

My favourite cartoon character is _____
Ms. Bunney's is Bugs Bunny

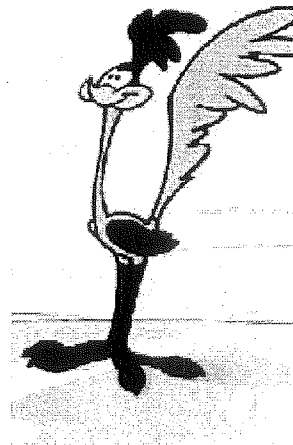
Name: Key

Mole Velous Practice Quest

Watch out for SIG FIGS!! (and falling objects)

- 1) Carbon disulphide, CS_2 , is a liquid having a density of 1.26 g/mL.
What volume is occupied by 5.50×10^{22} molecules of CS_2 ?

$$5.5 \times 10^{22} \text{ molecules} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molecules}} \times \frac{76.2 \text{ g}}{1 \text{ mol}} \times \frac{1 \text{ mL}}{1.26 \text{ g}} = \boxed{5.53 \text{ mL}}$$



- 2) What is the mass of 5.13 moles of $\text{Na}_2\text{Cr}_2\text{O}_7$?

$$5.13 \text{ mol} \times \frac{262.0 \text{ g}}{1 \text{ mol}} = 1344.06 \text{ g} = \boxed{1340 \text{ g}}$$

- 3) How many total atoms are there in 34.2 g of $\text{CH}_3\text{CO}_2\text{H}$?

$$34.2 \text{ g} \times \frac{1 \text{ mol}}{60.0 \text{ g}} \times \frac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mol}} \times \frac{8 \text{ atoms}}{1 \text{ molecule}} = 2.74512 \times 10^{24} \text{ atoms} = \boxed{2.75 \times 10^{24} \text{ atoms}}$$

- 4) How many grams of aluminum are there in 4.05×10^{25} molecules of Al_2O_3 ?

$$4.05 \times 10^{25} \text{ molecules} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molecules}} \times \frac{54.0 \text{ g}}{1 \text{ mol}} = 3632.89 \text{ g} = \boxed{3630 \text{ g}}$$

- 5) Determine the density of gold if 1.25×10^{23} atoms occupy 2.83×10^{-3} L.

$$\frac{1.25 \times 10^{23} \text{ atoms}}{2.83 \times 10^{-3} \text{ L}} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ atoms}} \times \frac{197.0 \text{ g}}{1 \text{ mol}} \times \frac{1 \text{ L}}{1000 \text{ mL}} = \frac{14.45417 \text{ g}}{\text{mL}} = \boxed{14.5 \text{ g/mL}}$$

- 6) Calculate the number of grams in 13.4 L of chlorine gas (Cl_2) at STP.

$$13.4 \text{ L} \times \frac{1 \text{ mol}}{22.4 \text{ L}} \times \frac{71.0 \text{ g}}{1 \text{ mol}} = 42.47 \text{ g} = \boxed{42.5 \text{ g}}$$