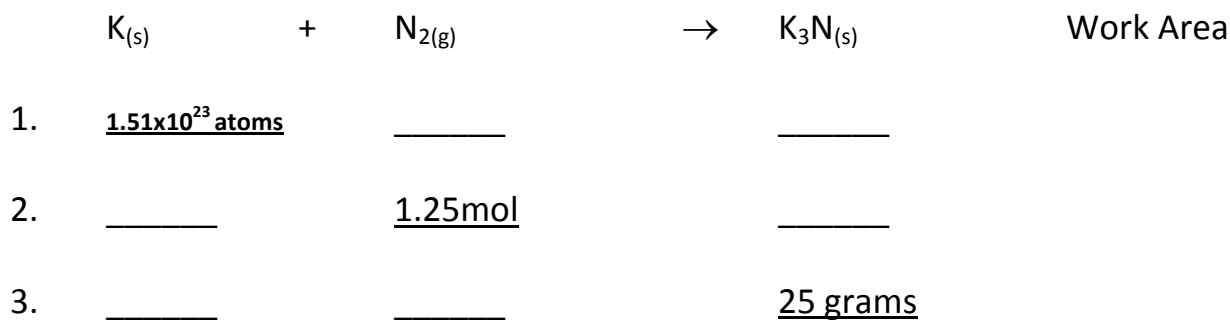
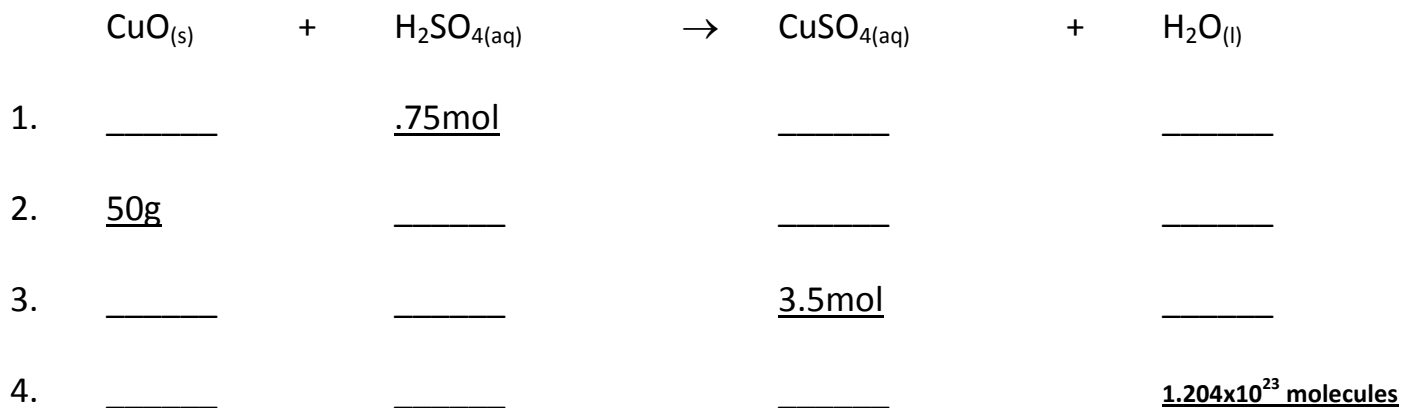
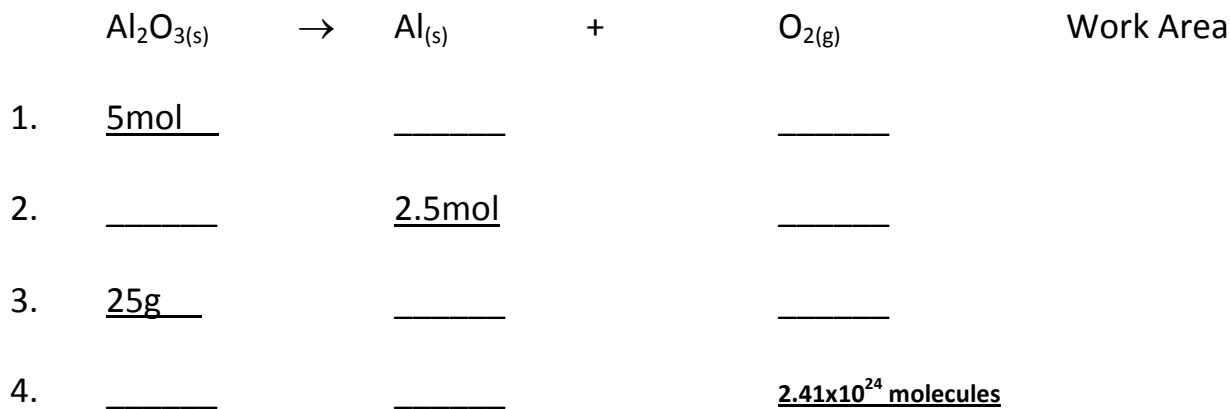


Honors Chemistry Worksheet 3

Stoichiometry Practice Problems

Name _____ Period _____ Date _____

Instructions: Balance the following chemical equations and then determine the missing information for each of the conditions given. The four questions related to each equation are independent of one another. Answers for a particular numbered problem should be in the same units as the information given (i.e. grams to grams, moles to moles, particles to particles).



Equation Balancing and Stoichiometry

Balance the following reactions:

- $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$
- $\text{Sb} + \text{H}_2\text{O} \rightarrow \text{Sb}_2\text{O}_3 + \text{H}_2$
- $\text{Ac}(\text{OH})_3 \rightarrow \text{Ac}_2\text{O}_3 + \text{H}_2\text{O}$
- $\text{Zn} + \text{CrCl}_3 \rightarrow \text{CrCl}_2 + \text{ZnCl}_2$
- $\text{BaCO}_3 + \text{C} + \text{H}_2\text{O} \rightarrow \text{CO} + \text{Ba}(\text{OH})_2$

Write and balance the following reactions:

- Copper(II)carbonate decomposes to copper(II)oxide and carbon dioxide gas.
- Sodium reacts with water to produce sodium hydroxide and hydrogen gas.
- Calcium carbonate reacts with hydrochloric acid to produce calcium chloride, water and carbon dioxide.
- Detonation of TNT ($\text{C}_7\text{H}_5\text{N}_3\text{O}_6$) to form nitrogen gas, water, carbon monoxide and carbon.
- Mixing solutions of calcium nitrate and sodium phosphate forms sodium nitrate and solid calcium phosphate.

Solve the following:

- Blood hemoglobin contains 0.33% iron. Assuming that there are two atoms of iron per molecule of hemoglobin, calculate the approximate molecular weight of hemoglobin.
- Calculate the formula of a compound, given that 55.85g of iron combines with 32.06g of sulfur.
- Aluminum metal reacts with chlorine gas to form solid aluminum trichloride, AlCl_3 . What mass of chlorine gas is needed to react completely with 163g of aluminum?
- How many grams of oxygen gas can be produced from the decomposition of 50.0g of aluminum oxide to aluminum and oxygen? If 8.0 grams are produced, what is the percent yield of the reaction?
- Tetraphosphorus hexaoxide (219.9g/mol) is formed by the reaction of phosphorus (123.9g/mol) with oxygen gas (32.00g/mol).
$$\text{P}_4(\text{s}) + 3\text{O}_2(\text{g}) \rightarrow \text{P}_4\text{O}_6(\text{s})$$
If a mixture of 75.3g of phosphorus and 38.7g of oxygen produce 43.3g of P_4O_6 , what is the percent yield for the reaction?
- How many moles of lithium oxide will remain unreacted if an available 25.00g of lithium oxide (29.88g/mol) produces 1.000mol of LiOH in the reaction $\text{Li}_2\text{O}(\text{s}) + \text{H}_2\text{O}(\text{l}) \rightarrow 2\text{LiOH}(\text{aq})$?