

Name: _____ Per _____

Unit 5 Review Prep

The Mole

- How do you calculate Molar Mass? *look on the PT*
- Calculate the molar mass for the following substances.
 - K *39.10 g/mol*
 - $\text{Al}_2(\text{CO}_3)_3$ *233.99 g/mol*
 - Bromine *159.82 g/mol*
 - Titanium (III) chloride $\text{Ti}^{3+} \text{Cl}^- \rightarrow \text{TiCl}_3$
154.25 g/mol
- Complete the following conversions.
 - What is the mass of 3.50 moles of uranium?
833 g U
 - What is the mass of 2.4×10^{23} molecules of aluminum nitrate?
85 g $\text{Al}(\text{NO}_3)_3$ $\text{Al}^{3+} \text{NO}_3^-$
 - Determine the number of molecules in 9.35 kg of sodium chloride.
 9.63×10^{25} molecules NaCl
 - How many atoms are contained in 0.75 moles of carbon?
 4.5×10^{23} atoms C
 - Determine the number of molecules in 23 grams dinitrogen tetroxide. How many atoms are there in each element?
 1.5×10^{23} molecules N_2O_4
 3.0×10^{23} atoms N
 6.0×10^{23} atoms O

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4. Write the formula, or name the following hydrates.

a. $\text{Na}_2\text{CO}_3 \cdot 10 \text{H}_2\text{O}$ sodium carbonate decahydrate

b. Strontium iodate monohydrate $\text{Sr}(\text{IO}_3)_2 \cdot \text{H}_2\text{O}$

c. $\text{CrCl}_3 \cdot 6 \text{H}_2\text{O}$ chromium (III) chloride hexahydrate

d. Iron (III) sulfate tetrahydrate
 $\text{Fe}_2(\text{SO}_4)_3 \cdot 4 \text{H}_2\text{O}$

5. Determine the percent composition for each of element in the following compounds.

a. CaC_2O_4

31.3% Ca, 18.8% C, 50.0% O

b. $\text{Sr}_3(\text{PO}_4)_2$

58.1% Sr, 13.7% P, 28.3% O

6. Citric acid is the type of acid found in fruits such as lemons and oranges. The chemical formula is $\text{C}_6\text{H}_8\text{O}_7$. Determine the percent composition for each element.

37.5% C, 4.2% H, 58.3% O

7. The compound $\text{Fe}(\text{NO}_3)_2 \cdot 9 \text{H}_2\text{O}$ is used in fingerprint analysis.

a. Give the chemical name for this compound.

iron (II) nitrate nonahydrate

b. Determine the percent composition for each element in the compound.

16.3% Fe, 8.2% N, 70.2% O, 5.3% H

c. Determine the percent composition of water in the compound.

47.4% H_2O