# Synthesis of Magnesium Oxide Worksheet

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**Name:**

A chemical reaction occurs whenever one of more chemical substances, called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, are converted into one or more different chemical substances, called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This transformation is represented by a **generic equation:**

**\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_\_\_**

For many chemical reactions, a careful analysis is needed to prove the identity of the products. You see this in CSI type shows on TV when the forensics team are trying to identify the type of residues left behind to know what was burned. However, for some reactions, it can be easy to observe that a reaction has taken place.

Discuss with your group then write some sentences or bullet points to record your knowledge of combustion reactions based on the discussion at the start of class.

Think about patterns in which substances will burn, how to end a fire (think fire triangle...), and about the energy storage changes in the system.



EXAMPLE A: THE SYNTHESIS OF MAGNESIUM OXIDE by the combustion of magnesium in air.

Describe the appearance of magnesium. What happens if you try to bend it?

Describe what happens when the strip of magnesium is ignited. Be specific about what happens, what is produced, and what is formed.

From your knowledge of combustion, what gas must be present for the reaction to occur?

Write the chemical formulas for **magnesium and oxygen**:

Write the chemical formula for **magnesium oxide**:

Name the two elements magnesium oxide is made of?

How did you know that a reaction has taken place?

What two forms of energy are produced in the synthesis of magnesium oxide?

What two elements were combined in this reaction?

Write a word equation to represent the reaction that occurred.

Translate this word equation to a chemical equation for the reaction:

What is a **synthesis** reaction?

Write a generic synthesis/combustion reaction.

For the following synthesis reactions, fill in the blank compounds or elements. Make sure **compound formulae are accurate** (i.e. charge balanced).

1. Ca + O2 🡪 \_\_\_\_\_\_\_
2. Al + Cl2 🡪 \_\_\_\_\_\_\_
3. Al + Br2 🡪 \_\_\_\_\_\_\_
4. Sn + \_\_\_\_\_\_\_\_ 🡪 SnF2
5. Fe + \_\_\_\_\_\_\_\_ 🡪 FeF3
6. Na + \_\_\_\_\_\_\_\_ 🡪 NaCl
7. \_\_\_\_\_\_\_\_ + O2 🡪 Na2O
8. \_\_\_\_\_\_\_\_ + O2 🡪 Li2O
9. \_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_ 🡪 NaBr
10. \_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_ 🡪 Fe2O3

If you are feeling confident, try balancing the equations. This will only work if you have the correct compound formulae!