QUANTITIES IN CHEMICAL REACTIONS PRACTICE

How many **moles** of each compound react completely in the given reactions with the given quantity?

$6\ CO_2(g) + 6\ H_2O(l) \rightarrow 6\ O_2\ (g) + C_6H_{12}O_6\ (aq)$				
	CO_2	H_2O	O_2	$C_6H_{12}O_6$
1	12			
2			6	
3				3
4		24		
5				5

$C_3H_8(l) + 5\ O_2(g) \rightarrow 4\ H_2O(l) + 3\ CO_2(g)$				
	C_3H_8	O_2	H_2O	CO_2
6	3			
7				15
8		10		
9				12
10			40	

$2\ N_2O_5(g) \rightarrow 4\ NO_2(g) + O_2(g)$			
	N_2O_5	NO_2	O_2
11	2.5		
12		1.5	
13			9.6
14		5.3	
15	7.2		

$2\ C_8H_{18}(l) + 25\ O_2(g) \rightarrow 16\ CO_2(g) + 18\ H_2O(g)$				
	C_8H_{18}	O_2	CO_2	H_2O
16	1.0			
17		1.8		
18			9.6	
19				4.3
20			7.0	

Using the equations provided, answer the questions. Make sure to check if the equations are balanced!

$2\ SO_2(g) + O_2(g) + 2\ H_2O(l) \rightarrow 2\ H_2SO_4$

21. How many grams of H_2SO_4 can be formed from 3.1 grams of SO_2?
22. How many grams of H_2SO_4 are needed to form 5.4 grams of O_2?
23. Given 3 kg of SO_2, 2 kg of O_2, and plenty of water, which compound would be limiting reagent?
24. What would be the theoretical yield in moles of H_2SO_4 given the amounts in question 23?

$3\ CaCl_2 + 2\ Na_3PO_4 \rightarrow Ca_3(PO_4)_2 + 6\ NaCl$

25. How many grams of NaCl can be formed from 4.8 grams of $CaCl_2$?
26. How many grams of Na_3PO_4 are needed to form 2.7 grams of NaCl?
27. Given 32 g of $CaCl_2$ and 32 g of Na_3PO_4, which compound would be limiting reagent in forming $Ca_3(PO_4)_2$?
28. What would be the theoretical yield in grams of $Ca_3(PO_4)_2$ given the amounts in question 27?

$4\ FeS + 7\ O_2 \rightarrow 2\ Fe_2O_3 + 4\ SO_2$

29. How many grams of SO_4 can be formed from 2.9 grams of FeS?
30. How many grams of O_2 are needed to form 3.3 grams of Fe_2O_3?
31. Given 1.1 g of FeS and 4.3 g of O_2, which compound would be limiting reagent in forming SO_2?
32. What would be the theoretical yield in grams of Fe_2O_3 given the amounts in question 31?

$NH_3 + O_2 \rightarrow NO + H_2O$

33. How many grams of NO can be formed from 9.9 grams of NH_3?
34. How many grams of O_2 are needed to form 7.7 grams of NO?
35. Given 45 g of NH_3 and 50 g of O_2, which compound would be limiting reagent in forming NO?
36. What would be the theoretical yield in grams of NO given the amounts in question 35?