Maths - Year 4

Measurement 5: Understanding and using units of capacity and volume

Key Vocabulary

Capacity	How much a container can hold, measured in, e.g. millilitres (ml) or litres (l).
Volume	How much space something takes up, often measured in cm^3 or m^3.
Container/vessel	A hollow object used for holding something, usually a liquid.
Litre (l)	A unit to measure capacity.
Millilitre (ml)	A unit to measure capacity. 1000ml = 1l
Equivalent	The same amount or value, represented in different ways e.g. 2000ml = 2l.
Equate	To be the same in quantity or value e.g. 1000ml equates to 1l.
Estimate/ approximate	Work out an answer or measurement that is nearly right, e.g. an estimate of 4 x 9 is nearly 4 x 10 = nearly 40.

Mathematical Skills

- Give a reasonable estimate of the capacity of a container or an everyday volume.
- Describe the difference between capacity and volume.
- Use understanding of place value to partition capacities or volumes.
- Compare and order capacities or volumes given in different metric units.
- Convert between millilitres and litres.
- Choose appropriate strategies for calculating with capacities and volumes.

Mathematical Methods

- Calculating with litres and millilitres e.g. two 500ml jugs will be needed to measure out 1l of paint.
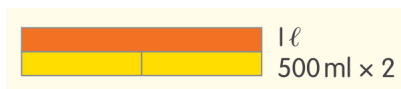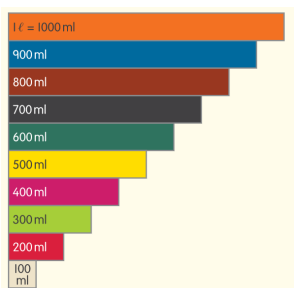

- Converting between millilitres, litres and millilitres, and litres e.g. when mixing paint colours.

Colour A	Colour B	Colour C	New colour		
600ml	500ml	–	1100ml	1ℓ 100ml	1·1ℓ
–	500ml	900ml	1400ml	1ℓ 400ml	1·4ℓ
300ml	1200ml	–	1500ml	1ℓ 500ml	1·5ℓ
600ml	600ml	600ml	1800ml	1ℓ 800ml	1·8ℓ
500ml	500ml	250ml	1250ml	1ℓ 250ml	1·25ℓ
1500ml	–	750ml	2250ml	2ℓ 250ml	2·25ℓ
400ml	580ml	960ml	1940ml	1ℓ 940ml	1·94ℓ

- Problem solving with litres e.g. a racing car has a fuel tank with a capacity of 80l. In one race the car uses 1l of fuel every 0.5 laps of the track and the race lasts 230 laps. How many pit stops will the car need to make during the race to refuel?
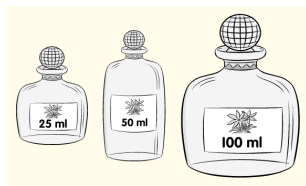
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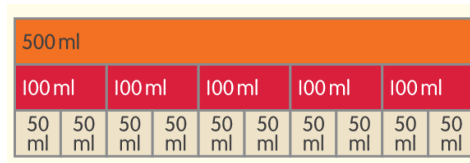
Children could use their understanding of decimal fractions, doubling and place value to identify that the car will use 2 ℓ of fuel each lap, so, since 2 × 230 = 460. That makes 460 ℓ of fuel during the race. Then children could use their knowledge of number facts and place value to reason that 5 tanks of fuel would be 400 ℓ (as 5 × 8 = 40, so

Hundreds	Tens	Ones
200 200	30 30	
400	60	
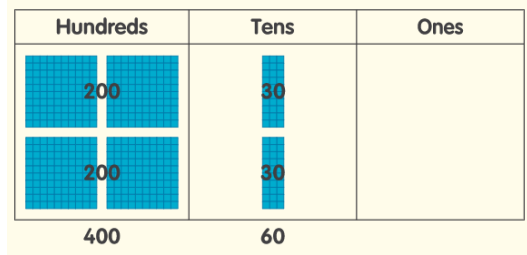
- More problem solving with litres and millilitres e.g. how many of bottle B will be needed for 500ml of perfume?

25 ml   50 ml   100 ml

A   B   C

500 ml				
100 ml	100 ml	100 ml	100 ml	100 ml
50 ml 50 ml	50 ml 50 ml	50 ml 50 ml	50 ml 50 ml	50 ml 50 ml

Can you..?

- Which containers could Max use to measure exactly 1.5L (1l 500ml)?

300 ml   400 ml   600 ml   900 ml

- Tom drinks 2l of liquid a day, Mary drinks 1700ml of liquid a day and Anna drinks ¼ less than Tom a day. How much liquid a day do they drink altogether?

- A plan uses 5 litres of fuel every second. How many litres of fuel will the plane use per minute?