

Mole Conversion Practice (one step)

Particles to Mole, Mole to Particles

Answer the following questions with the correct amount of significant figures. Make sure that all problems are set-up using the dimensional analysis (goal post) method and show all your work and units.

1. How many atoms are in 0.50 moles of carbon?

$$\frac{0.50 \cancel{\text{mol C}}}{1 \cancel{\text{mol C}}} \times \frac{6.022 \times 10^{23} \text{ atoms C}}{1 \text{ mol C}} = 3.0 \times 10^{23} \text{ atoms C}$$

2. How many molecules are in 3.26 moles of H₂O?

$$\frac{3.26 \cancel{\text{mol H}_2\text{O}}}{1 \cancel{\text{mol H}_2\text{O}}} \times \frac{6.022 \times 10^{23} \text{ molecules H}_2\text{O}}{1 \text{ mol H}_2\text{O}} = 1.96 \times 10^{24} \text{ molecules H}_2\text{O}$$

3. How many formula units are in 2.0×10^{-2} moles of LiF?

$$\frac{2.0 \times 10^{-2} \cancel{\text{mol LiF}}}{1 \cancel{\text{mol LiF}}} \times \frac{6.022 \times 10^{23} \text{ fu LiF}}{1 \text{ mol LiF}} = 1.2 \times 10^{22} \text{ fu LiF}$$

5. How many moles are in 4.595×10^{18} atoms of fluorine?

$$\frac{4.595 \times 10^{18} \cancel{\text{atoms F}}}{6.022 \times 10^{23} \cancel{\text{atoms F}}} \times \frac{1 \text{ mol F}}{1 \text{ mol F}} = 7.630 \times 10^{-6} \text{ mol F}$$

6. How many moles are in 6.72×10^{25} formula units of MgO?

$$\frac{6.72 \times 10^{25} \cancel{\text{fu MgO}}}{6.022 \times 10^{23} \cancel{\text{fu MgO}}} \times \frac{1 \text{ mol MgO}}{1 \text{ mol MgO}} = 112 \text{ mol MgO}$$

7. How many moles are in 2.2245×10^{22} molecules of C₃H₈?

$$\frac{2.2245 \times 10^{22} \cancel{\text{molecules C}_3\text{H}_8}}{6.022 \times 10^{23} \cancel{\text{molecules C}_3\text{H}_8}} \times \frac{1 \text{ mol C}_3\text{H}_8}{1 \text{ mol C}_3\text{H}_8} = 0.36940 \text{ mol C}_3\text{H}_8$$