

Name: \_\_\_\_\_  
Period: \_\_\_\_\_

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## Balancing Chemical Reactions

*We balance chemical reactions for mass must be conserved.*

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Don't Change Subscripts!

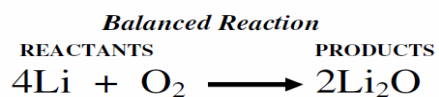
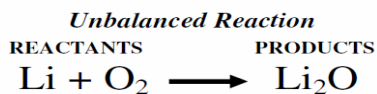
Coefficients Multiply!

Steps to Balancing Equations

- 1.
- 2.
- 3.
- 4.

Number of Atoms Must be Equal on Both Sides

The number of atoms of each element must be the same on both sides.



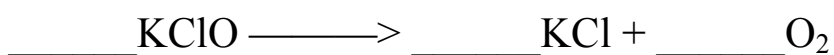
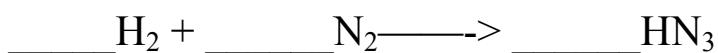
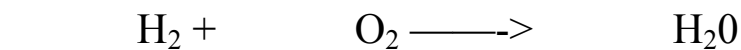
Expanding Compounds

Reaction Notation



Be Patient

When balancing some chemical equations you may have to change the coefficients several times. When one element becomes balanced, another may become unbalanced. Be patient and eventually you will succeed.



<i>Expand out these compounds.</i>	<i>Write the following in reaction notation.</i>
3MgCl <sub>2</sub> = _____	3MgCl <sub>2</sub> = _____      2K <sub>3</sub> N = _____
4H <sub>2</sub> = _____	4H <sub>2</sub> = _____      6Ca = _____
2Al <sub>2</sub> O <sub>3</sub> = _____	2Al <sub>2</sub> O <sub>3</sub> = _____      8NaCl = _____
BeO = _____	BeO = _____      7Fe <sub>2</sub> O <sub>3</sub> = _____
5Li <sub>2</sub> O = _____	5Li <sub>2</sub> O = _____      2Ca(SO <sub>4</sub> ) = _____

<i>Why do we balance chemical reactions?</i>	<i>Write the coefficient to equal the correct number of atoms.</i>
	____ Be <sub>2</sub> Br = Be <sub>6</sub> Br <sub>3</sub> ____ BeI <sub>2</sub> = BeI <sub>2</sub> ____ O <sub>2</sub> = O <sub>4</sub> ____ H <sub>2</sub> O = H <sub>16</sub> O <sub>8</sub> ____ Li <sub>3</sub> N = Li <sub>12</sub> N <sub>4</sub> ____ CO = C <sub>4</sub> O <sub>4</sub> ____ CO <sub>2</sub> = C <sub>3</sub> O <sub>6</sub> ____ Mg <sub>3</sub> N <sub>2</sub> = Mg <sub>6</sub> N <sub>4</sub> ____ NaCl = Na <sub>5</sub> Cl <sub>5</sub> ____ Ca(CO <sub>3</sub> ) = Ca <sub>3</sub> C <sub>3</sub> O <sub>9</sub> ____ Al <sub>2</sub> O <sub>3</sub> = Al <sub>12</sub> O <sub>18</sub> ____ Be(NO <sub>3</sub> ) <sub>2</sub> = Be <sub>4</sub> N <sub>8</sub> O <sub>24</sub>
Be + O <sub>2</sub> → BeO O	Is this reaction balanced correctly? Why or why not?

<i>Find the molecular masses of the following:</i>	
Al <sub>2</sub> =	
Li <sub>3</sub> N =	
Mg <sub>3</sub> N <sub>2</sub> =	
	If 11 grams of Sodium Sulfate reacts with 17 grams of Barium Chloride and produces 19 grams of table salt.  how much Ba(SO <sub>4</sub> ) is produced?  <b>Na<sub>2</sub>(SO<sub>4</sub>) + BaCl<sub>2</sub> → Ba(SO<sub>4</sub>) + 2NaCl</b> (11g)            (17g)            (?g)            (19g)

<i>Balance the following chemical reactions.</i> <i>(Write reaction notation beneath the reactions to help yourself.)</i>
____ ZnS + ____ O <sub>2</sub> → ____ ZnO + ____ SO <sub>2</sub>
____ Be + ____ O <sub>2</sub> → ____ BeO
____ Fe <sub>2</sub> O <sub>3</sub> + ____ C → ____ Fe + ____ CO
____ Li <sub>2</sub> O + ____ MgCl <sub>2</sub> → ____ LiCl + ____ MgO
____ Na <sub>2</sub> (SO <sub>4</sub> ) + ____ BaCl <sub>2</sub> → ____ Ba(SO <sub>4</sub> ) + ____ NaCl