

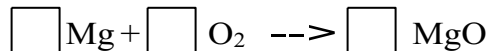
# Balancing Act

Name \_\_\_\_\_

Atoms are not \_\_\_\_\_ or \_\_\_\_\_ during a chemical reaction.

Scientists know that there must be the \_\_\_\_\_ number of atoms on each \_\_\_\_\_ of the \_\_\_\_\_. To balance the chemical equation, you must add \_\_\_\_\_ in front of the chemical formulas in the equation. You cannot \_\_\_\_\_ or \_\_\_\_\_ subscripts!

1) Determine number of atoms for each element.



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

Mg =

Mg =

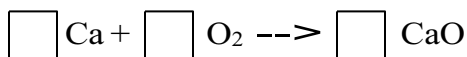
3) Add a coefficient in front of the formula with that element and adjust your counts.

O =

O =

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

## Try these:

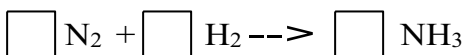


Ca =

Ca =

O =

O =

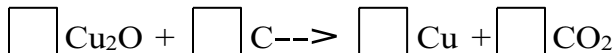


N =

N =

H =

H =



Cu =

Cu =

O =

O =

C =

C =



H =

H =

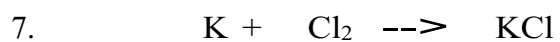
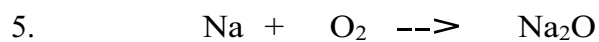
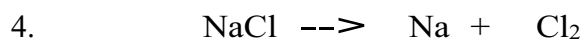
O =

O =

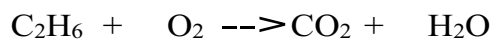
**Balancing Act Practice**

Name \_\_\_\_\_

Balance each equation. Be sure to show your lists! Remember you cannot add subscripts or place coefficients in the middle of a chemical formula.

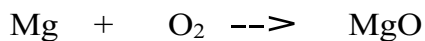


**Challenge: This one is tough!**



### Step-by-Step Example Problem:

Step 1: Determine number of atoms for each element.



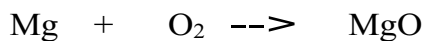
$$\text{Mg} = 1$$

$$\text{Mg} = 1$$

$$\text{O} = 2$$

$$\text{O} = 1$$

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



$$\text{Mg} = 1$$

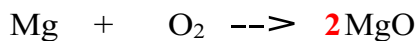
$$\text{Mg} = 1$$

$$\text{O} = 2$$

$$\text{O} = 1$$

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.



$$\text{Mg} = 1$$

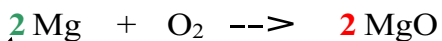
$$\text{Mg} = \cancel{1} 2$$

$$\text{O} = 2$$

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

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.



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

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

$$\text{O} = 2$$

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

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.

