

# Reasoning and Problem Solving

## Step 5: Millilitres

### National Curriculum Objectives:

Mathematics Year 2: (2M1) [Compare and order lengths, mass, volume/capacity and record the results using >, < and =](#)

Mathematics Year 2: (2M2) [Choose and use appropriate standard units to estimate and measure length/height in any direction \(m/cm\); mass \(kg/g\); temperature \(° C\); capacity \(litres/ml\) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels](#)

### Differentiation:

Questions 1, 4 and 7 (Problem Solving)

**Developing** When given two statements about the capacity of a vessel, determine what the capacity could be (vessels up to 50ml. Includes multiples of 10).

**Expected** When given two statements about the capacity of a vessel, determine what the capacity could be (vessels up to 100ml. Includes multiples of 2 and 10).

**Greater Depth** When given two statements about the capacity of a vessel, determine what the capacity could be (vessels up to 100ml. Includes multiples of 2, 5 and 10).

Questions 2, 5 and 8 (Problem Solving)

**Developing** Use knowledge of > and < to determine which vessel contains more liquid after sharing an amount (vessels up to 50ml. Includes multiples of 10).

**Expected** Use knowledge of > and < to determine which vessel contains more liquid after sharing an amount (vessels up to 100ml. Includes multiples of 2 and 10).

**Greater Depth** Use knowledge of > and < to determine which vessel contains more liquid after sharing an amount (vessels up to 100ml. Includes multiples of 2, 5 and 10).

Questions 3, 6 and 9 (Reasoning)

**Developing** Calculate whether liquid from one vessel is able to fit into two smaller vessels (vessels up to 50ml. Includes multiples of 10).

**Expected** Calculate whether liquid from one vessel is able to fit into two smaller vessels (vessels up to 100ml. Includes multiples of 2 and 10).

**Greater Depth** Calculate whether liquid from one vessel is able to fit into two smaller vessels (vessels up to 100ml. Includes multiples of 2, 5 and 10).

More [Year 2 Mass Capacity and Temperature](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

# Reasoning and Problem Solving – Millilitres

1a. A vessel holds 10ml. Nine vessels will not fill this bottle but ten will be too much.



What could the capacity of the bottle be?



PS

1b. A vessel holds 10ml. Five vessels will not fill this bottle but seven will be too much.

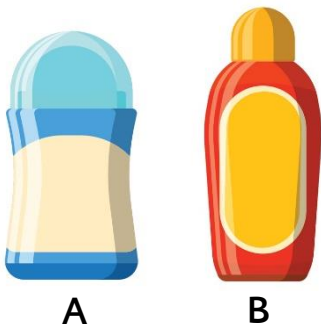


What could the capacity of the bottle be?



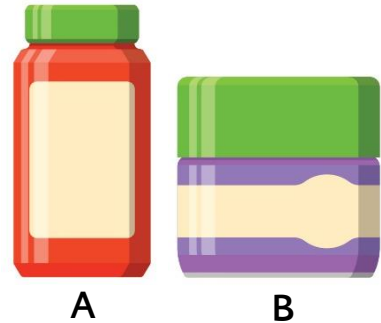
PS

2a. Bottle A contains 50ml of liquid. Bottle A is empty. If 30ml is poured from bottle A into bottle B, which bottle has the greatest volume?



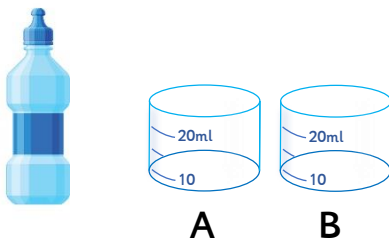
PS

2b. Jar A contains 40ml of liquid. Jar B is empty. If 20ml is poured from jar A into jar B, which jar has the greatest volume?



PS

3a. The bottle contains 50ml. Could all of the liquid be poured into vessels A and B?

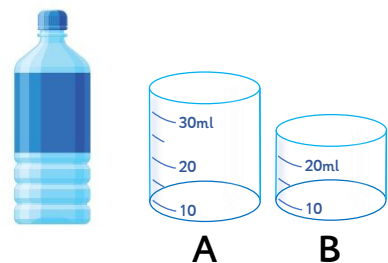


Prove it.



R

3b. The bottle contains 40ml. Could all of the liquid be poured into vessels A and B?



Prove it.



R

# Reasoning and Problem Solving – Millilitres

4a. A vessel holds 2ml. Seven vessels will not fill this bottle but eight will be too much.



What could the capacity of the bottle be?



PS

4b. A vessel holds 10ml. Four vessels will not fill this bottle but six will be too much.



What could the capacity of the bottle be?



PS

5a. Bottle A contains 60ml of liquid. Bottle B is empty. If 32ml is poured from bottle A into bottle B, which bottle has the greatest volume?



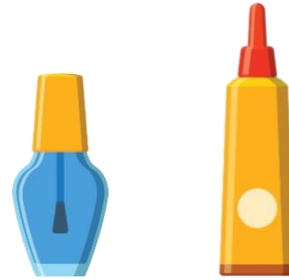
A

B



PS

5b. Container A contains 80ml of liquid. Container B is empty. If 38ml is poured from container A into container B, which container has the greatest volume?



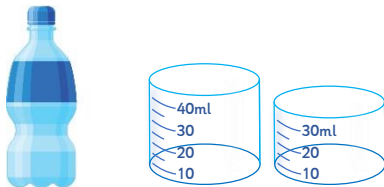
A

B



PS

6a. The bottle contains 72ml. Could all of the liquid be poured into containers A and B?



A

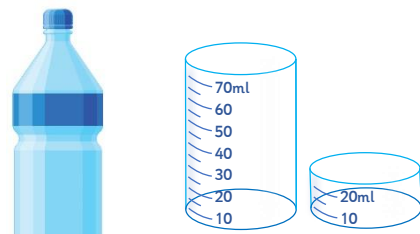
B

Prove it.



R

6b. The bottle contains 82ml. Could all of the liquid be poured into containers A and B?



A

B

Prove it.



R

# Reasoning and Problem Solving – Millilitres

7a. A vessel holds 10ml. Nine vessels will not fill this bottle but twelve will be too much.

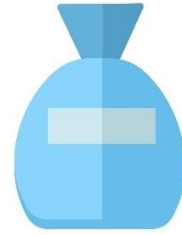


What could the capacity of the bottle be?



PS

7b. A vessel holds 5ml. Six vessels will not fill this bottle but seven will be too much.



What could the capacity of the bottle be?



PS

8a. Bottle A contains 95ml of liquid. Bottle B is empty. If 46ml is poured from bottle A into bottle B, which bottle has the greatest volume?



A

B



PS

8b. Bottle A contains 72ml of liquid. Bottle B is empty. If 35ml is poured from bottle A into bottle B, which bottle has the greatest volume?



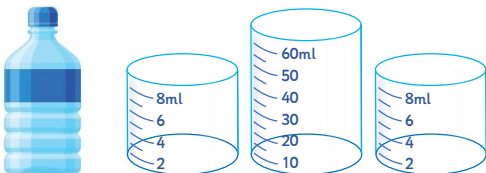
A

B



PS

9a. The bottle contains 75ml. Could all of the liquid be poured into containers A, B and C?



A

B

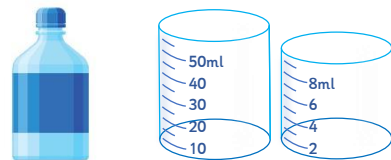
C

Prove it.



R

9b. The bottle contains 62ml. Could all of the liquid be poured into containers A and B?



A

B

Prove it.



R

# Reasoning and Problem Solving – Millilitres

## Developing

- 1a. Between 91 and 99ml.
- 1b. Between 51 and 69ml.
- 2a. A has 20ml, B has 30ml. B has the greatest volume.
- 2b. A has 20ml, B has 20ml. They have equal volume.
- 3a. No.  $20 + 20 = 40\text{ml}$  (not enough capacity)
- 3b. Yes.  $30 + 20 = 50\text{ml}$  (enough capacity)

## Expected

- 4a. 15ml
- 4b. Between 41 and 59ml.
- 5a. A has 28ml, B has 32ml. B has the greatest volume.
- 5b. A has 42ml. B has 38ml. A has the greatest volume.
- 6a. No.  $40 + 30 = 70\text{ml}$  (not enough capacity)
- 6b. Yes.  $70 + 20 = 90\text{ml}$  (enough capacity)

## Greater Depth

- 7a. Between 91 and 119ml.
  - 7b. Between 31 and 34ml.
  - 8a. A has 49ml. B has 46ml. A has the greatest volume.
  - 8b. A has 37ml. B has 35ml. A has the greatest volume.
  - 9a. Yes.  $60 + 8 + 8 = 76\text{ml}$  (enough capacity)
  - 9b. Yes.  $55^* + 9^* = 64\text{ml}$  (enough capacity)
- \*The scales go higher than the numbers given.