

note: exceptions to sig figs in calculations
 (money + time)

\$ 2
 decim

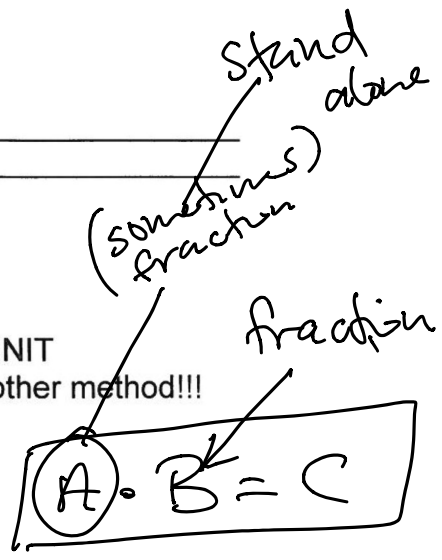
Name: _____
 Blk: _____ Date: _____

Chemistry 11
 SIMPLE UNIT CONVERSIONS

In chemistry you must be able to PROBLEM SOLVE using the UNIT CONVERSION METHOD....do not cheat yourself by using any other method!!!

The unit conversion method has three primary components:

- A. The initial amount (and its UNIT)
- B. The conversion factor (and its UNITS)
- C. The unknown amount (and its UNIT)



And it is written in the form $C = A \times B$

Ex.1 What is the cost of 2 doz Tim Hortons® donuts if they cost \$5.35/doz?
 FIRST YOU MUST IDENTIFY THE PRIMARY COMPONENTS

C = Cost \$ #

A = 2 doz donuts

B = $\frac{\$5.35}{1 \text{ doz donuts}}$

or $\frac{1 \text{ doz donuts}}{\$5.35}$
 $A \cdot B = C$

NOW PUT IT ALL TOGETHER:

$2 \text{ doz donuts} \cdot \left(\frac{\$5.35}{1 \text{ doz donuts}} \right) = \boxed{\$10.70}$

Ex. 2) If 0.200 mL of platinum has a mass of 4.12 grams, what is the mass of 5.00 mL of platinum?

FIRST YOU MUST IDENTIFY THE PRIMARY COMPONENTS

C = # grams

A = 5.00 mL Pt

B = $\frac{0.200 \text{ mL Pt}}{4.12 \text{ g}}$

or $A \cdot B = C$
 $\frac{4.12 \text{ g}}{0.200 \text{ mL Pt}}$

NOW PUT IT ALL TOGETHER:

$5.00 \text{ mL Pt} \cdot \left(\frac{4.12 \text{ g}}{0.200 \text{ mL Pt}} \right) = \boxed{103 \text{ g}}$

Seat work/ Homework : Exercises: 1 + 2

top
 bottom

Do # 2 (odd letters)

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Chemistry 11 SIMPLE UNIT CONVERSIONS

1. For each of the following problem statements identify
- the unknown amount and its unit,
 - the initial amount and its unit, and
 - the conversion factors and their units.

(You aren't required to put everything together and solve the problem yet ... that comes next.)

- a) If a chemical costs \$50 per gram, what is the cost of 100 g of the chemical?
b) Computer disks cost \$6.00 for 10 disks. How many disks can you buy for \$36.00?
c) Cork has a density of 0.35 g/mL. What is the volume of 20 g of cork?
d) If 3 kiwi fruit sell for \$1, how many kiwi fruit can you buy for \$5?
e) If 4 bims are worth 5 tuds, how many bims can you buy for 30 tuds?

$$30 \text{ tuds} \cdot \left(\frac{4 \text{ bims}}{5 \text{ tuds}} \right) = 24 \text{ bims}$$

$$A \cdot B = C$$

$$A = 30 \text{ tuds}$$

$$B = \frac{4 \text{ bims}}{5 \text{ tuds}} \text{ or } \frac{5 \text{ tuds}}{4 \text{ bims}}$$

see!

2. Solve the following using the method of unit conversions.

- a) If there are 6.02×10^{23} atoms in 1 mol of atoms, how many atoms are there in 5.5 mol of atoms?
b) If one mole of a gas has a volume of 22.4 L, how many moles are there in 25.0 L of gas?
c) If one mole of nitrogen has a mass of 28 g, how many moles of nitrogen gas are in 7.0 g of nitrogen gas?
d) How many seconds must an electrical current of 35 coulombs/s flow in order to deliver 200.0 coulombs?
e) A quiet sound exerts a pressure of 4×10^{-8} kPa ("kPa" = kilopascals, an SI pressure unit). What is this pressure in atmospheres if 1 atmosphere is 101.3 kPa?
f) A large nugget of naturally occurring silver metal has a mass of 3.20×10^4 troy ounces. What is the mass in kilograms if 1 troy ounce is equivalent to 0.0311 kg?
g) A reaction is essentially complete in 5.0×10^{-4} s. If one millisecond (1 ms) equals 10^{-3} s, how many milliseconds does the reaction take?
h) If 1 mol of octane produces 5450 kJ of heat when burned, how many moles of octane must be burned to produce 15 100 kJ of heat?
i) Our fingers can detect a movement of 0.05 micron. If 1 micron is 10^{-3} mm, what is this movement expressed in millimetres (mm)?
j) If concentrated hydrochloric acid has a concentration of 11.7 mol/L, what volume of hydrochloric acid is required in order to have 0.0358 mol of hydrochloric acid?