

Atomic Structure and Properties
1.1 Moles and Molar Mass
Worksheet

- 1) How many moles of acetic acid, CH_3COOH , are contained within 24.71 g of acetic acid?
- 2) How many moles of sodium carbonate, Na_2CO_3 , are contained by 57.3 g of sodium carbonate?
- 3) How many moles of sulfuric acid, H_2SO_4 , are contained by 157 g of sulfuric acid?
- 4) How many grams of NaOH are contained within 0.785 moles of NaOH ?
- 5) How many grams of C_6H_6 are present in 12.70 moles of C_6H_6 ?
- 6) How many grams of CCl_4 are present in 2.67 moles of CCl_4 ?
- 7) How many carbon atoms are contained in 84.3 g of ethyne (C_2H_2)?
- 8) How many ethyne molecules are contained in 84.3 g of ethyne (C_2H_2)?
- 9) How many $\text{C}_6\text{H}_{12}\text{O}_6$ molecules are contained in a 100.0 g sample of $\text{C}_6\text{H}_{12}\text{O}_6$?
- 10) How many carbon atoms are contained in a 734 g sample of $\text{C}_6\text{H}_{12}\text{O}_6$?
- 11) How many moles of lithium are present in a sample that contains 2.45×10^{87} formula units of Li_2SO_4 ?
- 12) A helium balloon contains 0.143 moles of He.
 - a. How many grams of helium are in the balloon?
 - b. How many helium atoms are in the balloon?
- 13) Consider a 47.35 g pure sample of Al_2O_3 .
 - a. How many moles of Al_2O_3 are in the sample?
 - b. How many moles of Al^{3+} ions are in the sample?
 - c. How many moles of O^{2-} ions are in the sample?
 - d. How many formula units of Al_2O_3 are in the sample?
 - e. How many Al^{3+} ions are in the sample?
 - f. How many O^{2-} ions are in the sample?
- 14) How many grams of H_2O are there in 1.0 mole of H_2O ?
- 15) How many oxygen atoms are contained in 12.7 g of zinc sulfate, ZnSO_4 ?