

COMMENT ON PROBLEM SOLVING:

When you write up your solutions, you should have a document that is very helpful to you come exam time. A problem solution that is just some equations, a few lines of algebra, and a couple of numbers not help you study at all. When you study for an exam you want to fully understand the reasoning behind the solution and the best way to describe the reasoning is with words and pictures. You will always see me draw sketches and writing the words that explain what I am doing. I expect you to do the same thing. In summary, a proper problem solution includes:

- A sketch of the important features of the problem.
- A clearly identified coordinate system, if needed.
- A list of known quantities.
- A list of the quantities you intend to find.
- The names of the relevant definitions, laws, and useful relationships you use.
- A written explanation of the reasoning required for the key steps.
- The algebra done first, then the numbers plugged in.
- A clear indication of the final answer (such as a box around it)
- A final written comment about the result.

1. Convert each of the following to standard SI units using $1.00\text{m} = 3.28\text{ft}$:
(a) 10.0ft , (b) 126yds , (c) 60.0mph , (d) 27.0ft^2 , and (e) 1.00acre .
2. Convert each of the following to a value between 0 and 1000 using the metric prefixes.
(a) $20,000\text{m}$, (b) $1.25 \times 10^{-3}\text{s}$, (c) $1.25 \times 10^5\text{g}$, (d) $5.29 \times 10^{-8}\text{m}$
3. Find the number of significant figures in each of the following.
(a) 3.14, (b) 31.4, (c) 31.40, (d) 0.00314
4. A cylinder has a radius of 2.54cm and a height of 3.2cm . Find the following quantities with careful attention to significant figures.
(a) the diameter of the cylinder.
(b) the area of the top (or bottom) of the cylinder.
(c) the area of the side of the cylinder.
(d) the total surface area of the cylinder.
(e) the volume of the cylinder.