

CSEC Physics – Derived Quantities

The table below lists the main derived quantities you will encounter throughout the CSEC Physics syllabus. You will learn the formulas as the course progresses. Fill in the table with the missing information.

| Derived Quantity | Common Symbol | Formula | Constituent SI Base Units | SI Unit Name | SI Unit Symbol (if different from base constituents) |
|---|---------------|--|-----------------------------------|--------------------------|---|
| | ρ | $\rho = \frac{m}{V}$ <ul style="list-style-type: none"> • ρ = density (usually in kg/m³ or g/cm³) • m = mass (kg or g) • V = volume (m³ or cm³) | | Kilogram per cubic metre | |
| Velocity (or speed – sometimes interchangeable) | v | $v = \frac{\Delta d}{t}$ | | metre per second | |
| Acceleration | a | $a = \frac{\Delta v}{t}$ | | metre per second squared | |
| Force | F | $F = ma$ | kg m s ⁻² | | |
| Work (or energy) | W | $W = Fd$ | kg m ² s ⁻² | | |
| Power | P | $P = \frac{W}{t}$ | Js ⁻¹ | | |

| | | | | | |
|---------------|---|-------------------|-------------------------------|------------------------------------|----------------------|
| Pressure | P | $P = \frac{F}{A}$ | | | Pa |
| Moment | M | $M = Fd$ | $\text{kg m}^2 \text{s}^{-2}$ | | |
| | p | $p = mv$ | kg m s^{-1} | Kilogram metre per second | kg m s^{-1} |
| Charge | Q | $Q = It$ | As | | C |
| Voltage | V | $V = \frac{W}{Q}$ | JC^{-1} | Volt | |
| | R | $R = \frac{V}{I}$ | VA^{-1} | Ohm | Ω |
| Frequency | f | $f = \frac{1}{T}$ | | Hertz | Hz |
| Radioactivity | A | $A = \frac{N}{t}$ | s^{-1} | | Bq |