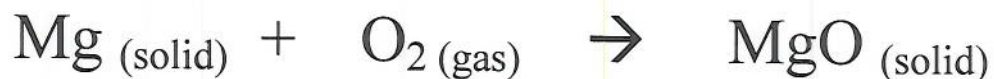
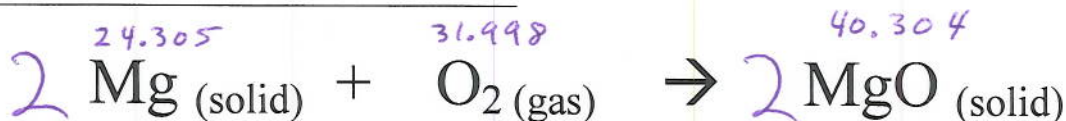


Name _____



1. Balance the equation above.
2. If you start with 4.00 moles of Mg, how many moles of magnesium oxide will be produced?
3. How many atoms are in one **molecule** of oxygen gas (O₂)?
4. If you start with 5.0 moles of magnesium, how many moles of O₂ will be needed to completely react with the magnesium?
5. If 3.00 moles of oxygen gas (O₂) are consumed in the reaction, how many **moles** of magnesium (Mg) were used in the reaction?
6. What is the molar ratio of Mg to O₂ needed for the synthesis of MgO?
7. If you begin with **1.00 mole** of magnesium (Mg), what **theoretical yield** of magnesium oxide (MgO) can be produced?
8. If you begin with 3.00 grams of magnesium, what is the **theoretical yield** of magnesium oxide that can be produced?
9. If you begin with 3.00 grams of magnesium, what **mass** of oxygen gas will be required to completely react with the magnesium?
10. When a strip of magnesium is burned in the air, should it lose mass or gain mass during the reaction? Why?

Name Key



- Balance the equation above.
- If you start with 4.00 moles of Mg, how many moles of magnesium oxide will be produced? *4.00 mol*
- How many atoms are in one **molecule** of oxygen gas (O₂)? *2 atoms*
- If you start with 5.0 moles of magnesium, how many moles of O₂ will be needed to completely react with the magnesium? *2.5 mol O₂*
- If 3.00 moles of oxygen gas (O₂) are consumed in the reaction, how many **moles** of magnesium (Mg) were used in the reaction? *6.00 mol Mg*
- What is the molar ratio of Mg to O₂ needed for the synthesis of MgO? *2:1*

- If you begin with **1.00 mole** of magnesium (Mg), what **theoretical yield** of magnesium oxide (MgO) can be produced?

$$\frac{1.00 \text{ mol Mg}}{1.00 \text{ mol Mg}} \times \frac{1.00 \text{ mol MgO}}{1 \text{ mol MgO}} \times \frac{40.304 \text{ g MgO}}{1 \text{ mol MgO}} = 40.304 \text{ g MgO}$$

40.3 g MgO

- If you begin with 3.00 grams of magnesium, what is the **theoretical yield** of magnesium oxide that can be produced?

$$\frac{3.00 \text{ g Mg}}{24.305 \text{ g Mg}} \times \frac{1 \text{ mol Mg}}{2 \text{ mol Mg}} \times \frac{2 \text{ mol MgO}}{1 \text{ mol MgO}} \times \frac{40.304 \text{ g MgO}}{1 \text{ mol MgO}} = 4.97 \text{ g MgO}$$

- If you begin with 3.00 grams of magnesium, what **mass** of oxygen gas will be required to completely react with the magnesium?

$$\frac{3.00 \text{ g Mg}}{24.305 \text{ g Mg}} \times \frac{1 \text{ mol Mg}}{2 \text{ mol Mg}} \times \frac{1 \text{ mol O}_2}{1 \text{ mol O}_2} \times \frac{31.998 \text{ g O}_2}{1 \text{ mol O}_2} = 1.97 \text{ g O}_2$$

- When a strip of magnesium is burned in the air, should it lose mass or gain mass during the reaction? Why?

gain mass because oxygen is adding (O₂) bonding to the Mg