$\qquad$

Consider the following chemical equation to answer the questions below.

$$
\mathrm{C}_{3} \mathrm{H}_{8}+5 \mathrm{O}_{2} \rightarrow 3 \mathrm{CO}_{2}+4 \mathrm{H}_{2} \mathrm{O}
$$

1. $\qquad$ molecules of $\mathrm{C}_{3} \mathrm{H}_{8}$ react with $\qquad$ molecules of $\mathrm{O}_{2}$ to produce $\qquad$ molecules of $\mathrm{CO}_{2}$ and $\qquad$ molecules of $\mathrm{H}_{2} \mathrm{O}$.
2. 20 molecules of $\mathrm{C}_{3} \mathrm{H}_{8}$ react with $\qquad$ molecules of $\mathrm{O}_{2}$ to produce $\qquad$ molecules of $\mathrm{CO}_{2}$ and $\qquad$ molecules of $\mathrm{H}_{2} \mathrm{O}$.
3. $6.022 \times 10^{23}$ molecules of $\mathrm{C}_{3} \mathrm{H}_{8}$ react with $\qquad$ molecules of $\mathrm{O}_{2}$ to produce
$\qquad$ molecules of $\mathrm{CO}_{2}$ and $\qquad$ molecules of $\mathrm{H}_{2} \mathrm{O}$.
4. 1 mole of $\mathrm{C}_{3} \mathrm{H}_{8}$ reacts with $\qquad$ moles of $\mathrm{O}_{2}$ to produce $\qquad$ moles of $\mathrm{CO}_{2}$ and
$\qquad$ moles of $\mathrm{H}_{2} \mathrm{O}$.
5. 5 moles of $\mathrm{C}_{3} \mathrm{H}_{8}$ reacts with $\qquad$ moles of $\mathrm{O}_{2}$ to produce $\qquad$ moles of $\mathrm{CO}_{2}$ and
$\qquad$ moles of $\mathrm{H}_{2} \mathrm{O}$.
6. 44 g of $\mathrm{C}_{3} \mathrm{H}_{8}$ reacts with $\qquad$ grams of $\mathrm{O}_{2}$ to produce $\qquad$ grams of $\mathrm{CO}_{2}$ and grams of $\mathrm{H}_{2} \mathrm{O}$.
7. $\quad 176 \mathrm{~g}$ of $\mathrm{C}_{3} \mathrm{H}_{8}$ reacts with $\qquad$ grams of $\mathrm{O}_{2}$ to produce $\qquad$ grams of $\mathrm{CO}_{2}$ and
$\qquad$ grams of $\mathrm{H}_{2} \mathrm{O}$.
8. How many moles of carbon dioxide can be produced from the reaction of 12 moles of propane?
9. What mass of oxygen is needed to produce 65 grams of water?
10. How many moles of carbon dioxide can be produced from the reaction of 225 g of propane?
11. What mass of $\mathrm{H}_{2} \mathrm{O}$ is produced from the reaction of 6.3 g of propane?
12. How many molecules of $\mathrm{H}_{2} \mathrm{O}$ are produced when 2 moles of $\mathrm{O}_{2}$ are reacted with excess propane?
