



QUESTION WORKBOOK

SI units and prefixes

Measurements · Year 12

AQA 3.1.1 · CIE 1.1, 1.2 · OCR A 2.1.1, 2.1.2

10 questions · 29 marks

NAVY SCREEN EDITION

SECTION A · Warm-up

A1 Name the six SI base quantities used at A-level and the SI base unit of each.

[2]

A2 Convert (a) 5.0 km into metres and (b) 2.5 GHz into hertz.

[2]

A3 Express the newton (N) in terms of SI base units.

[2]

SECTION B · Standard

B1 Express (a) the joule and (b) the watt in SI base units.

[3]

B2 Convert (a) 3.0 mA into amperes, (b) 450 nm into metres and (c) 12 M Ω into ohms. [3]

B3 Use base units to check whether the equation $v^2 = 2as$ is homogeneous (dimensionally consistent). [3]

B4 Express the pascal (Pa) in SI base units. [3]

SECTION C · Stretch

C1 The gravitational constant G appears in $F = GMm/r^2$. Determine the SI base units of G . [4]

- C2** Convert (a) a density of 2.7 g cm^{-3} into kg m^{-3} and (b) a speed of 90 km h^{-1} into m s^{-1} . [4]

- C3** Explain why checking that an equation is homogeneous (has matching units on both sides) is a useful way to spot mistakes. [3]