

9/7/09 - ①

1 mole = # atoms in 12g of carbon-12
= 6.022×10^{23} atoms

$$5 = 5 \quad \frac{5}{5} = 1$$

$$0.7 \text{ mol Ar} \times \frac{6.022 \times 10^{23} \text{ atoms}}{1 \text{ mol}} = 4.214 \times 10^{23} \text{ atoms}$$

→ How many g does 0.7 moles Ar weigh?

$$0.7 \text{ mol Ar} \times \left(\frac{39.948 \text{ g}}{1 \text{ mol}} \right) = 27.9636 \text{ g}$$

Molar mass of Ar from periodic table.

Ex. #2

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$$3.0 \times 10^{20} \text{ atoms} \times \frac{1 \text{ mol}}{6 \times 10^{23} \text{ atoms}} = 4.98 \times 10^{-4} \text{ mol}$$

Ex. #3

$$41.0 \text{ g C} \times \frac{1 \text{ mol}}{12.01 \text{ g}} = \underline{3.41 \text{ mol C}}$$

→ # atoms?

$$3.41 \text{ mol C} \times \frac{6 \times 10^{23} \text{ atoms}}{\text{mol}} = 2.1 \times 10^{24} \text{ atoms C}$$

Ex. #4

$$41.0 \text{ g He} \times \frac{1 \text{ mol}}{4.00 \text{ g}} = \underline{10.24 \text{ mol He}}$$

→ # atoms?

$$10.24 \text{ mol He} \times \frac{6.022 \times 10^{23} \text{ atoms}}{\text{mol}} = \underline{6.17 \times 10^{24} \text{ atoms He}}$$

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Mass of 1 Pt atom?
195.078u

in grams?

$$\hookrightarrow 1 \text{ atom} \times \frac{1 \text{ mole}}{6.022 \times 10^{23} \text{ atoms}} \times \frac{195.078 \text{ g}}{1 \text{ mole}} =$$

$$\boxed{3.24 \times 10^{-22} \text{ g}}$$

$$\text{Molar mass of O} = \frac{15.994 \text{ g}}{\text{mol}}$$

$$2.6 \text{ mol} \times \frac{15.994 \text{ g}}{\text{mol}} = \underline{41.6 \text{ g}}$$