Key

EXTRA PRACTICE

1) What is the molar mass of lithium oxide? 29.88 g/mol

2) Consider ammonium phosphite:

   a. How many moles of ammonium are in 1 mole of $(NH_4)_3PO_3$? 3 mol NH_4^+

   b. How many moles of phosphite are in 1 mole of $(NH_4)_3PO_3$? 1 mol PO_3^{-3}

   c. How many moles of ions are in a mole of $(NH_4)_3PO_3$? 4 mol ions

   d. How many moles of nitrogen are in a mole of $(NH_4)_3PO_3$? 3 mol N

   e. How many moles of hydrogen are in a mole of $(NH_4)_3PO_3$? 12 mol H

   f. How many atoms of phosphorus are in 1 mol of $(NH_4)_3PO_3$? 6.02×10^{23} atoms P

   g. How many atoms of oxygen are in 1 mol of $(NH_4)_3PO_3$? 1.806×10^{24} atoms O

   h. How many atoms of phosphorus are in 1 formula unit of $(NH_4)_3PO_3$? 1 atom P

   i. How many formula units are in 2.31 moles of $(NH_4)_3PO_3$? 1.39×10^{24} for. unit

   j. How many grams are in 3.21×10^{24} formula units of $(NH_4)_3PO_3$? 710. g $(NH_4)_3PO_3$

3) What is the volume of 8.12 moles of oxygen gas at STP? 182 L O_2

4) How many moles are in 63.2 L of sulfur dioxide at STP? 2.82 mol SO_2

5) What is the mass of 15.2 L of carbon dioxide? 29.9 g CO_2

6) How many molecules of H_2O are in 6.78 g of H_2O? 2.27×10^{23} molecules H_2O

7) How many grams are in 5.98 moles of lithium oxide? 179 g Li_2O

8) What is the percent composition of nitrogen in $Ba(NO_3)_2$? 10.72 % N

9) How many grams of manganese are in 45.3 g of manganese (II) phosphate? 21.1 g $Mn_3(PO_4)_2$

10) What is the empirical formula for a compound that is 57.14% C, 6.16% H, 9.52% N, and 27.18% O.
$C_{14}H_{18}N_2O_5$

11) The empirical formula for a compound has 12.03 grams of phosphorus, 5.44 grams of nitrogen and 27.53 grams of chlorine. If its molecular mass is 231.76 g/mol, determine its molecular formula.
$P_2N_2Cl_4$

12) A compound's empirical formula is C_2OH_4. If the molar mass is 88 g/mol, what is the molecular formula?
$C_4O_2H_8$

13) The molecular formula for Vitamin C is $C_{24}H_{32}O_{24}$. What is its empirical formula?
$C_3H_4O_3$