CH 105 SI

Practice Problems/Tips

Dimensional Analysis:

STEPS

- Figure out what you know.
- Figure out what you are trying to find.
- Write down what you know showing ALL UNITS.
- Make sure that the units you want to cancel line up diagonally and cross them out as you cancel them. This will assure that your answer is in the right units.
- Double check that you have the correct units. Write down your answer with a few decimals (if applicable).
- Then go back and determine the number of significant figures. Write your answer with the correct number of sig figs.

1. If you are going 50 mph, how many feet per second are you traveling?

$$\frac{50 \text{ miles}}{1 \text{ hour}}\left(\frac{5280 \text{ feet}}{1 \text{ mile}}\right)\left(\frac{1 \text{ hour}}{60 \text{ min}}\right)\left(\frac{1 \text{ min}}{60 \text{ seconds}}\right) = 73.\bar{3}$$

70 ~~miles~~ ft/sec

(Sig figs)

★ don't harp on sig figs!

2. How much bleach do you need to make a quart of 5% bleach solution?

$$1 \text{ qrt bleach solution}\left(\frac{32 \text{ oz}}{1 \text{ qt}}\right)\left(\frac{5 \text{ oz bleach}}{100 \text{ oz solution}}\right) = 1.6 \text{ oz bleach}$$

~~and~~

(2 oz w/ sig figs)

Conversions:

3. **Convert 13.7 cm into mm, km, and m.**

$13.7\ cm \longrightarrow .137\ m \longrightarrow 137\ mm$

$\downarrow$

$.000137\ KM$

Density:

4. **What is the mass of 56.7 ml of water at 4 degrees Celsius?**

$$Density = mass/volume$$

$P_{H_2O} = 1.00\ g/mL$

$56.7\ mL \times 1.00\ g/mL = mass/56.7\ mL \times 56.7\ mL$

$\boxed{mass = 56.7\ g}$