

JELLYBEAN BALANCING

In this activity, you will learn to balance chemical reactions by using candy to represent the atoms involved in a chemical reaction. You may not eat your candy until instructed to do so!

Getting Started

WASH/SANITIZE YOUR HANDS BEFORE OBTAINING THE CANDY! Working with your partner, obtain the proper number of each colour candy. The chart below will serve as a reference for constructing the equations.

ATOM	O	H	Na	Cl	K	Ca
Jellybean Colour	Pink OR Red	Yellow	Purple	Green	Orange	White
Number	20	10	6	8	6	2

Understanding Balanced Chemical Equations

When chemicals react, atoms are conserved. That means that there must be the same number of each atom on each side of the arrow.

Look at the reaction! $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$

Try to represent this reaction below by using your candy (put Jellybeans in the boxes).

H_2	+	O_2	→	H_2O
	+		→	

Now answer the following questions while viewing the boxes above.

How many hydrogen candies are on the *left* side of the arrow? _____

How many oxygen candies are on the *left* side of the arrow?! _____

How many hydrogen candies are on the *right* side of the arrow? _____

How many oxygen candies are on the *right* side of the arrow?! _____

Is the equation, as it was originally written, a balanced equation? _____

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Now you will **"ADJUST"** the equation so that **IT IS BALANCED**. Some key ideas to remember...

- You may not change the chemical formula for any item.
 - **H₂ MUST STAY H₂**
 - **O₂ MUST STAY O₂**
 - **H₂O MUST STAY H₂O**

- You may use more candy to make more **whole molecules** of any individual product or reactant.
 - **H₂ is a "whole molecule" ...so you can make more H₂'s**
 - **O₂ is a "whole molecule" ...so you can make more O₂'s**
 - **H₂O is a "whole molecule" ...so you can make more H₂O's**

- You may not add individual atoms (pieces of candy) to either side.
 - **H₂ is a "whole molecule" ...so you can ADD more H₂'s**
 - **O₂ is a "whole molecule" ...so you can ADD more O₂'s**
 - **H₂O is a "whole molecule" ...so you can ADD more H₂O's**

Now try adding "WHOLE MOLECULES" to make the equation balanced.

H ₂	+	O ₂	→	H ₂ O
	+		→	

Now count the number of **EACH TYPE OF WHOLE MOLECULE**.

How many H₂'s do you have? _____

How many O₂'s do you have? _____

How many H₂O's do you have? _____

*****These are your NEW COEFFICIENTS of the equation. Fill them in the spaces below.**



Now answer the following questions.

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How many hydrogen candies are on the *left* side of the arrow? _____How many oxygen candies are on the *left* side of the arrow? _____How many hydrogen candies are on the *right* side of the arrow? _____How many oxygen candies are on the *right* side of the arrow? _____

Is the equation a balanced equation? _____

Now you will do the same thing with the following equations. Check with your teacher when done.

Put the initial compounds in the boxes BEFORE adding whole molecules!!!

REACTION 2: Sodium Chloride plus Calcium Oxide produces Sodium Oxide plus Calcium Chloride

NaCl	+	CaO	→	Na ₂ O	+	CaCl ₂
	+		→		+	



REACTION 3: Potassium Chlorate yields Potassium Chloride plus Oxygen

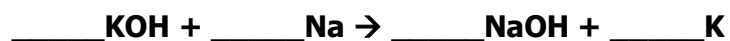
KClO ₃	→	KCl	+	O ₂
	→		+	



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REACTION 4: Potassium Hydroxide plus Sodium produces Sodium Hydroxide plus Potassium

KOH	+	Na	→	NaOH	+	K
	+		→		+	

**CHECK WITH YOUR TEACHER NOW...IF CORRECT YOU CAN EAT!!!****Post Lab Question**

1.) Why do you see OXYGEN as O₂ and Hydrogen as H₂? (look at your notes as we have discussed this)