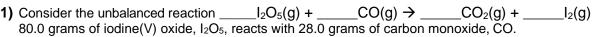
Dougherty Valley HS Chemistry Adv. Chemical Ratios – More Limiting Stoich Practice

Name:	Period:	Seat#:
Show work and include ALL units.		
 Do these on binder paper. 		
Label clearly so I know what I am looking at.	Box and label final answers!	
 Some answers are provided at the end of the 	problem. They are underlined.	



- a) Determine the mass of iodine I_2 , which could be produced? <u>50.7 g</u>
- b) If only 0.160 moles of iodine, I₂ was produced, what mass of iodine was produced? 40.6 g
- c) What percentage yield of iodine was produced? 80.1%
- 2) Zinc and sulfur react to form zinc sulfide according to the equation. $Zn + S \rightarrow ZnS$ If 25.0 g of zinc and 30.0 g of sulfur are mixed,
 - a) Which chemical is the limiting reactant? Zn
 - b) How many grams of ZnS will be formed? 37.26 g
 - c) How many grams of the excess reactant will remain after the reaction is over? 17.7g
- 3) Mg is ignited in pure oxygen.
 - a) Which element is in excess when 3.00 grams of Mg is ignited in 2.20 grams of pure oxygen?
 - b) What mass is in excess? 0.23 g
 - c) What mass of MgO is formed? 4.97 g
- 4) How many grams of Al₂S₃ are formed when 5.00 grams of Al is heated with 10.0 grams S? 13.91 g
- **5)** When MoO₃ and Zn are heated together they react Zn(s) + MoO₃(s) -----> Mo₂O₃(s) + ZnO(s) What mass of ZnO is formed when 20.0 grams of MoO₃ is reacted with 10.0 grams of Zn? $\underline{12.45 g}$
- **6)** Silver nitrate, AgNO₃, reacts with ferric chloride, FeCl₃, to give silver chloride, AgCl, and ferric nitrate, Fe(NO₃)₃. In a particular experiment, it was planned to mix a solution containing 25.0 g of AgNO₃ with another solution containing 45.0 grams of FeCl₃.
 - a) Write the chemical equation for the reaction.
 - b) Which reactant is the limiting reactant? AgNO3
 - c) What is the maximum number of moles of AgCl that could be obtained from this mixture? 0.147 mol
 - d) What is the maximum number of grams of AgCl that could be obtained? 21.9 g
 - e) How many grams of the reactant in excess will remain after the reaction is over? 37.04 g
- 7) Solid calcium carbonate, CaCO₃, is able to remove sulphur dioxide from waste gases by the reaction: CaCO₃ + SO₂ + other reactants -----> CaSO₃ + other products In a particular experiment, 255 g of CaCO₃ was exposed to 13.5 g of SO₂ in the presence of an excess amount of the other chemicals required for the reaction.
 - a) What is the theoretical yield of CaSO₃? <u>253.2 g</u>
 - b) If only 198 g of CaSO₃ was isolated from the products, what was the percentage yield of CaSO₃ in this experiment? <u>78.21%</u>
- **8)** A research supervisor told a chemist to make 100 g of chlorobenzene from the reaction of benzene with chlorine and to expect a yield no higher that 65%. What is the minimum quantity of benzene that can give 100 g of chlorobenzene if the yield is 65%? The equation for the reaction is: <a href="https://doi.org/10.25/10.

$$C_6H_6 + Cl_2$$
 -----> $C_6H_5Cl + HCl$ benzene chlorobenzene