

Volume

Measuring volume

Volume is usually measured using measuring jugs, cups and spoons, but also bottles, buckets and even wheelbarrows.

The units of mass are litre (ℓ) and millilitre ($\text{m}\ell$).

The volume of a bucket could be 10ℓ , while the volume of a cup is about $250\text{ m}\ell$.

You need to be able to read values from a measuring jug.

The values on this measuring jug are:



A: $350\text{ m}\ell$ (It is half way between 300 and 400)

B: $300\text{ m}\ell$ (It is a quarter of the way between 250 and 350)

Calculations involving volume

Example:

If one litre of milk costs R7,99, what would be the price of 2,5 litres?

Therefore $\times 2,5$ $\xrightarrow{\quad 1\ell \text{ of milk cost R7,99} \quad} \times 2,5$
 $\xrightarrow{\quad 2,5\ell \text{ of milk cost R19,98} \quad}$

Temperature

Measuring temperature

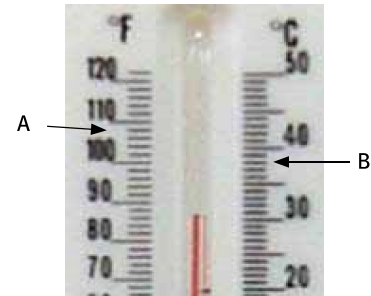
Volume is usually measured using thermometers. Dials on stoves and fridges are used to set the thermometer of these appliances. Temperature values are also shown on weather maps.

The unit of temperature is degrees Celsius ($^{\circ}\text{C}$). In some countries, such as Great Britain, temperature is measured in degrees Fahrenheit ($^{\circ}\text{F}$). 0°C is the freezing point of water. A day temperature of 25°C is considered to be moderate, while a temperature of -5°C is considered to be cold.

You need to be able to read temperature values from a thermometer, for example:

A: 106°F (There are 5 divisions from 100 to 110, therefore each division is 2 degrees: $(110 - 100) \div 5 = 2$)

B: 38°C (There are 10 divisions between 30 and 40)



Calculations involving temperature

You need to be able to convert between $^{\circ}\text{C}$ and $^{\circ}\text{F}$, using the following formulas (which will be given in the exam):

$$\bullet \quad ^{\circ}\text{F} = (1,8 \times ^{\circ}\text{C}) + 32^{\circ}$$

$$\bullet \quad ^{\circ}\text{C} = (^{\circ}\text{F} - 32^{\circ}) \div 1,8$$

Example:

Use the correct formula and convert:

(a) 365°F to $^{\circ}\text{C}$

(b) -10°C to $^{\circ}\text{F}$

Answers:

$$\begin{aligned} \text{a) } ^{\circ}\text{C} &= (^{\circ}\text{F} - 32) \div 1,8 \\ &= (365 - 32) \div 1,8 \\ &= (333) \div 1,8 \\ &= 185^{\circ}\text{C} \end{aligned}$$

$$\begin{aligned} \text{b) } ^{\circ}\text{F} &= (1,8 \times ^{\circ}\text{C}) + 32 \\ &= (1,8 \times (-10)) + 32 \\ &= (-18) + 32 \\ &= 14^{\circ}\text{F} \end{aligned}$$