Announcements

Monday, September 14, 2009

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

- Ch 2: Fri, Sep 18
- Ch 3: Fri, Sep 25

Microscale density lab today. New lab partners this week. Please sit next to somebody you haven't yet worked with. (You will be asked to switch partners a few more times this semester).

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

Molar mass

The mole = the chemist's dozen

1 pair = 2 objects
1 dozen = 12 objects
1 mole = 6.022×10^{23} objects

6.022×10^{23} particles/mol = Avogadro's number

6.022 E 23

1.38 mol Al = ? Al atoms

$1.38 \text{ mol Al} \times \frac{6.022E23 \text{ atoms Al}}{1 \text{ mol Al}} = 8.31 \times 10^{23} \text{ Al atoms}$

9.23×10^{25} Pb atoms = ? mol Pb

$9.23E25 \text{ Pb atoms} \times \frac{1 \text{ mol Pb}}{6.022E23 \text{ Pb atoms}} = 153 \text{ mol Pb}$

	Atomic mass	Molar mass
carbon-12	12 amu exactly	12 g/mol exactly
carbon	12.01 amu	12.01 g/mol
neon	20.18 amu	20.18 g/mol

periodic tbl

12.5 g Si = ? mol Si

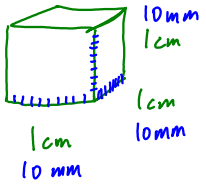
$12.5 \text{ g Si} \times \frac{1 \text{ mol Si}}{28.09 \text{ g Si}} = 0.445 \text{ mol Si}$

2.6 mol Ag = ? g Ag

$2.6 \text{ mol Ag} \times \frac{107.87 \text{ g Ag}}{1 \text{ mol Ag}} = 280 \text{ g Ag} = 2.8 \times 10^2 \text{ g Ag}$

Conversions

How many atoms of aluminum are contained in a cube of aluminum with 3.51 mm sides? D(Al) = 2.70 g/cm^3



$(3.51\ mm)^3 = 43.2\ mm^3$

$(3.51\ mm)^3 \times \frac{1\ cm^3}{1000\ mm^3} \times \frac{2.70\ g\ Al}{1\ cm^3\ Al} \times \frac{1\ mol\ Al}{26.98\ g\ Al} \times$

$\left(3.51\ mm \times \frac{1\ cm}{10\ mm} = (0.351\ cm)^3\right)$

$\times \frac{6.022E23\ Al\ atoms}{1\ mol\ Al}$

$= 2.61E21\ Al\ atoms$

Particles $\xleftrightarrow{Av\#}$ mol $\xleftrightarrow{\text{molar mass}}$ mass (g)