Dr. Mattson's CHM 203!

8/26/2015 Wednesday

Review Sessions with Monika Latkauskas

Thursdays + Sundays 7-8:30 pm

Room → TBA

Today's Lesson: Sections 1.1-1.5

~~52(b)~~ → 52(c)

Section 1 → scientific method → Read it! It will be on the test!

Section 2 → measurement → read it to know what's going on

SI quantities	
Mass	kg
Length	m
Temp	K
amount	mol
time	s

10^{12}	Tera	T
10^{9}	Giga	G
10^{6}	Mega	M
10^{3}	Kilo	k
10^{-2}	Centi	c
10^{-3}	milli	m
10^{-6}	micro	μ
10^{-9}	nano	n
10^{-12}	pico	p
10^{-15}	femto	f
10^{-18}	atto	a

relationships

① $1\ g = 1\ g$

② $1\ ng = 1\times10^{-9}\ g$

MISTAKE: $1\times10^{-9}\ ng = 1\ g$

Example

Which is larger?

$15\ mg$ or $4.2\times10^{-2}\ g$

to solve, change g ⇒ mg

quantity

$$mass = 4.2\times10^{-2}\ g \times \frac{1\ mg}{10^{-3}\ g} = 42\ mg$$

③

value + units

① $1\ mg = 10^{-3}\ g$

② $\frac{1\ mg}{10^{-3}\ g} = 1$

Convert 157 pm into nm.

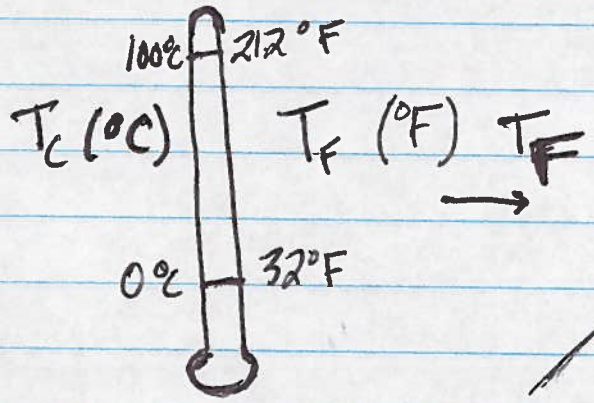
$$\text{Length} = 157\,\text{pm}\left|\frac{10^{-12}\,\text{m}}{1\,\text{pm}}\right|\left|\frac{1\,\text{nm}}{10^{-9}\,\text{m}}\right| = .157\,\text{nm}$$

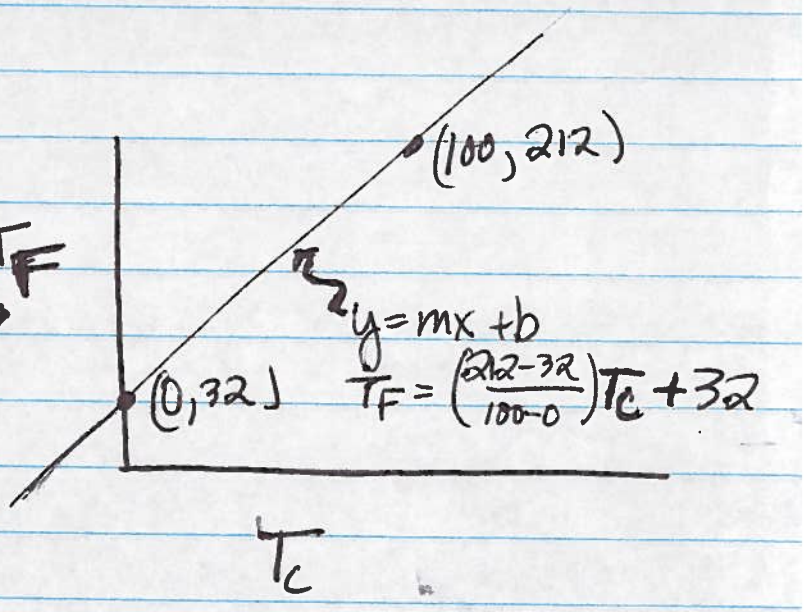
(3)

(1) $1\,\text{pm} = 1\times10^{-12}\,\text{m}$
$1\,\text{nm} = 1\times10^{-9}\,\text{m}$

(2) $1 = \frac{10^{-12}\,\text{m}}{1\,\text{pm}}$ $\quad \frac{1\,\text{nm}}{10^{-9}\,\text{m}} = 1$

Temperature





$$T_F = 1.8\,T_C + 32 \approx \text{pg } 10 \quad {}^\circ F = 1.8\times{}^\circ C + 32^\circ F$$

Kelvin

$$T_K = T_C + 273$$

$$T_F \leftrightarrow T_C \leftrightarrow T_K$$

Folder Activity Chapter 1 Number 1 **26 August 2015**

Printed Name: Monika Satkauskas Chm 203 Student number: TA

1. Classify each of the following as a unit of mass, length, or temperature.

a. mg mass b. dL length^3/volume c. K temp

d. μL length^3/volume e. pm length f. nm length

2. Complete these equalities:

a. 1 mm = 10^{-3} m

b. 1 mL = 10^{-3} L

c. 1 mg = 10^{-3} g

d. 1 μm = 10^{-6} m

e. 1 ng = 10^{-9} g

f. 1 kg = 10^{3} g

g. 1 pm = 10^{-12} m

h. 1 μL = 10^{-6} L

I. 1 cm = 10^{-2} m

j. 1 mm = 10^{-3} m

3. The radius of a potassium atom is 280 pm. Convert this to units of nm. This is a unit of length. Start by identifying the desired quantity, as we did in class:

$$\underbrace{\text{length}}_{\text{(Quantity)}} = 280\ \text{pm} \left| \frac{10^{-12}\ \text{m}}{1\ \text{pm}} \right| \left| \frac{10^{9}\ \text{nm}}{1\ \text{m}} \right| = \underbrace{280\ \text{nm}}_{\text{(value) + (units)}}$$

$\hookrightarrow \approx \frac{1\ \text{nm}}{10^{-9}\ \text{m}}$

4. Rearrange the following equation to solve for x: $4y = 2x + 7$

$-2x = -4y + 7$

$x = 2y + -7/2$

5. Rearrange the following equation to solve for x: $4y = 2(x + 7)$

$4y = 2x + 14$

$-2x = -4y + 14$

$x = 2y - 7$

Check in the any problem that you found difficult (you wouldn't be able to solve it on your own on an exam).