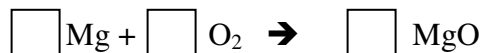


# Balancing Act

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.

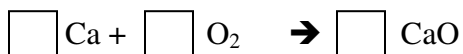
Mg = Mg =

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

O = O =

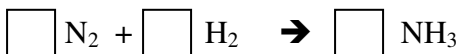
4) Continue adding coefficients to get the same number of atoms of each element on each side.

## Try these:



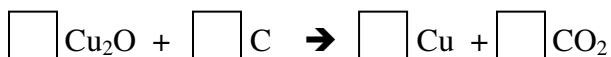
Ca = Ca =

O = O =



N = N =

H = H =



Cu = Cu =

O = O =

C = C =



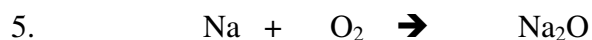
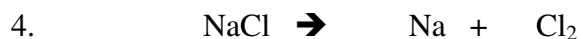
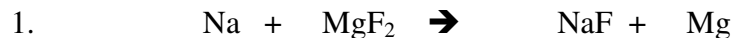
H = H =

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!**

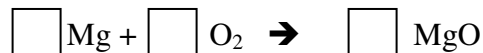


# Balancing Act

## 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.

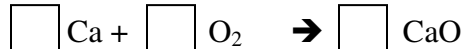
$$\text{Mg} = \qquad \qquad \text{Mg} =$$

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

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

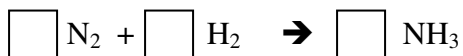
Step 4: Continue adding coefficients to get the same number of atoms of each element on each side.

Try these:



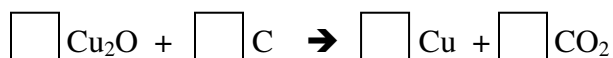
$$\text{Ca} = \qquad \qquad \text{Ca} =$$

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



$$\text{N} = \qquad \qquad \text{N} =$$

$$\text{H} = \qquad \qquad \text{H} =$$



$$\text{Cu} = \qquad \qquad \text{Cu} =$$

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

$$\text{C} = \qquad \qquad \text{C} =$$



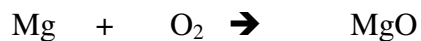
$$\text{H} = \qquad \qquad \text{H} =$$

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

### Step-by-Step Example Problem:

<b>Balancing Act Teacher Notes</b>
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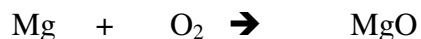
**Step 1: Determine number of atoms for each element.**



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

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

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

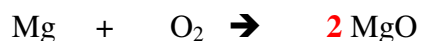


$$\text{Mg} = 1 \qquad \text{Mg} = 1$$

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

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.**

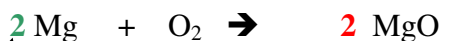


$$\text{Mg} = 1 \qquad \text{Mg} = \cancel{1} 2$$

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

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.**



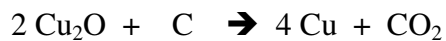
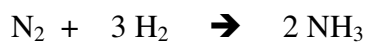
$$\text{Mg} = \cancel{1} 2 \qquad \text{Mg} = \cancel{1} 2$$

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

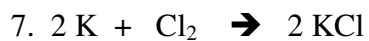
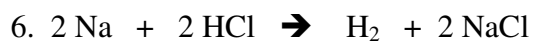
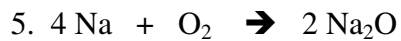
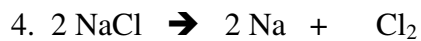
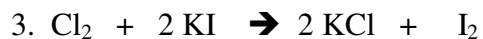
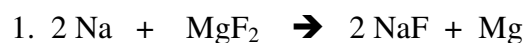
Now we need to increase the number of Mg atoms we have on the reactant side. Adding a 2 in front of Mg will give us 2 atoms of Mg and balance the equation.
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## Balancing Act Answer Key:

### Page 1 Problems



### Page 2 Practice Problems



### Challenge: This one is tough!

