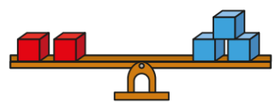
| | | | | | | |
|---|---|---|---|---|---|---|
| **Measure in millilitres (2MD 1)** | **To interpret the scales on containers to measure capacity and volume in millilitres** | What is capacity?<br>What is volume?<br>How can you measure the volume of water in this container?<br>How does the scale on the container help?<br>How can you accurately draw the volume on this container?<br>How could you find the capacity of this container?<br>What mistakes do you think people may make when reading this scale?<br>If the water level is between these two marks, what would be a sensible estimate for the volume? | The container has a capacity of ___ millilitres.<br>The volume of ___ in the ___ is ___millilitres. | | Children may look at the top of the container and find the capacity rather than the volume.<br>Children may require support in interpreting more complex scales. |   |
| Measure in litres | To interpret the scales on containers to measure capacity and volume in litres | How can you measure the volume of this container?<br>How are litres and millilitres different?<br>How much water do you estimate is in this container?<br>What strategy did you use to read the scale?<br>Is there a more efficient way?<br>Where do you need to draw a line on the scale? How do you know?<br>Would you measure the capacity of this container in litres or millilitres? | The capacity of the container is ___ litres.<br>The volume of in the container is ___ litres.<br>1 litre is ___ than 1 millilitre. | | Children may mix up millilitres and litres.<br>Children may need support when reading more complex scales. | |
| Four operations with volume and capacity | To solve problems involving volume and capacity | Which operation should you use for this question?<br>How could you write this as a number sentence?<br>How could you represent this using a bar model?<br>Is there more than one way to work this out?<br>What mistake do you think some people may make?<br>What did the question ask you to find? How do you know you have found it?<br>What do you need to do first? How do you know? | To find the total volume, I need to ___ the volumes.<br>To find how much more container A holds, I need to ___.<br>First, I need to… Then, I need to... | | Children may not read scales accurately.<br>Children may make calculation errors, for example in times-tables.<br>Children may select the incorrect operation to complete the calculation. |  One pear weighs 10 cubes.<br>How many cubes will balance one pineapple?<br>Explain how you know. |
| **Temperature (2MD 1)** | **To interpret scales on thermometers to measure temperature** | What is temperature?<br>What words do you use to describe temperature?<br>What does “°C” stand for?<br>What does the scale show?<br>How do you know that you have read the temperature correctly?<br>How do you know that you have shown the correct temperature on the thermometer scale?<br>How can you compare these two thermometers? | The temperature of/in ___ is ___ cold/warm/hot.<br>The temperature of/in ___ is ___°C.<br>The difference between the two temperatures is ___°C. | | Children may not draw accurately to represent a temperature, especially when estimating.<br>Children may not have the conceptual understanding of what a “hot” or “cold” temperature is.<br>When comparing two temperatures, children may look at the shaded part rather than the scales. | **Always, sometimes or never true?**<br>The larger the box, the heavier it is.<br><br>Which blocks are lighter?<br>Tick your answer.<br>  <br>Talk about your answer with a partner. |

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## MATHS MEDIUM TERM PLANNING

**Compare Mass**

True or false?

5 books have a greater mass than 10 pencils.

1 book has the same mass as 1 pencil.

20 pencils have a smaller mass than 10 books.

5 pencils have the same mass as 5 books.

Can you write a sentence to describe the mass of the objects using the words 'greater' or 'smaller'?

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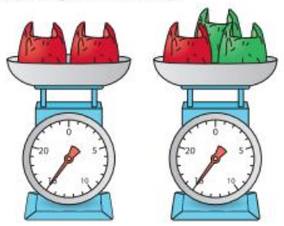
What is the mass of two red bags?

Which is heavier, the red bag or the green bag?

Explain your reasoning.



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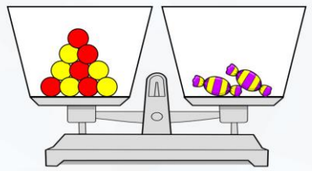
One sweet is equal to four counters.



True or false? Explain your answer.

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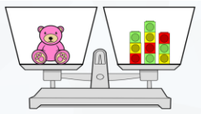

| | True | False |
|---|---|---|
| Three bears = 30 cubes. | | |
| 50 cubes > 6 bears | | |
| 10 bears = double 50 cubes | | |
| 70 cubes < 4 + 2 bears | | |

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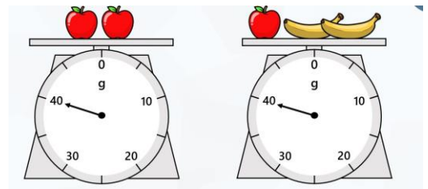

Which is heavier, an apple or a banana? How do you know?

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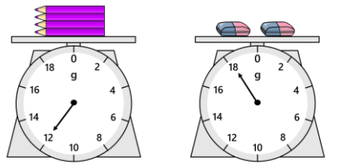

What is the mass of one pencil? _____ one rubber? _____

What is the combined mass of all items? _____

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Which is heavier, the red or the green beanbag?

Explain why.

---



The  weighs ☐ g.

The  weighs ☐ g.

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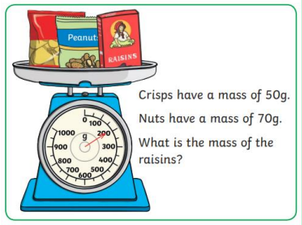
**Measuring Mass in Grams**

A large tin of beans has a mass of 100g.

What is the mass of a small tin?



Crisps have a mass of 50g.

Nuts have a mass of 70g.

What is the mass of the raisins?

Use a 100g weight to help you find three things in the classroom that you think feel lighter than 100g. Use a scale to check.

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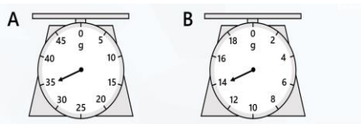

The arrow is pointing in the same direction so the items so both scales show the same mass.

True or False? Explain your answer.

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Always, Sometimes, Never?

The tallest container holds the most liquid.

Identical containers can have a different capacity.

Show me.

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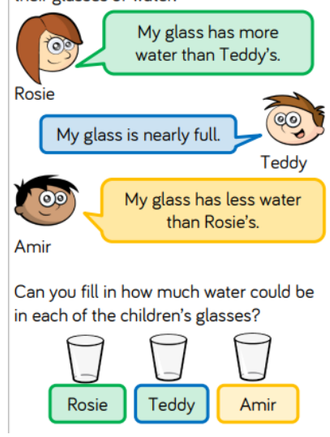
Rosie, Teddy and Amir are describing their glasses of water.




Can you fill in how much water could be in each of the children's glasses?

Rosie Teddy Amir

---

What is the mass of each barrel?


Double the mass of A 

 Half the mass of A

What is the difference between the mass of B and C?

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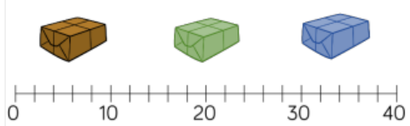
The brown parcel weighs twice as much as the blue parcel.

The green parcel weighs 2 kg more than 30 kg

The blue parcel weighs 12 kg less than the green parcel.

Draw an arrow to show where each parcel would be on the scale.

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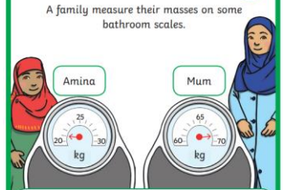
**Measuring Mass in Kilograms**

A family measure their masses on some bathroom scales.




What is Mum's mass?

How heavy is Amina?

Omar's mass is 6kg more than his sister. What is his mass?

Dad is 20kg heavier than Mum. What is Dad's mass?

Omar's friend, Fola, weighs more than Amina but less than Omar. What could Fola's mass be?

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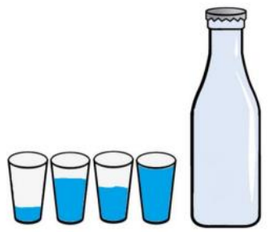
Whitney pours her cups into the bottle and they fill it exactly.



She says the bottle has a capacity of four cups. Do you agree?

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Show the volume in each glass.

- A is nearly full.
- B is nearly empty.
- A has more than C.
- C has more than B.

A B C

Compare answers with a partner.

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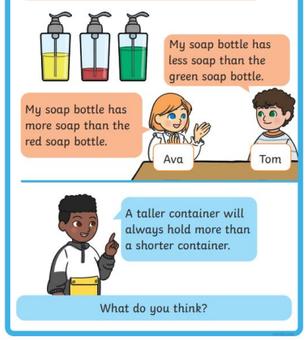
**Introduce Capacity and Volume**

Match the soap bottles with the children.

Is there more than 1 answer?



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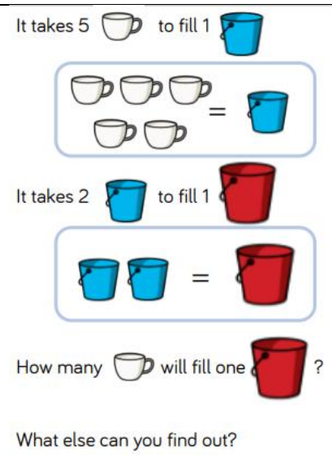
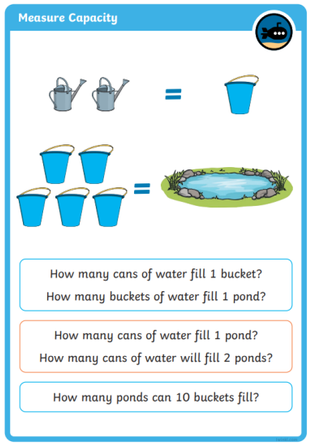



What else can you find out?

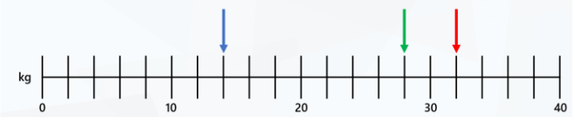



The red bag weighs 4 kg more than 28kg.

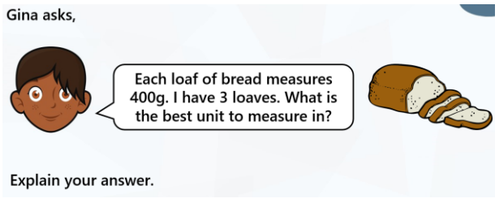
The blue bag weighs 18kg less than the red bag.

The green bag weighs twice as much as the blue bag.

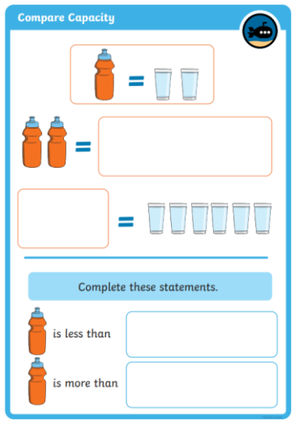
Draw an arrow to show where each bag would be on the scale.

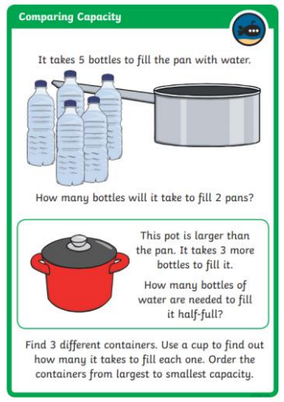



Gina asks,



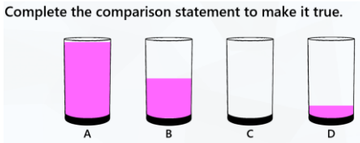

Explain your answer.




Choose a selection of different sized containers.
Decide how you will measure how much liquid each container can hold.
Order your containers from smallest to largest.
Compare the containers using <, > or =

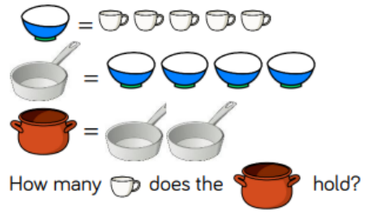

Complete the comparison statement to make it true.

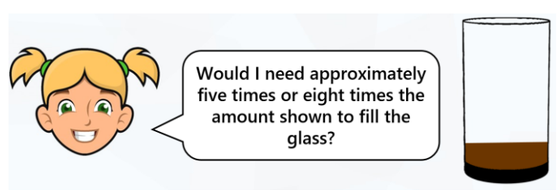


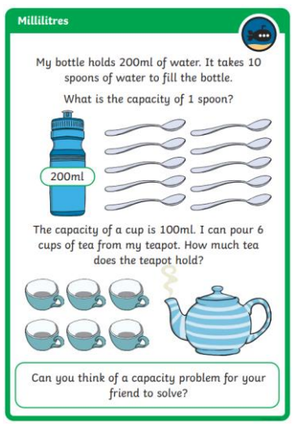

Can you create your own comparison sentences?

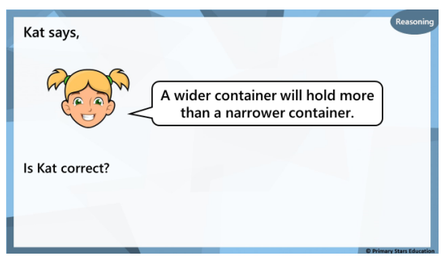
Whitney had two full bottles of juice.
She poured some juice into two glasses.

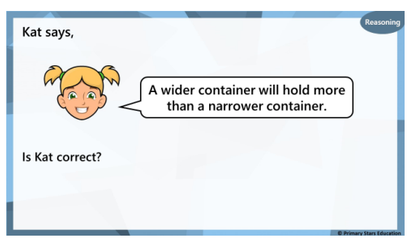

Which glass has the most juice in?
Which has the least juice in?
Explain how you know.



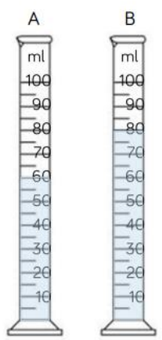



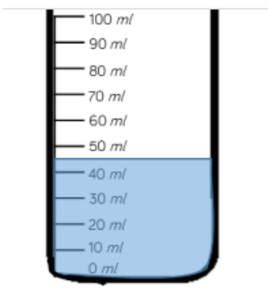




A holds 5 ml of liquid.

How many of liquid are there in each container?




Estimate the amount of water in the container.

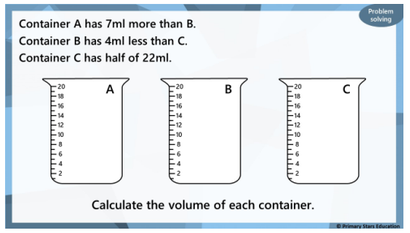



Explain why you have given your answer.

# Old Town Infant School and Nursery

Coastal Learning PARTNERSHIP

## MATHS MEDIUM TERM PLANNING



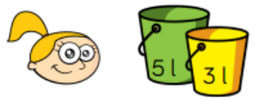

Mo puts 4 litres of water in bucket A.
He then pours 3 litres from bucket A into bucket B.

Which sentence is correct? A B

- There is more in bucket A.
- There is less in bucket A.
- There are equal amounts in each bucket.

Explain why.

Eva wants to measure 2 litres of water into a tub. She only has a 5 litre and a 3 litre container.




How can she use both containers to measure 2 litres?

3 bowls each have more than 20 l of water in but less than 50 l

The green bowl has 5 l more than the red bowl.

The blue bowl has 10 l more than the green bowl.

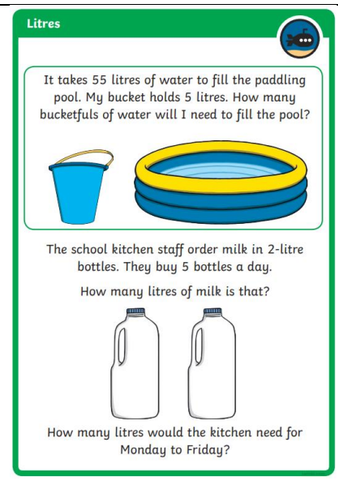
How much could each bowl have in?

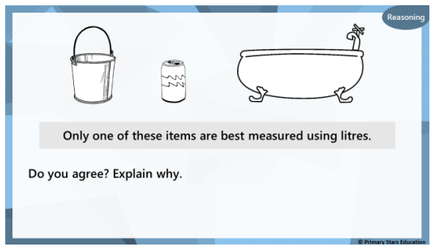
How would you measure the capacity of each object?

Tick litres or millilitres.

| Object | Litres | Millilitres |
|---|---|---|
| bath | | |
| mug | | |
| spoon | | |
| teapot | | |
| swimming pool | | |

Talk about your answers.



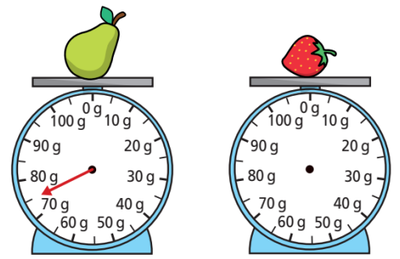

Here is a picture of a 1 litre bottle and a 2 litre bottle with some water in them.
What's the same? What's different?


A toy car and a toy train have a total mass of 90 g.

The toy car has a mass of 35 g.

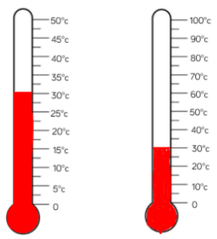
What is the mass of the toy train?

The strawberry is 45 g lighter than the pear.



Draw an arrow on the scales to show the mass of the strawberry.

What is the same and what is different about the thermometers/temperatures?



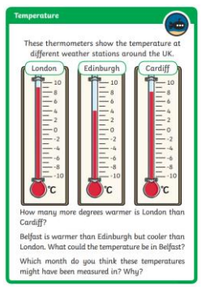
The table shows the temperature in some cities around the world on 1 June.

| New York | Paris | Dubai | Sydney |
|---|---|---|---|
| 18°C | 2°C | 43°C | 27°C |

a) Which city is the hottest? _____

b) Which city is the coldest? _____

c) How many degrees colder is it in New York than in Sydney? ☐ °C




Mollie took the temperature at 12 p.m. and again at 5 p.m.

There was a difference of 7°C

What could the temperatures be?

Whitney has three tins of paint.

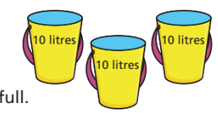

Each tin contains 5 litres of paint.

Whitney uses 8 litres of paint.

How many litres of paint does she have left?

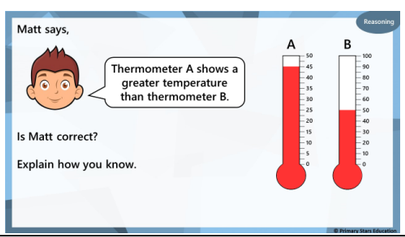
A bucket holds 10 litres of water.

Teddy pours three full buckets of water into an empty barrel.




The barrel is now half full.

How many litres of water can the barrel hold?




When Sue took the temperature at 10am it showed 18˚C.
She took the temperature again at 3pm and it had increased by 6˚C.
She took it again half an hour later and it had decreased by 2˚C.

What time did she take the new temperature? _____

What is the new temperature? _____

Can you make your own temperature problem?

*Certain areas of this unit, which support pupils reaching the end of year expectations for maths, should be prioritised in order to gain sufficient evidence; areas of this unit should be revisited, in more depth, in week 12 of the summer term.*

| | |
|---|---|
| **Post-assessment:** | WRH end of block Mass, Capacity and temperature assessment – snip as feel appropriate<br>Previous time SATs questions – snip as feel appropriate |