Physics Exam/Test Common Errors

And how to gain the most marks

Not showing your working clearly

- You can gain marks from showing your working and methods clearly even if you get the final answer incorrect.

- There are 4 types of marks for exam questions:
  - A marks
    - Answer marks – these are given for writing the correct final answer to a question (using correct sf).
  - B marks
    - Independent marks for an answer or part answer – they do not depend on other parts of the question.
  - C marks
    - Compensation marks – these are the marks you can gain by showing your working/calculations clearly.
  - M marks
    - Method marks – these are gained for showing the method you used to reach an answer. A marks cannot be gained if an M mark is not scored.

So make sure you clearly write out each step in a calculation

A cylindrical metal strut that forms part of the landing gear of a jet aircraft has a diameter of 24 mm and is 0.35 m long. During landing, the maximum compressive force reaches a value of 50 kN.

Assuming that the elastic limit of the strut is not exceeded, calculate the reduction in length of the strut under this compressive force.

The Young modulus for the metal is 80 GN m^{-2}.

$E = \frac{\text{stress}}{\text{strain}}$ hence $\text{strain} = \frac{\text{stress}}{E}$	C1
$\frac{\Delta L}{L} = \frac{(F/A)}{E} = \frac{F}{EA}$	C1
$\frac{\Delta L}{0.35} = \frac{50 \times 10^3}{\pi \times (12 \times 10^{-3})^2 \times 80 \times 10^9}$	C1
$\Delta L = 4.8 \times 10^{-4}$ m $(= 0.48\,\text{mm})$	A1

Not converting to SI units

- The equations you use in Physics ONLY work when you insert quantities in SI units.

- Eg:

  F=ma

  A 25g object will not accelerate at $4ms^{-2}$ when a resultant force of 100N is applied.

  –This 0.025kg object accelerates at $4000ms^{-2}$.