Name: _____
Period: _____ Date: _____

# Limiting Reactant WS K & L

1. Which type of reactant will be completely used in a reaction?
   limiting reactant

2. Which type of reactant will be left over after the reaction takes place? excess reactant

3. What would be the limiting reactant if wood were burning on a campfire? wood

4. What would be the excess reactant if an iron nail completely rusted? oxygen

5. *To make 1 batch of brownies, you need the following:*

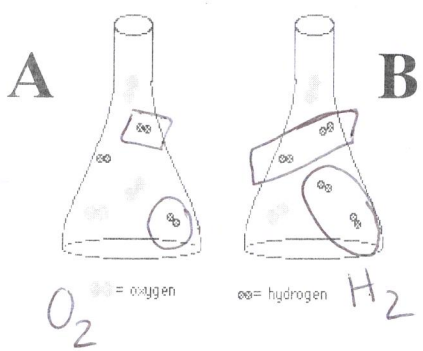
| | | |
|---|---|---|
| 1 cup sugar | 2.5 cups flour | 1 tsp. baking soda |
| 1 cup cocoa | 2 eggs | 2 sticks of butter |

*In the pantry you have the following:*

| | | |
|---|---|---|
| 4 cups sugar – 4 | 7 cups flour – 2 | 1 box baking soda |
| 1container cocoa | 1 dozen eggs – 6 | 4 sticks of butter – 2 |

How many batches of brownies can you make and what is the limiting reactant? butter, 2 batches

6. Each flask contains $H_2$ and $O_2$ gas. When they combine to form water in the reaction $\mathbf{2H_2 + O_2 \rightarrow 2H_2O}$, which flask will have a limiting reactant (A or B) and what is it ($H_2$ or $O_2$)?




Name: _____
Period: _____ Date: _____

# Limiting Reactant WS K & L

1. Which type of reactant will be completely used in a reaction?
   limiting

2. Which type of reactant will be left over after the reaction takes place? excess

3. What would be the limiting reactant if wood were burning on a campfire? wood

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5. *To make 1 batch of brownies, you need the following:*

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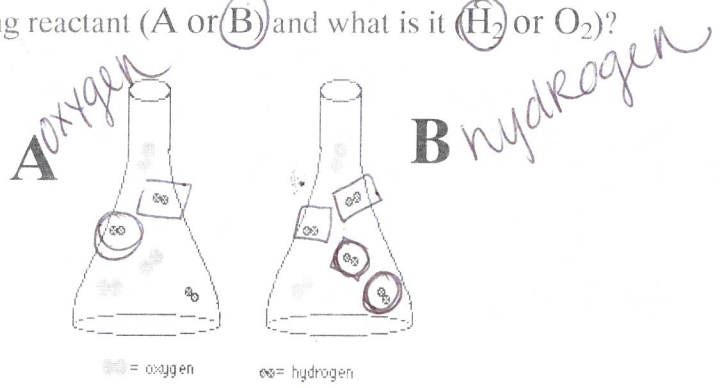
| 4 cups sugar – 4 | 7 cups flour – 2 | 1 box baking soda |
| 1container cocoa | 1 dozen eggs – 6 | 4 sticks of butter – 2 |

How many batches of brownies can you make and what is the limiting reactant? 2 - butter.

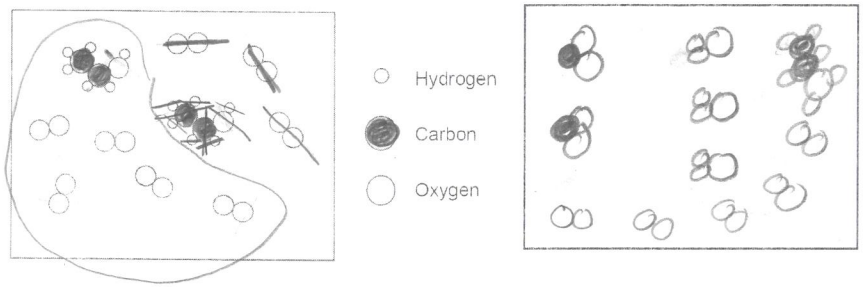
6. Each flask contains $H_2$ and $O_2$ gas. When they combine to form water in the reaction $\mathbf{2H_2 + O_2 \rightarrow 2H_2O}$, which flask will have a limiting reactant (A or B) and what is it ($H_2$ or $O_2$)?



7. The reactants for the following balanced chemical equation are shown below. Draw the products using your knowledge of the law of conservation of mass and limiting/excess reactants.

$C_2H_6O + 3\,O_2 \rightarrow 2\,CO_2 + 3\,H_2O$

**ethanol** **oxygen** **carbon dioxide** **water**




8. The combustion of ethane is represented by the following balanced equation: $C_2H_4 + 2O_2 \rightarrow 2CO_2 + 2H_2O$. If 2.7 moles of ethane reacted with 6.3 moles of oxygen, identify the limiting reactant.

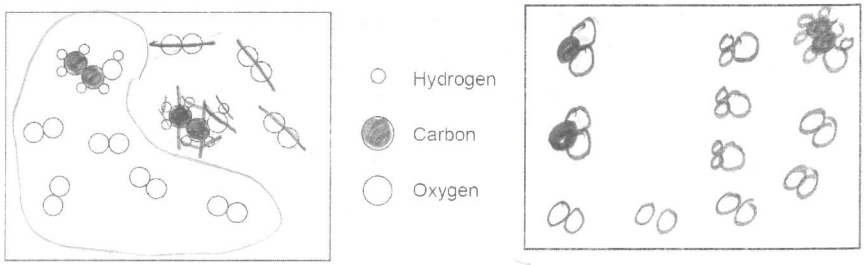
9. Photosynthesis is represented by the following balanced equation: $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$. If a plant consumes 88 g of carbon dioxide and 64 g of water, determine the limiting reactant.

10. Use the following unbalanced equation: ___$H_2$ + ___$N_2$ → ___$NH_3$ If you have 1.61 moles of hydrogen and 2.83 moles of nitrogen, how much ammonia can be formed? What is the limiting reactant?

7. The reactants for the following balanced chemical equation are shown below. Draw the products using your knowledge of the law of conservation of mass and limiting/excess reactants.

$C_2H_6O + 3\,O_2 \rightarrow 2\,CO_2 + 3\,H_2O$

**ethanol** **oxygen** **carbon dioxide** **water**




8. The combustion of ethane is represented by the following balanced equation: $C_2H_4 + 2O_2 \rightarrow 2CO_2 + 2H_2O$. If 2.7 moles of ethane reacted with 6.3 moles of oxygen, identify the limiting reactant.

$\frac{x \text{ moles } C_2H_4}{6.3 \text{ moles } O_2} = \frac{1 \text{ mole } C_2H_4}{2 \text{ moles } O_2}$ LR-ethane

$x = 3.15 \text{ moles } C_2H_4$

9. Photosynthesis is represented by the following balanced equation: $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$. If a plant consumes 88 g of carbon dioxide and 64 g of water, determine the limiting reactant.

$\frac{x \text{ g } CO_2}{64 \text{ g } H_2O} = \frac{264.054 \text{ g } CO_2}{108.09 \text{ g } H_2O}$ LR: $CO_2$

$x = 156.35 \text{ g } CO_2$

10. Use the following unbalanced equation: ___$H_2$ + ___$N_2$ → ___$NH_3$ If you have 1.61 moles of hydrogen and 2.83 moles of nitrogen, how much ammonia can be formed? What is the limiting reactant?

$\frac{x \text{ g } NH_3}{1.61 \text{ mol } H_2} = \frac{34.062}{3 \text{ mol } H_2}$

$x = 18 \text{ g of } NH_3$

$\frac{x \text{ moles } H_2}{2.83 \text{ moles } N_2} = \frac{3 \text{ moles } H_2}{1 \text{ mole } N_2}$ LR: $H_2$

$x \text{ moles} = 8.49 \text{ moles } H_2$

~~8.5 $H_2$ + 2.83 $N_2$ →~~