



REQUIRED SKILL

The G.U.E.S.S. METHOD For solving problems in Physics

In Physics it is more important to show your thought process than to calculate the right answer. In science, we build on the knowledge and successes (and failures) of others. It is much easier to see where a mistake might have been made if the entire solution process is shown. Different problems might require different solution formats, but it is never adequate to show only an answer. That proves nothing.

For unit conversion of any kind, use the following format:

$$\text{(Known Quantity and Units)} \times \text{(Conversion Factor and Units)} = \text{Answer with desired units}$$

For any problem you work, make sure that you have units with your answer and that you have boxed it. Example: $v = 43 \text{ m/s}$ Circling the answer is also acceptable.

Physics Problem Solving

Each physics problem solution **MUST** show the following steps:

1. **G**ivens (including a sketch or Free-Body Diagram, if applicable)
2. **U**nknown (what do you need to find)
3. **E**quations (standard equation and then that equation solved for the variable in question)
4. **S**ubstitution (Working equation with numbers and units plugged in) This is the first step where we use actual numbers!
5. **S**olution with correct units and circled or boxed.

Example:

How long will it take a car to travel 51m at an average speed of 17m/s?

Givens: $\Delta x = 51\text{m}$ $v_{\text{avg}} = 17 \text{ m/s}$

Often, you would draw a diagram to help You understand the problem.

Unknown: $t = ?$

Equations: Base: $x = x_0 + v_{\text{avg}}t$ Equation solved for desired variable: $t = \frac{\Delta x}{v_{\text{avg}}}$

Substitute: Substitute given values into working equation: $t = \frac{51\text{m}}{17 \text{ m/s}}$

Solution: $t = 3.0\text{s}$