

Units, prefixes and reliable measurements

Physics grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

This test covers SI units, prefixes, standard form, significant figures and the reliability of measurements. Show your working, include units and give answers to a sensible number of significant figures. Calculators are allowed.

Level: Physics grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · **Curriculum:** GCSE WS, IGCSE 1.1

Time: 45 minutes · 8 questions · Total: 20 marks · Calculator allowed

Question 1 SI base units (2 marks)

- State the SI base unit of mass. (1 mark)
- State the name and symbol of the SI unit of electric current. (1 mark)

Question 2 Prefixes (2 marks)

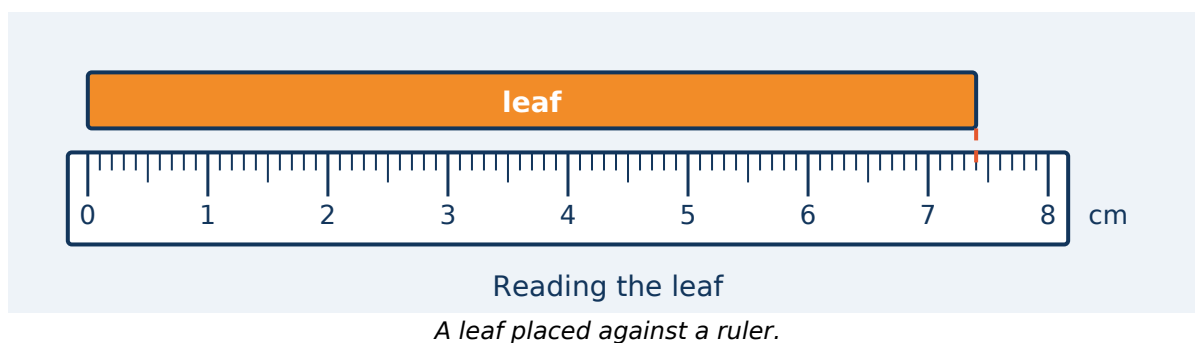
- Write 3.6 MHz in hertz, in standard form. (1 mark)
- Write 250 μm in metres, in standard form. (1 mark)

Question 3 Standard form (2 marks)

- Write 0.000 83 s in standard form. (1 mark)
- Write 6.02×10^4 as an ordinary number. (1 mark)

Question 4 Significant figures and reading (3 marks)

- State the number of significant figures in 0.03080. (1 mark)
- Round 4.0951 to 3 significant figures. (1 mark)
- Record the length of the leaf shown, in cm. (1 mark)

**Question 5 Area of a field** (3 marks)

A rectangular field measures 24.5 m by 8.2 m. Calculate its area, giving the answer to an appropriate number of significant figures in standard form. (3 marks)

Question 6 Precision and accuracy (3 marks)

The true mass of a stone is 50.0 g. Student X measures 49.9 g, 50.1 g, 50.0 g. Student Y measures 52.1 g, 52.1 g, 52.2 g.

- State which student is more accurate. (1 mark)
- State which student is more precise and give the evidence. (1 mark)
- Suggest a cause of Student Y's error. (1 mark)

Question 7 Mean and uncertainty (3 marks)

A ball's fall is timed four times: 2.31 s, 2.35 s, 2.29 s, 2.33 s. Calculate the mean time, the uncertainty (half the range) and the percentage uncertainty. (3 marks)

Question 8 Unit conversion (2 marks)

Convert 72 km/h to m/s. Show your working. (2 marks)