

Molar Conversions Worksheet

1. How many moles does 80.0 grams of H₂O represent? $\frac{1 \text{ mol } 18 \text{ g}}{80 \text{ g}} = \underline{4.4 \text{ mol}}$
2. How many moles does 22.0 grams of CO₂ represent? $\frac{1 \text{ mol } 44 \text{ g}}{22 \text{ g}} = \underline{0.5 \text{ mol}}$
3. What is the mass of 5.0 moles of Ba(CN)₂? $5(137.3 + 2(12) + 2(14)) = \underline{946.5 \text{ g}}$
4. What is the mass of 3.5 moles of water? $3.5(2(1.01) + 16) = \underline{63.07 \text{ g}}$
5. How many molecules are in 0.25 moles of CH₄? $0.25(6.02 \times 10^{23}) = \underline{1.5 \times 10^{23}}$
6. How many sodium ions are in 3.0 moles of NaCl? $3(6.02 \times 10^{23}) = \underline{1.8 \times 10^{24}}$
7. Convert 3.01×10^{23} molecules of C₂H₆ to moles. $\frac{3.01 \times 10^{23}}{6.02 \times 10^{23}} = \underline{0.5 \text{ mol}}$
8. How many moles of glucose does 1.2×10^{24} molecules represent? $\frac{1.2 \times 10^{24}}{6.02 \times 10^{23}} = \underline{2 \text{ mol}}$
9. What would be the mass of 1.20×10^{24} molecules of water? $\frac{6.02 \times 10^{23} \text{ } 18 \text{ g}}{1.2 \times 10^{24} \text{ } \times} = \underline{35.9 \text{ g}}$
10. How much mass does 1.51×10^{22} atoms of neon represent? $\frac{6.02 \times 10^{23} \text{ } 20.2 \text{ g}}{1.51 \times 10^{22} \text{ } \times} = \underline{0.51 \text{ g}}$
11. How many molecules does 36.0 grams of water represent? $\frac{6.02 \times 10^{23} \text{ } 18 \text{ g}}{\times \text{ } 36 \text{ g}} = \underline{1.204 \times 10^{24}}$
12. How many atoms does 3.0 grams of carbon represent? $\frac{6.02 \times 10^{23} \text{ } 12 \text{ g}}{\times \text{ } 3 \text{ g}} = \underline{1.505 \times 10^{23}}$
13. What would be the volume of 0.25 moles of chlorine gas at STP? $.25(22.4 \text{ L}) = \underline{5.6 \text{ L}}$
14. What would be the volume of 6.25 moles of helium gas at STP? $6.25(22.4 \text{ L}) = \underline{140 \text{ L}}$
15. How many moles does 44.8 L of Hydrogen gas at STP represent? $\frac{1 \text{ mol } 22.4 \text{ L}}{\times \text{ } 44.8 \text{ L}} = \underline{2 \text{ mol}}$
16. A sample of Oxygen gas occupies 6.2 L at STP. How many moles does that represent? $\frac{1 \text{ mol } 22.4 \text{ L}}{\times \text{ } 6.2 \text{ L}} = \underline{0.28 \text{ mol}}$