## Boloncing Act

Name $\qquad$

Atoms are not $\qquad$ or $\qquad$ during a chemical reaction.

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

1) Determine number of atoms for each element.
2) Pick an element that is not equal on both sides of the equation.
3) Add a coefficient in front of the formula with that element and adjust your counts.
4) Continue adding coefficients to get the same number of atoms of each element on each side.

## Try these:


$\mathrm{N}=\quad \mathrm{N}=$
$\mathrm{H}=\quad \mathrm{H}=$



$$
\square \mathrm{H}_{2} \mathrm{O}_{2} \quad \rightarrow \square \mathrm{H}_{2} \mathrm{O}+\square \mathrm{O}_{2}
$$

$$
\begin{array}{ll}
\mathrm{H}= & \mathrm{H}= \\
\mathrm{O}= & \mathrm{O}=
\end{array}
$$

$\qquad$
Balance each equation. Be sure to show your lists! Remember you cannot add subscripts or place coefficients in the middle of a chemical formula.
1.

$$
\mathrm{Na}+\mathrm{MgF}_{2} \rightarrow \quad \mathrm{NaF}+\mathrm{Mg}
$$

2. 

$$
\mathrm{Mg}+\mathrm{HCl} \quad \rightarrow \quad \mathrm{MgCl}_{2}+\mathrm{H}_{2}
$$

3. $\mathrm{Cl}_{2}+\mathrm{KI} \rightarrow \mathrm{KCl}+\mathrm{I}_{2}$
4. $\mathrm{NaCl} \rightarrow \quad \mathrm{Na}+\mathrm{Cl}_{2}$
5. $\quad \mathrm{Na}+\mathrm{O}_{2} \rightarrow \quad \mathrm{Na}_{2} \mathrm{O}$
6. $\mathrm{Na}+\mathrm{HCl} \quad \rightarrow \quad \mathrm{H}_{2}+\mathrm{NaCl}$
7. $\mathrm{K}+\mathrm{Cl}_{2} \rightarrow \quad \mathrm{KCl}$

Challenge: This one is tough!

$$
\mathrm{C}_{2} \mathrm{H}_{6}+\mathrm{O}_{2} \rightarrow \mathrm{CO}_{2}+\mathrm{H}_{2} \mathrm{O}
$$

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.

$$
\square \mathrm{Mg}+\square \mathrm{O}_{2} \rightarrow \quad \square \mathrm{MgO}
$$

$$
\begin{array}{ll}
\mathrm{Mg}= & \mathrm{Mg}= \\
\mathrm{O}= & \mathrm{O}=
\end{array}
$$

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:


Step 1: Determine number of atoms for each element.

Balancing Act
Teacher Notes

$$
\mathrm{Mg}+\mathrm{O}_{2} \rightarrow \quad \mathrm{MgO}
$$

$\mathrm{Mg}=1$
$\mathrm{Mg}=1$
$\mathrm{O}=2$
$\mathrm{O}=1$

Step 2: Pick an element that is not equal on both sides of the equation.
$\mathrm{Mg}+\mathrm{O}_{2} \rightarrow \quad \mathrm{MgO}$
$\mathrm{Mg}=1 \quad \mathrm{Mg}=1$
$\mathrm{O}=2$
$\mathrm{O}=1$

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.

| $\mathrm{Mg}+\mathrm{O}_{2} \rightarrow$ | 2 MgO |
| :--- | :--- |
| $\mathrm{Mg}=1$ |  |

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


