

Grade 11 Mathematical Literacy – Measurement Summary

This summary covers important measurement topics that appear in Mathematical Literacy exams. Make sure you understand the formulas and when to use them.

1. Body Mass Index (BMI)

Body Mass Index is used to estimate whether a person has a healthy body weight compared to their height.

Formula:

$$\text{BMI} = \text{weight (kg)} \div [\text{height (m)}]^2$$

Steps:

1. Convert height to metres if necessary.
2. Square the height (height $\times$ height).
3. Divide the weight (kg) by the squared height.

Typical BMI Categories:

Underweight: less than 18.5

Normal weight: 18.5 – 24.9

Overweight: 25 – 29.9

Obese: 30 or more

2. Perimeter

Perimeter is the distance around the outside of a shape.

Example formulas:

Rectangle: Perimeter = $2 \times (\text{length} + \text{width})$

Square: Perimeter = $4 \times \text{side}$

In exam questions, you may need to add all the sides together to find the perimeter.

3. Area

Area is the amount of space inside a 2-dimensional shape. It is usually measured in square units such as m^2 , cm^2 , or km^2 .

Common formulas:

Rectangle: Area = length $\times$ width

Square: Area = side $\times$ side

Triangle: Area = $\frac{1}{2} \times \text{base} \times \text{height}$

Circle: Area = $\pi \times r^2$ ($\pi \approx 3.14$)

4. Surface Area

Surface area is the total area of all the outer surfaces of a 3-dimensional object.

Example:

For a rectangular prism (box shape), add the area of all 6 faces.

Surface area is measured in square units (cm^2 , m^2).

5. Volume

Volume is the amount of space inside a 3-dimensional object.

Common formulas:

Rectangular prism: $\text{Volume} = \text{length} \times \text{width} \times \text{height}$

Cube: $\text{Volume} = \text{side}^3$

Cylinder: $\text{Volume} = \pi \times r^2 \times \text{height}$

Volume is measured in cubic units such as cm^3 or m^3 .

Exam Tips:

- Always write the correct units.
- Make sure measurements are in the same units before calculating.
- Read the question carefully to see whether it asks for area, perimeter, surface area, or volume.