Name_____ Date_____ Per_____

Mole to Grams, Grams to Moles Conversions Worksheet

To find moles divide molar mass	To find grams multiply molar mass

What are the molecular weights of the following compounds?

1) NaOH

2) H_3PO_4

3) H_2O

4) Mn_2Se_7

5) $MgCl_2$

6) $(NH_4)_2SO_4$

There are two definitions (equalities) of mole. They are:

1 mole = 6.02 x 10^{23} particles

1 mole = molar mass (could be atomic mass from periodic table or molecular mass)

Each definition can be written as a set of two conversion factors. They are:

1 mole = molar mass(g) can be written as ( ) **OR** ( )

1 mole = 6.02 x 10^{23} particles can be written as ( ) **OR** ( )

Solve the following:

1) **How many moles** are in 15 grams of lithium?

2) **How many grams** are in 2.4 moles of sulfur?

3) **How many moles** are in 22 grams of argon?

4) **How many grams** are in 88.1 moles of magnesium?

5) **How many moles** are in 2.3 grams of phosphorus?

6) **How many grams** are in 11.9 moles of chromium?

7) **How many moles** are in 9.8 grams of calcium?

8) **How many grams** are in 238 moles of arsenic?

Solve the following:

9) How many grams are in 4.5 moles of sodium fluoride, NaF?

10) How many moles are in 98.3 grams of aluminum hydroxide, $Al(OH)_3$?

11) How many grams are in 0.02 moles of beryllium iodide, BeI_2?

12) How many moles are in 68 grams of copper (II) hydroxide, $Cu(OH)_2$?

13) How many grams are in 3.3 moles of potassium sulfide, K_2S?

14) How many moles are in 1.2×10^3 grams of ammonia, NH_3?

15) How many grams are in 2.3×10^{-4} moles of calcium phosphate, $Ca_3(PO_3)_2$?

16) How many moles are in 3.4×10^{-7} grams of silicon dioxide, SiO_2?

17) How many grams are in 1.11 moles of manganese sulfate, $Mn_3(SO_4)_7$?

Mole Calculation Worksheet – Answer Key

What are the molecular weights of the following compounds?

1) NaOH 1x**23.0 + 1x16.0 + 1x1.0 = 40.1 g/mol**

2) H_3PO_4 **3x1.0 + 1x31.0 + 4x16.0 = 98.0 g/mol**

3) H_2O **2x1.0 + 1x16.0 = 18.0 g/mol**

4) Mn_2Se_7 **663.0 g/mol**

5) $MgCl_2$ **95.3 g/mol**

6) $(NH_4)_2SO_4$ **132.1 g/mol**

Solve any 15 of the following:

1) How many moles are in 15 grams of lithium? **15/7 = 2.14 moles**

2) How many grams are in 2.4 moles of sulfur? **2.4 x 32 = 76.8 grams**

3) How many moles are in 22 grams of argon? **22/40 = 0.55 moles**

4) How many grams are in 88.1 moles of magnesium? **88.1 x 24 = 2114.4 grams**

5) How many moles are in 2.3 grams of phosphorus? **2.3/31 = 0.074 moles**

6) How many grams are in 11.9 moles of chromium? **11.9 x 52 = 618.8 grams**

7) How many moles are in 9.8 grams of calcium? **9.8/40 = 0.25 moles**

8) How many grams are in 238 moles of arsenic? **238 x 75 = 17,850 grams**

9) How many grams are in 4.5 moles of sodium fluoride, NaF? **4.5 x 42 = 189 grams**

10) How many moles are in 98.3 grams of aluminum hydroxide, $Al(OH)_3$? **98.3/78 = 1.26 moles**

11) How many grams are in 0.02 moles of beryllium iodide, BeI_2? **0.02 x 263 = 5.26 grams**

12) How many moles are in 68 grams of copper (II) hydroxide, $Cu(OH)_2$? **68/99 = 0.69 moles**

13) How many grams are in 3.3 moles of potassium sulfide, K_2S? **3.3 x 110 = 363.0 grams**

14) How many moles are in 1.2×10^3 grams of ammonia, NH_3? **1.2×10^3 / 17 = 70.59 moles**

15) How many grams are in 2.3×10^{-4} moles of calcium phosphate, $Ca_3(PO_3)_2$? **2.3×10^{-4} x 278 = 0.064 grams**

16) How many moles are in 3.4×10^{-7} grams of silicon dioxide, SiO_2? **3.4×10^{-7} / 60 = 6.00×10^{-9} moles**

17) How many grams are in 1.11 moles of manganese sulfate, $Mn_3(SO_4)_7$? **1.11 x 837 = 929.07 grams**