

## Announcements

Wednesday, September 02, 2009

### MasteringChemistry due dates (all at 11:59 pm):

- Intro: **this Fri** Sep 4 (practice only, not for credit)
- Ch 1: **this Fri** Sep 4
- Ch 2: Fri, Sep 18
- Ch 3: Fri, Sep 25

### Quiz 1: Mon, Sep 14 - Ch 1-2 (thru Sep 9 class)

- Memorize SI prefixes (M, k, d, c, m,  $\mu$ , n) and their powers of 10 for the quiz

Spreadsheet 2 Excel file is due in the D2L dropbox next **Tuesday**, Sep 8 at 3:00 pm (because Monday is a holiday).

- Please don't forget to enter **your name and your partner's name** in the **comments box** when you upload the file.

**D2L Discussions**: remember, you need one thoughtful post per chapter in the chapter discussions for your participation points.

## Units raised to powers

How many cubic inches ( $\text{in}^3$ ) are in 280.  $\text{m}^3$ ?

$$2.54 \text{ cm} = 1 \text{ in (exact)} \quad (c = 10^{-2})$$

Is this correct?

$$\left( \frac{1 \text{ in}}{2.54 \text{ cm}} \right)^3 = \frac{1^3 \text{ in}}{2.54^3 \text{ cm}^3}$$

you have to raise the numbers by the same power you raise the units.

$$280. \cancel{\text{m}^3} \times \left( \frac{100 \cancel{\text{cm}}}{1 \cancel{\text{m}}} \right)^3 \times \frac{1 \text{ in}^3}{2.54^3 \cancel{\text{cm}^3}} = \boxed{1.71 \times 10^7 \text{ in}^3}$$

$$1 \text{ in} = .0254 \text{ m}$$

$$1 \text{ in}^3 = .000016387 \text{ m}^3$$

$$280 \text{ m}^3 \times \frac{1 \text{ in}^3}{.000016387 \text{ m}^3} =$$

## Identifying conversion factors

A certain drug contains 124 mg active ingredient in 1.00 mL solution. If a patient needs 42.5 mg of the ingredient, how many microliters ( $\mu\text{L}$ ) should be given?

$$\begin{array}{c} \text{given} \\ 42.5 \text{ mg ingred} \end{array} \times \frac{\begin{array}{c} 124 \text{ mg ingred} \\ 1 \text{ mL soln} \end{array}}{\cancel{124 \text{ mg ingred}}} \times \frac{1000 \mu\text{L}}{\cancel{1 \text{ mL}}} = \boxed{343 \mu\text{L}}$$

*given*  
*start*

$$\text{g/mL} = \text{mg}/\mu\text{L}$$

Mercury has a density of 13.6 g/mL. What is the mass in milligrams of a 16.4 microliter droplet of mercury?

$$\begin{array}{c} 13.6 \text{ g Hg} \\ 1 \text{ mL Hg} \end{array} \times \frac{16.4 \mu\text{L Hg}}{1000 \mu\text{L}} \times \frac{1000 \text{ mg}}{1 \text{ g}} = \boxed{223 \text{ mg}}$$