Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_

**CLASSWORK: Gram to Atom Conversions**

 **Mole Island**

**Conversion Factors**

Moles to Atoms:

1 mole =

Moles to Grams:

1 mole =

![an00682_[1]]()

***Practice the following one step conversions:***

A. You have 1.4 moles of cesium. How many atoms of cesium do you have?

B. Miss Miller has 3.91 x 1024 atoms of sodium. How many moles of sodium does she have?

C. Your experiment calls for 1.6 moles of sulfur. How many grams of sulfur should you add?

D. You measure 14.0 grams of calcium oxide (CaO). How many moles of calcium oxide is this?

**Think. Pair. Share.** Why can’t we convert directly from mass to atoms or from atoms to mass?

**Try it!** You are doing a lab that requires 3.72 x 1023 **atoms** of oxygen. How many **grams** of oxygen do you need. Work with your partner to come up with a way to calculate this.

**Two Step Conversions:**

|  |  |
| --- | --- |
| To Convert from atoms/molecules to grams: | To convert from grams to atoms: |
|  |  |

A. How many atoms are in 360 grams of potassium sulfide?

1. How many calcium atoms would be in a 105 gram sample of calcium metal?

2. How many grams are in 5.6 x 1023 atoms of Zinc?

3. Calculate the mass of 4.0 x 1023 atoms of Silver.

7. Examine #3 and #6 above. What do you notice about what you started with? How do your answers for the 2 problems compare? Does this make sense? Why?

B. What is the mass of 5.6x1025 atoms of ammonia (NH3)?

4. Calculate the number of grams in 9.7x1022 molecules of carbon dioxide (CO1) .

5. How many molecules are there in 375 grams of Na2SO4?

6. Calculate the mass of 4.0 x 1023 atoms of Beryllium.