

Mole Review Key

- Find the molar mass of the following elements or compounds. Give your answers with four significant figures.
 - 2.84 g/mol**
 - 218.7 g/mol**
 - 418.7 g/mol**
 - 432.4 g/mol**
 - 149.1 g/mol**
 - 121.9 g/mol**
 - 49.01 g/mol**
 - 74.08 g/mol**
 - 177.8 g/mol**
 - 375.1 g/mol**
- Determine the number of molecules or ions.
 - 1.20×10^{24} Fe⁺³ ions**
 - 2.7×10^{24} BCl₃ molecules**
 - 1.5×10^{23} Co⁺² ions**
 - 3.626×10^{24} O₂ molecules**
- Find the number of moles in the following.
 - 0.500 mol H₂O**
 - 0.1661 mol C**
 - 0.0932 mol K⁺**
 - 0.00137 mol naphthalene**
- How many molecules of carbon dioxide exit your lungs when you exhale 5.00×10^{-2} mol of carbon dioxide?
 3.01×10^{22} molecules
- You have a solution containing 9.656 mol of nickel (II) nitrate. How many nitrate ions are in your solution?
 1.163×10^{25} NO₃⁻ ions
- If there are approximately 1 trillion (1×10^{12}) cells in the human body, and approximately 6,732,470,000 people alive on the planet, how many moles of cells are there currently on the planet?
~0.01 mol cells
- Find the mass in grams.
 - 9.00 g H₂O**
 - 1.995 g C**
 - 5.779 g NO₃⁻**
 - 0.107 g C₆H₆**
- Calculate the mass of each of the following.
 - 127 g I₂**
 - 675 g PbS**
 - 232 g C₄H₁₀**
 - 103 g Al₂(SO₄)₃**
 - 41.6 g Cu(NO₃)₂**
- How many moles are in each of the following?
 - 0.0500 mol (NH₄)₂SO₄**
 - 61 mol Ca(OH)₂**
 - 7.50×10^{-5} mol H₂SO₄**
 - 6.25×10^{-8} mol C₆H₁₄**
- Ibuprofen, C₁₃H₁₈O₂, is an active ingredient in pain relievers. How many molecules of ibuprofen are present in a pill that contains 250 mg of ibuprofen?
 7.3×10^{20} molecules

11. Predict the reaction type and balance the following chemical equations.

- a. **2, 3, 2; S**
- b. **2, 3, 1, 3; SR**
- c. **1, 8, 5, 6; C**
- d. **2, 2, 3; D**

12. Translate the following word equations into chemical equations and balance them.

- a. **$2\text{HNO}_3 + \text{Na}_2\text{CO}_3 \rightarrow 2\text{NaNO}_3 + \text{H}_2\text{O} + \text{CO}_2$**
- b. **$10\text{FeSO}_4 + 2\text{KMnO}_4 + 8\text{H}_2\text{SO}_4 \rightarrow 8\text{H}_2\text{O} + 2\text{MnSO}_4 + 5\text{Fe}_2(\text{SO}_4)_3 + \text{K}_2\text{SO}_4$**
- c. **$\text{Ag}_2\text{CO}_3 \rightarrow \text{Ag}_2\text{O} + \text{CO}_2$**
- d. **$\text{I}_2 + 3\text{Cl}_2 \rightarrow 2\text{ICl}_3$**

13. Predict the products and balance each of the following reactions.

- a. **$2\text{Ag}_2\text{O} \rightarrow 4\text{Ag} + \text{O}_2$**
- b. **$\text{C}_4\text{H}_8 + 6\text{O}_2 \rightarrow 4\text{CO}_2 + 4\text{H}_2\text{O}$**
- c. **$\text{Pb}(\text{NO}_3)_2 + \text{K}_2\text{CrO}_4 \rightarrow \text{PbCrO}_4 + 2\text{KNO}_3$**
- d. **$4\text{Li} + \text{O}_2 \rightarrow 2\text{Li}_2\text{O}$**
- e. **$2\text{Na}_3\text{PO}_4 + 3\text{Pb}(\text{NO}_3)_2 \rightarrow 6\text{NaNO}_3 + \text{Pb}_3(\text{PO}_4)_2$**