Mole Practice Sheet

1. Calculate the molar mass or gram formula mass for the following. Include units.

1. sodium chloride \_\_\_\_\_\_\_\_\_\_\_\_\_ 4. Carbon Dioxide \_\_\_\_\_\_\_\_\_\_\_\_\_

2. water \_\_\_\_\_\_\_\_\_\_\_\_\_ 5. calcium chloride \_\_\_\_\_\_\_\_\_\_\_\_\_

3. calcium nitrate \_\_\_\_\_\_\_\_\_\_\_\_\_ 6. ammonium sulfate \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Definitions of the Mole. Fill in the blank with the appropriate quantity.

7. 1 mole = \_\_\_\_\_\_\_\_\_\_\_\_\_particles

8. 1 mole Aluminum = \_\_\_\_\_\_\_\_\_\_\_\_\_grams (**gfm/molar mass of the specific substance)**

1. Mole Conversions: Convert the following quantities to Moles. SHOW YOUR WORK!

9. 86.4 g FeO –

10. 10.4 g CO2 –

11. 1.42 x 1042 particles-

Mole Conversions: Convert the following moles to the appropriate quantity. SHOW YOUR WORK! Include units on answers.

12. 10.0 grams lead (II) hydroxide (convert to formula units)

1. 0.40 moles aspirin (C9H8O4) (convert to grams)
2. 1.86 x 1025 molecules CO2 (convert to grams)

1. A nurse has been asked to get 0.0465 moles of quinine (C20H24N2O2). What mass should the nurse obtain?

1. During an electroplating process, 5.8625 g of silver are deposited on a steel bar. How many atoms is this?
2. How many moles are present in 1.0 x 1020 atoms F?
3. How many atoms are present in 2.4 moles Silver oxide?
4. Calculate the molar mass / gram formula mass for the following compounds:
   1. sodium nitrate –
   2. magnesium phosphate –
   3. calcium chloride –
   4. sulfuric acid –

Mole Practice Sheet Key

1. Calculate the molar mass or gram formula mass for the following. Include units.

1. sodium chloride - **NaCl – 58.5 g/mol** 4. Carbon Dioxide – **CO2 – 44.0 g/mol**

2. water – **H2O – 18.0 g/mol**  5. calcium chloride – **CaCl2 – 111 g/mol**

3. calcium nitrate - **Ca(NO3)2 – 164 g/mol** 6. ammonium sulfate – **(NH4)2SO4 – 132 g/mol**

1. Definitions of the Mole. Fill in the blank with the appropriate quantity.

7. 1 mole = \_\_**6.02 x 1023**\_\_\_\_ particles

8. 1 mole Aluminum = \_\_\_\_**27.0**\_\_\_\_\_\_ grams (**gfm/molar mass of the specific substance)**

1. Mole Conversions: Convert the following quantities to Moles. SHOW YOUR WORK!

9. 86.4 g FeO –

**86.4 g FeO 1 mol FeO = 1.20 mol FeO**

**71.84 g FeO**

10. 10.4 g CO2 –

**10.4 g CO2 1 mol CO2 = 0.236 mol CO2**

**44.01 g CO2**

11. 1.42 x 1042 particles

**1.42 x 1042 particles 1 mol = 2.36 x 1018 mol**

**6.02 x 1023 particles**

Mole Conversions: Convert the following moles to the appropriate quantity. SHOW YOUR WORK! Include units on answers.

12. 10.0 grams lead (II) hydroxide (convert to formula units) = **2.50 x1022 formula units Pb(OH)2**

**10.0 g Pb(OH)2 1 mol Pb(OH)2  6.02 x 10 Pb(OH)2 =**

**241.21 g Pb(OH)2** 1 mol **Pb(OH)2**

1. 0.40 moles aspirin (C9H8O4) (convert to grams) – **72 g C9H8O4**

**0.40 mol** C9H8O4 **180.12 g** C9H8O4 **=**

**1 mol** C9H8O4

1. 1.86 x 1025 molecules CO2 (convert to grams) = **1360 g CO2 or 1.36 x103 g CO2**

**1.86 x 1025 molecules CO2 1 mol CO2 44.0 g CO2 =**

* 1. **1023 molecules CO2 1 mol CO2**

1. A nurse has been asked to get 0.0465 moles of quinine (C20H24N2O2). What mass should the nurse \obtain?

**0.0465 moles C20H24N2O2 324 g C20H24N2O2 = 15.1 g C20H24N2O2**

**1 mol C20H24N2O2**

**20(12g/mol) + 24(1.01 g/mol ) + 2(14.0 g/mol) + 2(16.0 g/mol) = 324 g/mol**

1. During an electroplating process, 5.8625 g of silver are deposited on a steel bar. How many atoms is this?

**5.8626 g Ag 1 mol Ag 6.02 x 1023 atoms = 3.2678 E22**

**108 g Ag 1 mol Ag**

1. How many moles are present in 1.0 x 1020 atoms F?

**1.0 x 1020 atoms F 1 mol F = 1.7 x 10-4 mol F**

**6.02 x 1023 atoms F**

1. How many atoms are present in 2.4 moles Silver oxide?

**2.4 mol Ag2O 6.02 x 1023 formula units Ag2O = 1.4 x 1024 formula units Ag2O**

**1 mol Ag2O**

1. Calculate the molar mass / gram formula mass for the following compounds:
   1. sodium nitrate – **NaNO3 = 1(23.0 g/mol ) + 1(14.0 g/mol ) + 3(16.0 g/mol ) = 85.0 g/mol**
   2. magnesium phosphate – **Mg3(PO4)2** **= 3(24.3 g/mol ) + 2(31.0 g/mol ) + 8(16.0 g/mol ) =** **263 g/mol**
   3. calcium chloride – **CaCl2 = 111 g/mol See Page 1 for work**
   4. sulfuric acid – **H2SO4 = 2(1.01 g/mol ) + 1(32.1 g/mol ) + 4(16.0 g/mol) = 98.1 g/mol**