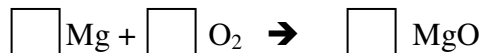


# Balancing Act

## Overhead Key

Atoms are not **CREATED** or **DESTROYED** during a chemical reaction. Scientists know that there must be the **SAME** number of atoms on each **SIDE** of the **EQUATION**. To balance the chemical equation, you must add **COEFFICIENTS** in front of the chemical formulas in the equation. You cannot **ADD** or **CHANGE** subscripts!

Step 1: Determine number of atoms for each element.



Step 2: Pick an element that is not equal on both sides of the equation.

Mg =

Mg =

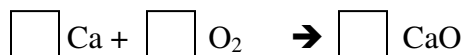
O =

O =

Step 3: Add a coefficient in front of the formula with that element and adjust your counts.

Step 4: Continue adding coefficients to get the same number of atoms of each element on each side.

Try these:

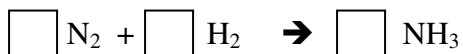


Ca =

Ca =

O =

O =

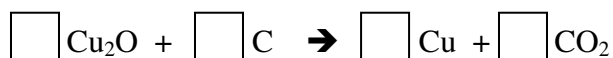


N =

N =

H =

H =



Cu =

Cu =

O =

O =

C =

C =



H =

H =

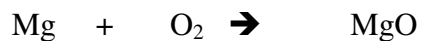
O =

O =

### Step-by-Step Example Problem:

#### Balancing Act Teacher Notes

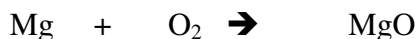
**Step 1: Determine number of atoms for each element.**



$$\text{Mg} = 1 \qquad \text{Mg} = 1$$

$$\text{O} = 2 \qquad \text{O} = 1$$

**Step 2: Pick an element that is not equal on both sides of the equation.**

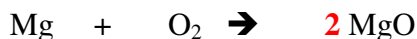


$$\text{Mg} = 1 \qquad \text{Mg} = 1$$

$$\text{O} = 2 \qquad \text{O} = 1$$

Since the O atoms are not equal,  
we'll target those first!

**Step 3: Add a coefficient in front of the formula with that element and adjust your counts.**

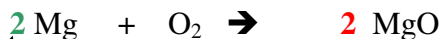


$$\text{Mg} = 1 \qquad \text{Mg} = \cancel{1} 2$$

$$\text{O} = 2 \qquad \text{O} = \cancel{1} 2$$

Adding a 2 in front of MgO will  
change the number of atoms on the  
product side of the equation.

**Step 4: Continue adding coefficients to get the same number of atoms of each element on each side.**



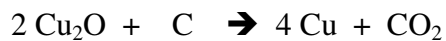
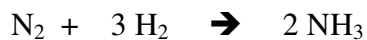
$$\text{Mg} = \cancel{1} 2 \qquad \text{Mg} = \cancel{1} 2$$

$$\text{O} = 2 \qquad \text{O} = \cancel{1} 2$$

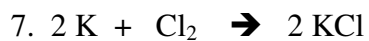
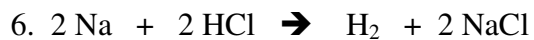
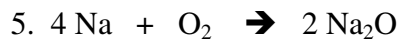
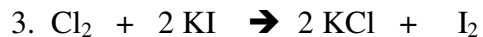
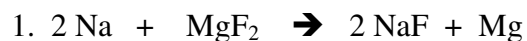
Now we need to increase the  
number of Mg atoms we have on the  
reactant side. Adding a 2 in front of  
Mg will give us 2 atoms of Mg and  
balance the equation.

## Balancing Act Answer Key:

### Page 1 Problems



### Page 2 Practice Problems



**Challenge: This one is tough!**

