

Grade 12 Mathematical Literacy: Measurement & Data Handling Guide

Grade 12 | Mathematical Literacy | Study Guide | 2024

Free Study Resources for South African Matric Learners

1. Measurement

Perimeter, Area & Volume

Rectangle:	$\text{Perimeter} = 2(l + w)$; $\text{Area} = l \times w$
Triangle:	$\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$
Circle:	$\text{Circumference} = 2\pi r$; $\text{Area} = \pi r^2$
Rectangular prism:	$\text{Volume} = l \times w \times h$; $\text{Surface area} = 2(lw + lh + wh)$
Cylinder:	$\text{Volume} = \pi r^2 h$; $\text{Surface area} = 2\pi r^2 + 2\pi r h$

Unit Conversions

- Length: 1 km = 1000 m; 1 m = 100 cm; 1 cm = 10 mm
- Area: 1 m² = 10 000 cm²; 1 km² = 1 000 000 m²; 1 hectare = 10 000 m²
- Volume: 1 litre = 1000 ml = 1000 cm³; 1 m³ = 1000 litres
- Mass: 1 kg = 1000 g; 1 tonne = 1000 kg
- Time: 24-hour to 12-hour: subtract 12 from hours > 12 and add pm

2. Maps, Plans & Scale

Scale:	Map distance : Actual distance (e.g. 1:50 000)
Actual distance:	Map measurement x scale denominator
Map distance:	Actual distance / scale denominator

Floor plans: measure with ruler then apply scale to get real dimensions.

Always check if scale is given as ratio or as "1 cm = X m".

3. Data Handling

Measures of Central Tendency

Mean:	Sum of all values / number of values
Median:	Middle value when data is arranged in order
Mode:	Most frequently occurring value
Range:	Highest value - Lowest value

Reading Graphs

- Bar graphs: compare categories; heights represent values
- Line graphs: show trends over time; look for increases/decreases
- Pie charts: show proportions; must add up to 100%
- Scatter plots: show relationship between two variables; look for correlation
- Histograms: continuous data grouped in class intervals; no gaps between bars

4. Probability

Probability:	$P(\text{event}) = \frac{\text{favourable outcomes}}{\text{total possible outcomes}}$
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Certain event:	$P = 1$
Impossible event:	$P = 0$
Complementary:	$P(\text{not } A) = 1 - P(A)$

TIP When reading data tables or graphs in exams: read ALL labels carefully (title, axis labels, units, legend). Write down given information before calculating. Show formula, substitution, and answer with units.