

Add and subtract capacity and volume

Notes and guidance

In this small step, children explore adding and subtracting capacities and volumes.

Children use mixed units, adding the litres and millilitres separately. Use of part-whole models can support this. This is a good opportunity for children to practise their mental addition and subtraction, as many of the numbers involved will not necessitate the written method. As children have not yet explored numbers beyond 1,000, there will be no requirement to cross 1 litre with addition or subtraction, but children will use their knowledge of 1,000 ml being equivalent to 1 litre to subtract from whole litres.

Things to look out for

- Children may mix units incorrectly, for example $300 \text{ ml} + 2 \text{ l} = 302 \text{ ml}$.
- Children may struggle with subtracting from a whole litre if they do not first convert to millilitres.
- Children may make errors in interpreting scales.

Key questions

- What units are being used? Can you add/subtract them?
- How many litres are there altogether? How many millilitres are there?
- What volume do you need to add to reach 1 litre? How much more liquid is still left to add?
- How could you work out the difference?
- In what order are you going to do the calculations?
Do you have to do them in a certain order or is there a more efficient method?

Possible sentence stems

- _____ litres add/subtract _____ litres is equal to _____ litres.
_____ ml add/subtract _____ ml is equal to _____ ml.
So the total/difference is _____ l _____ ml.

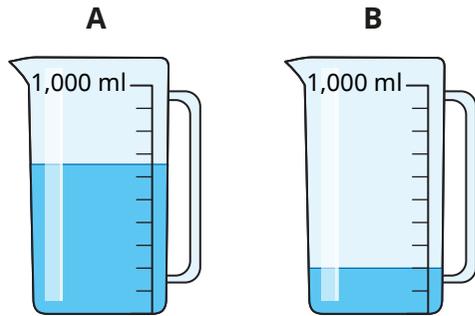
National Curriculum links

- Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

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Key learning

- Whitney has some jugs of water.



She pours all the water from jug A into jug B.
How much water is now in jug B?

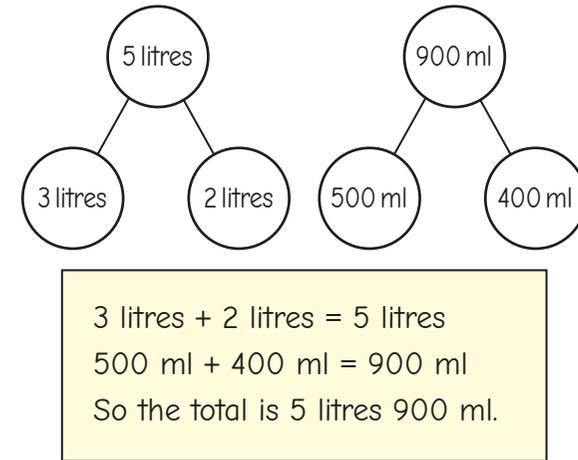
- Alex has this orange juice in a jug.
She drinks 300 ml.
How much orange juice is left in the jug?



- Work out the calculations.

- ▶ 200 ml + 320 ml
- ▶ 5 l + 7 l
- ▶ 450 ml – 100 ml
- ▶ 720 ml – 510 ml
- ▶ 100 l – 63 l
- ▶ 1 l – 310 ml

- Amir uses part-whole models to add 3 l 500 ml and 2 l 400 ml.



Use Amir's method to work out the totals.

1 l 300 ml + 2 l 450 ml	3 l 400 ml + 500 ml
3 l 600 ml + 400 ml	4 l 150 ml + 3 l 800 ml

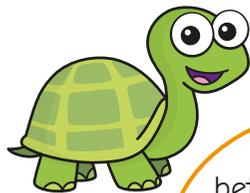
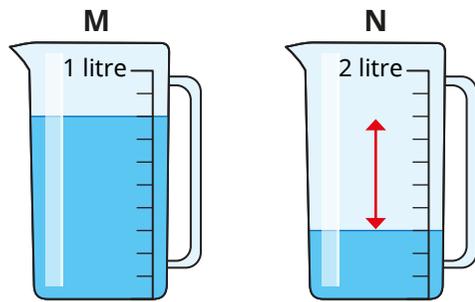
- Work out the subtractions.

3 l 400 ml – 2 l	10 l 195 ml – 8 ml
10 l 195 ml – 3 l	3 l 400 ml – 400 ml

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Reasoning and problem solving

Tiny is finding how much more water is in jug M than jug N.



The difference between the volumes of water is 5 intervals, so there is 500 ml more water in jug M.

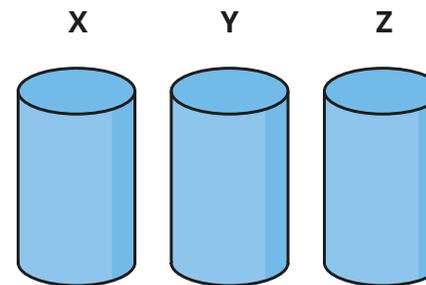
Do you agree with Tiny?

Explain your reasons.



No

Here are some measuring cylinders.



X: 200 ml

Y: 133 ml

Z: 67 ml

The total liquid in all three cylinders is 400 ml.

Cylinder X has half of the total amount in it.

Cylinder Y has 67 ml less than cylinder X.

How much liquid does each cylinder contain?