|  |  |  |
| --- | --- | --- |
| *Grams-to-grams & percent yield.*  CλeMis+ry: http://genest.weebly.com  Stop in for help every day at lunch and Tues &Thurs after school! | http://photos.laineygossip.com/articles/jennifer-lopez-casper-09jan15-05.jpg | Name\_\_\_\_\_\_\_\_\_\_\_\_\_  Period\_\_\_\_\_\_\_\_\_\_\_\_\_ |

## Write balanced chemical equations for the following reactions.

1. Sodium oxide reacts with water to form sodium hydroxide.
2. Iron metal reacts with water to form Fe3O4 and hydrogen gas.
3. Aluminum bromide reacts with chlorine gas to produce aluminum chloride and liquid bromine.
4. Nitric acid (HNO3) reacts with barium hydroxide to produce barium nitrate and water.
5. Calcium sulfite decomposes when heated to form calcium oxide and sulfur dioxide.

**Reaction Terminology**

Theoretical yield is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Actual yield is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Percent yield = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_divided by\_\_\_\_\_\_\_\_\_\_\_\_\_times one hundred

Limiting reactant is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Excess reactant is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Applying the Model**

1. Tin (II) chloride, SnCl2, reacts with oxygen gas to produce tin (II) oxide and chlorine dioxide.

If 0.750 moles of O2 were consumed using this chemical reaction, what massof   
tin (II) oxide would be produced?

1. Magnesium sulfate, MgSO4, decomposes when heated to produce magnesium sulfide and oxygen gas. If 6.32 grams of MgSO4 were heated in a test tube, what mass of oxygen gas should be released?
2. What mass of CO was used up in the reaction with an excess of oxygen gas if 24.7 g of carbon dioxide is formed? 2 CO + O2 🡪 2 CO2

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| Dr. Lopez mixed up some brine by stirring 365 grams of sodium chloride into enough water to make 1270 mL of solution. She then took a clean 51.0 gram crucible filled and filled it by completely emptying a pipette 5 times into the crucible (a pipette that holds 1.5 mL). Heating this until all of the water evaporated resulted in a dry crust of salt in her crucible. Her cooled crucible, with salt, weighed 52.99 grams. |

1. Fill in this data table to organize your data from above.

|  |  |
| --- | --- |
| empty crucible mass \_\_\_\_\_\_\_\_\_\_\_\_grams  crucible with dried salt \_\_\_\_\_\_\_\_\_grams  number of squirts\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_squirts | volume for one squirt\_\_\_\_\_\_\_\_\_\_\_\_ mL  concentration of the brine\_\_\_\_\_\_\_\_ g/mL |

1. Calculate what mass of dry salt she *should* have? (Set up your calculation in a single line if possible, like we did in class--it will make the next part *much* easier to solve.Hint: The lonely number here is number of squirts. The goal is grams of salt.)

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| --- |
| The number calculated here is a □actual yield □theoretical yield |

1. Based on her scale readings, how many grams of salt did she actually recover?

|  |
| --- |
| The number calculated here is a □actual yield □theoretical yield |

1. Calculate Dr Lopez’s percent yield using the formula in your notes.