

U3-LM2B-WS Molar Mass and Conversions

1. The molar mass of chlorine is:
2. The molar mass of carbon dioxide is:
3. The molar mass of aluminum carbonate, $\text{Al}_2(\text{CO}_3)_2$, is:
4. The molar mass of ascorbic acid (Vitamin C), $\text{C}_6\text{H}_8\text{O}_6$ is:
5. A 4.0g/mol represents the molar mass of the element _____.
6. A 2.0 g/mol represents the molar mass of the element _____.
7. A 40.0 g sample of sodium is _____ moles of sodium and _____ atoms of sodium.
8. One mole of elemental diatomic chlorine is _____ grams of chlorine and contains _____ atoms of chlorine.
9. If 2 moles of magnetite, Fe_3O_4 , are needed, one needs to weigh _____ grams of the substance. This amount corresponds to _____ formula units and it contains _____ ions of iron and _____ ions of oxygen.
10. A sample that is 36.0 grams of water represents _____ moles of water. It contains _____ grams of hydrogen and _____ grams of oxygen. It also contains _____ moles of H atom and _____ moles of O atoms. This sample also represents _____ molecules of water, _____ atoms of hydrogen and _____ atoms of oxygen.
11. a-Calculate the mass in grams of 2.5 moles of calcium.
b-How many atoms are there is 20.0 grams of calcium?
c-What is the mass of 1.40×10^{20} atoms of calcium?
d-Calculate the mass in grams of one calcium atom.
12. a-How many atoms are contained in 28.0 grams of nitrogen?
b-How many moles are represented in 5.0×10^{30} atoms of nitrogen?
c-Calculate the mass in grams of one molecule of nitrogen.
d-Calculate the mass in grams of one atom of nitrogen.

13. a-What masses of each element are presented in 5.60 moles of acetic acid, CH_3COOH ?
- b- How many moles of H atoms and how many atoms of H does the above sample contain?
- c-What is the mass of acetic acid that contains 4.0 g of hydrogen?
- d-What is mass of acetic acid that contains 32.0 g of acetic acid?
- e-What mass of acetic acid contains 48.0 grams of carbon?
14. There are 737 g of sodium chloride in a can of salt.
- a-How many moles of sodium chloride does the can of salt contain?
- b-How many formula units of salt does the can of salt contain?
- c-Calculate the mass in grams of one formula unit of sodium chloride.
- d-How many ions of sodium does the can of salt contain?
- e-How many moles of chloride ions does the can contain?
- f-How many grams of sodium does the can of salt contain?
15. a-How many moles of ammonium sulfate are in 32.0 g of ammonium sulfate?
- b-How many formula units of ammonium sulfate are there in 32.0 g of ammonium sulfate?
- c-How many atoms of H are found in 32.0 g of ammonium sulfate?
- d-How many grams of hydrogen are found in 32.0 g of ammonium sulfate?