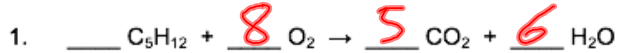


Name: **KEY**

Date: _____

Chemistry
Limiting Reagents WS

I. Complete the following limiting reagent calculations, balancing equations where necessary:



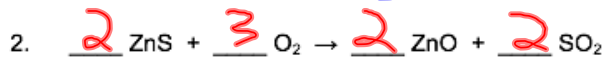
a. 244 g C₅H₁₂ are burned in 160. g O₂. How many grams of H₂O will be formed?

244 g C ₅ H ₁₂	1 mol C ₅ H ₁₂	6 mol H ₂ O	18.015 g H ₂ O	= 368.5 g H₂O
	72.15 g C ₅ H ₁₂	1 mol C ₅ H ₁₂	1 mol H ₂ O	
160. g O ₂	1 mol O ₂	6 mol H ₂ O	18.015 g H ₂ O	= 67.59 g H ₂ O
	31.998 g O ₂	8 mol O ₂	1 mol H ₂ O	

use LR b. In the above reaction, how many grams of carbon dioxide will also be formed?

↳

160. g O ₂	1 mol O ₂	5 mol CO ₂	44.009 g CO ₂	= 137.6 g CO ₂
	31.998 g O ₂	8 mol O ₂	1 mol CO ₂	



a. When 75.3 g zinc sulfide are reacted with 217.2 g oxygen gas, how much zinc oxide is formed?

75.3 g ZnS	1 mol ZnS	2 mol ZnO	81.379 g ZnO	= 62.88 g ZnO
	97.45 g ZnS	2 mol ZnS	1 mol ZnO	
217.2 g O ₂	1 mol O ₂	2 mol ZnO	81.379 g ZnO	= 368.47 g ZnO
	31.998 g O ₂	3 mol O ₂	1 mol ZnO	

use LR, assume STP b. In the above reaction, how many liters of sulfur dioxide will also be formed?

molar volume of any gas at STP

75.3 g ZnS	1 mol ZnS	2 mol SO ₂	22.4 L SO ₂	= 17.31 L SO ₂
	97.45 g ZnS	2 mol ZnS	1 mol SO ₂	

- II. Complete the following limiting reagent calculations, writing out and balancing the chemical equations:
3. In a classic neutralization reaction, sodium hydroxide reacts with hydrochloric acid to form sodium chloride (table salt) and water.



- a. How much salt would be formed by combining 66.2 g sodium hydroxide with 77.1 g hydrochloric acid?

66.2 g NaOH	1 mol NaOH	1 mol NaCl	58.443 g NaCl	= 96.7 g NaCl
	39.997 g NaOH	1 mol NaOH	1 mol NaCl	

7.71 g HCl	1 mol HCl	1 mol NaCl	58.443 g NaCl	= 123.6 g NaCl
	36.461 g HCl	1 mol HCl	1 mol NaCl	

use LR

- b. In the above reaction, how many grams of water will also be formed?

66.2 g NaOH	1 mol NaOH	1 mol H ₂ O	18.015 g H ₂ O	= 29.8 g H ₂ O
	39.997 g NaOH	1 mol NaOH	1 mol H ₂ O	

4. Iron (III) oxide reacts with carbon monoxide to form iron and carbon dioxide.



- a. In this oxidation-reduction reaction, 818.5 g iron (III) oxide are reduced by 134 L carbon monoxide at standard temperature and pressure. How much iron will be formed in this reaction?

818.5 g Fe ₂ O ₃	1 mol Fe ₂ O ₃	2 mol Fe	55.847 g Fe	= 572.5 g Fe
	159.691 g Fe ₂ O ₃	1 mol Fe ₂ O ₃	1 mol Fe	

134 L CO	1 mol CO	2 mol Fe	55.847 g Fe	= 222.7 g Fe
	22.4 L CO	3 mol CO	1 mol Fe	

- b. In the above reaction, how many grams of carbon dioxide will also be formed?

134 L CO	1 mol CO	3 mol CO ₂	44.009 g CO ₂	= 263.3 g CO ₂
	22.4 L CO	3 mol CO	1 mol CO ₂	