## Summer Review Sheet \#4 <br> Balancing Equations and Simple Stoichiometry

Answers are provided on the second sheet. Please try to do the worksheet without referring to them, because you'll be expected to know this stuff the first day of school!

Balance the following equations:

1) $\qquad$ $\mathrm{N}_{2}+$ $\qquad$ $\mathrm{F}_{2} \rightarrow$ $\qquad$ $\mathrm{NF}_{3}$
2) $\qquad$ $\mathrm{C}_{6} \mathrm{H}_{10}+$ $\qquad$ $\mathrm{O}_{2} \rightarrow$ $\qquad$ $\mathrm{CO}_{2}+$ $\qquad$ $\mathrm{H}_{2} \mathrm{O}$
3) $\qquad$ $\mathrm{HBr}+$ $\qquad$ $\mathrm{KHCO}_{3} \rightarrow \ldots \mathrm{H}_{2} \mathrm{O}+$ $\qquad$ $\mathrm{KBr}+\ldots \mathrm{CO}_{2}$
4) $\qquad$ $\mathrm{Na}_{2} \mathrm{SO}_{3} \rightarrow$ $\qquad$ $\mathrm{Ga}_{2}\left(\mathrm{SO}_{3}\right)_{3}+$ $\qquad$ NaBr
5) $\qquad$ $\mathrm{SnO}+$ $\qquad$ $\mathrm{NF}_{3} \rightarrow$ $\qquad$ $\mathrm{SnF}_{2}+$ $\qquad$ $\mathrm{N}_{2} \mathrm{O}_{3}$

Using the equation from problem 2 above, answer the following questions:
6) If I do this reaction with 35 grams of $\mathrm{C}_{6} \mathrm{H}_{10}$ and 45 grams of oxygen, how many grams of carbon dioxide will be formed?
7) What is the limiting reagent for problem 6 ? $\qquad$
8) How much of the excess reagent is left over after the reaction from problem 6 is finished?
9) If 35 grams of carbon dioxide are actually formed from the reaction in problem 6, what is the percent yield of this reaction?

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Balance the following equations:

1) $1 \mathrm{~N}_{2}+3 \mathrm{~F}_{2} \rightarrow 2 \mathrm{NF}_{3}$
2) $2 \mathrm{C}_{6} \mathrm{H}_{10}+17 \mathrm{O}_{2} \rightarrow 12 \mathrm{CO}_{2}+10 \mathrm{H}_{2} \mathrm{O}$
3) $1 \mathrm{HBr}+1 \mathrm{KHCO}_{3} \rightarrow 1 \mathrm{H}_{2} \mathrm{O}+1 \mathrm{KBr}+1 \mathrm{CO}_{2}$
4) $2 \mathrm{GaBr}_{3}+3 \mathrm{Na}_{2} \mathrm{SO}_{3} \rightarrow 1 \mathrm{Ga}_{2}\left(\mathrm{SO}_{3}\right)_{3}+6 \mathrm{NaBr}$
5) $3 \mathrm{SnO}+2 \mathrm{NF}_{3} \rightarrow 3 \mathrm{SnF}_{2}+1 \mathrm{~N}_{2} \mathrm{O}_{3}$

Using the equation from problem 2 above, answer the following questions:
6) If I do this reaction with 35 grams of $\mathrm{C}_{6} \mathrm{H}_{10}$ and 45 grams of oxygen, how many grams of carbon dioxide will be formed?
When you do this calculation for 35 grams of $\mathrm{C}_{6} \mathrm{H}_{10}$, you find that 113 grams of $\mathrm{CO}_{2}$ will be formed. When you do the calculation for 45 grams of oxygen, you find that 43.7 grams of $\mathrm{CO}_{2}$ will be formed. Because 43.7 grams is the smaller number, oxygen is the limiting reagent, forming 43.7 grams of product.
7) What is the limiting reagent for problem 6? oxygen
8) How much of the excess reagent is left over after the reaction from problem 6 is finished?
21.5 grams of $\mathrm{C}_{6} \mathrm{H}_{10}$ will be left over.
9) If 35 grams of carbon dioxide are actually formed from the reaction in problem 6, what is the percent yield of this reaction?
80.1\%

