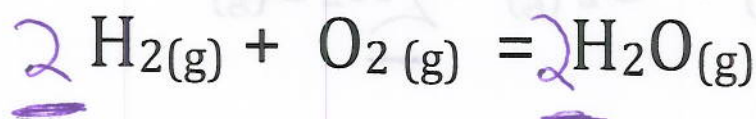


Name \_\_\_\_\_



The first step to any stoichiometry problem is to balance the equation!  
Balance the above equation before solving the problems below.

1. What is the molar ratio of hydrogen gas to oxygen gas needed for the synthesis of water?  $2:1$

2. If 10 moles of hydrogen gas are reacted with an excess of oxygen gas, how many moles of water vapor will be produced?  $10 \text{ mol H}_2\text{O}$

3. If 10 moles of hydrogen gas are reacted with an excess of oxygen gas, how many moles of oxygen gas are used in the reaction?  $5 \text{ mol O}_2$

4. If 10 moles of oxygen gas react with an excess of hydrogen gas, how many moles of water vapor will be produced?  $20 \text{ mol H}_2\text{O}$

5. If 6 moles of water vapor are produced, how many moles of hydrogen gas were used in the reaction?  $6 \text{ mol H}_2$

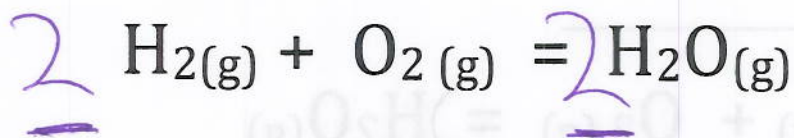
6. If 6 moles of water vapor are produced, how many moles of oxygen gas were used?  $3 \text{ mol O}_2$

7. If 2.00 grams of hydrogen gas are reacted with an excess of oxygen gas, what mass of water will be produced?

$$\frac{2.00 \text{ g H}_2}{2.016 \text{ g H}_2} \times \frac{1 \text{ mol H}_2}{2 \text{ mol H}_2} \times \frac{2 \text{ mol H}_2\text{O}}{1 \text{ mol H}_2} \times \frac{18.015 \text{ g}}{1 \text{ mol H}_2\text{O}} = 17.9 \text{ g H}_2\text{O}$$

8. If 2.00 grams of hydrogen gas are reacted with an excess of oxygen gas, what mass of oxygen gas was used in the reaction?

$$\frac{2.00 \text{ g H}_2}{2.016 \text{ g H}_2} \times \frac{1 \text{ mol H}_2}{2 \text{ mol H}_2} \times \frac{1 \text{ mol O}_2}{1 \text{ mol H}_2} \times \frac{31.998 \text{ g O}_2}{1 \text{ mol O}_2} = 15.9 \text{ g O}_2$$



9. If 10.0 **grams** of water vapor are produced in the reaction, how many **grams** of hydrogen gas were used in the reaction?

10.0 g H <sub>2</sub> O	1 mol H <sub>2</sub> O	2 mol H <sub>2</sub>	2.016 g	=
	18.015 g H <sub>2</sub> O	2 mol H <sub>2</sub> O	1 mol H <sub>2</sub>	

10. If 10.0 **grams** of water vapor are produced in the reaction, how many **grams** of oxygen gas were used in the reaction?

10.0 g H <sub>2</sub> O	1 mol H <sub>2</sub> O	1 mol O <sub>2</sub>	31.998 g O <sub>2</sub>	=	8.88 g O <sub>2</sub>
	18.015 g H <sub>2</sub> O	2 mol H <sub>2</sub> O	1 mol O <sub>2</sub>		

11. If 3.00 grams of oxygen gas were consumed in the reaction, how many grams of hydrogen gas were used?

3.00 g O <sub>2</sub>	1 mol O <sub>2</sub>	2 mol H <sub>2</sub>	2.016 g H <sub>2</sub>	=	0.378 g H <sub>2</sub>
	31.998 g O <sub>2</sub>	1 mol O <sub>2</sub>	1 mol H <sub>2</sub>		

12. If 3.00 grams of oxygen gas were consumed in the reaction, how many grams of water vapor should have been produced?

3.00 g O <sub>2</sub>	1 mol O <sub>2</sub>	2 mol <del>H<sub>2</sub></del> <sup>H<sub>2</sub>O</sup>	18.015 g H <sub>2</sub> O	=	3.38 g H <sub>2</sub> O
	31.998 g O <sub>2</sub>	1 mol O <sub>2</sub>	1 mol H <sub>2</sub> O		

Answers:

- |                           |                              |                            |                              |
|---------------------------|------------------------------|----------------------------|------------------------------|
| 1) 2:1                    | 2) 10 moles H <sub>2</sub> O | 3) 5 moles O <sub>2</sub>  | 4) 20 moles H <sub>2</sub> O |
| 5) 6 moles H <sub>2</sub> | 6) 3 moles O <sub>2</sub>    | 7) 17.9 g H <sub>2</sub> O | 8) 15.9 g O <sub>2</sub>     |
| 9) 1.12 g H <sub>2</sub>  | 10) 8.88 g O <sub>2</sub>    | 11) 0.378 g H <sub>2</sub> | 12) 3.38 g H <sub>2</sub> O  |