

**Five Reaction Types**

Chemistry: <http://genest.weebly.com>

Stop in for help every day at lunch and Tues & Thurs after school!



**A N S W E R S**

Name \_\_\_\_\_

Period \_\_\_\_\_

Predict the products for the following reactions then balance the equation.

**Get the formula RIGHT**

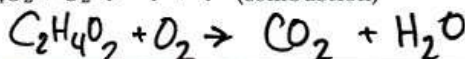
1:3:2:2 okay too!

Write out the **unbalanced** version of each reaction below

CaCO<sub>3</sub> → ? + ? (decomposition to form carbon dioxide and calcium oxide)



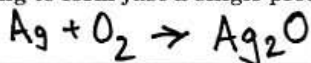
C<sub>2</sub>H<sub>4</sub>O<sub>2</sub> + O<sub>2</sub> → ? + ? (combustion)



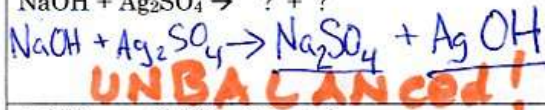
(single replacement) Na + Ag<sub>2</sub>S → ? + ?



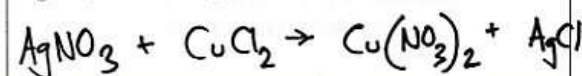
(combination) silver metal and oxygen gas reacting to form just a single product



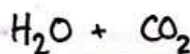
(double replacement) NaOH + Ag<sub>2</sub>SO<sub>4</sub> → ? + ?



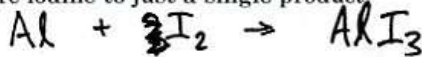
AgNO<sub>3</sub> + CuCl<sub>2</sub> → ? + ?



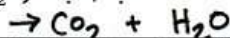
(combustion) C<sub>3</sub>H<sub>6</sub> + O<sub>2</sub> → ? + ?



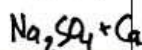
(combination) pure aluminum reacting with pure iodine to just a single product



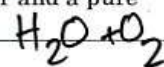
(combustion) O<sub>2</sub> + C<sub>5</sub>H<sub>12</sub>O<sub>2</sub> → ? + ?



(single replacement) Na + CaSO<sub>4</sub> → ? + ?



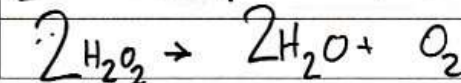
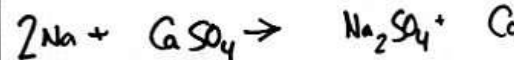
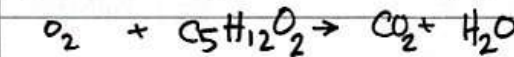
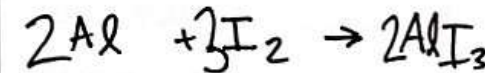
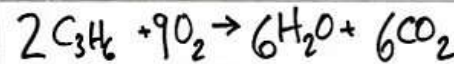
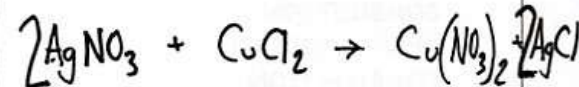
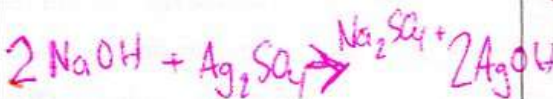
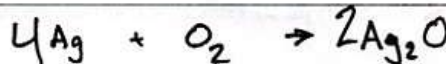
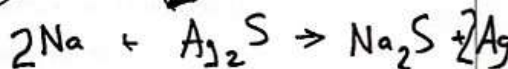
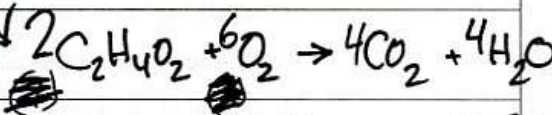
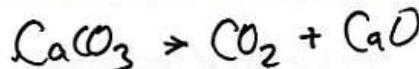
(decomposition to form water and a pure element) H<sub>2</sub>O<sub>2</sub> → ? + ?



Get a stamp here:

Stop! Don't touch this column until you get a stamp for the left hand column.

Now rewrite the same reaction as a **balanced** reaction.

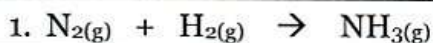




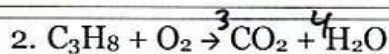
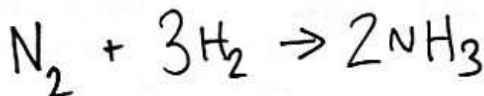
How to turn an unbalanced equation into a balanced equation

- With your finger, point to one element before and the same element after the arrow. Whichever side has not enough, increase the coefficient (The Big Number – never never touch the small subscript numbers)
- **write a little scoreboard. It helps. Grown up chemists do it all the time.**
- Balance chemical formulas by placing coefficients in front of them. **DO NOT** add subscripts, because this will change the formulas.

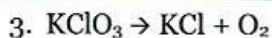
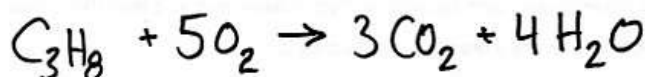
Balance these!



draw a little scoreboard over here to keep track



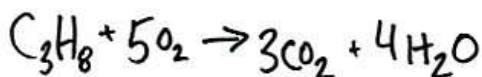
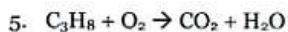
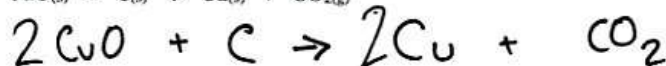
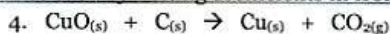
draw a little scoreboard over here to keep track

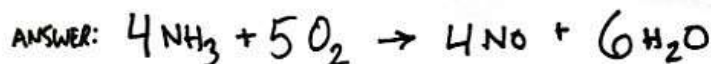
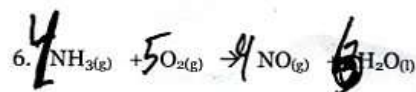


draw a little scoreboard over here to keep track



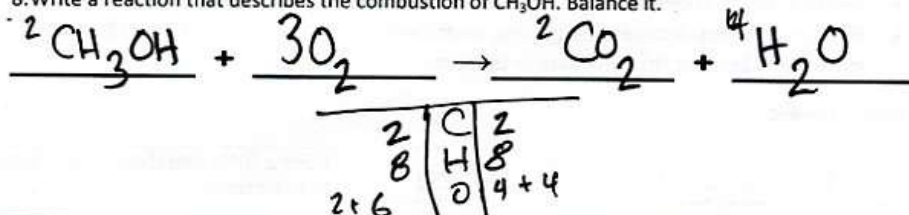
balance each by writing coefficients in front of the compounds:





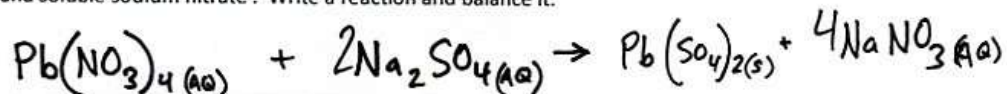
7. Which reaction numbers in #1 through #6 are combustion reactions? #2 AND #5

8. Write a reaction that describes the combustion of  $\text{CH}_3\text{OH}$ . Balance it.

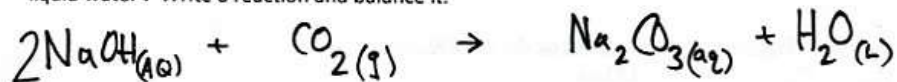


<p>9. Which equation shows conservation of mass?</p> <p>(1) <math>\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}</math></p> <p>(2) <math>\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}</math></p> <p>(3) <math>2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}</math> ← <span style="border: 1px solid black; border-radius: 50%; padding: 2px;"> <table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding: 0 5px;">4</td><td style="padding: 0 5px;">H</td><td style="padding: 0 5px;">4</td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">2</td><td style="padding: 0 5px;">O</td><td style="padding: 0 5px;">2</td></tr> </table> </span></p> <p>(4) <math>2\text{H}_2 + 2\text{O}_2 \rightarrow 2\text{H}_2\text{O}</math></p>	4	H	4	2	O	2	<p>10. If an equation is balanced properly, both sides of the equation must have the same number of</p> <p>(1) atoms (2) coefficients</p> <p>(3) molecules (4) all of the above</p>
4	H	4					
2	O	2					

8. Aqueous lead (IV) nitrate reacts with aqueous sodium sulfate to yield a lead (IV) sulfate precipitate and soluble sodium nitrate. Write a reaction and balance it.



9. Aqueous sodium hydroxide reacts with carbon dioxide gas to yield soluble sodium carbonate and liquid water. Write a reaction and balance it.



This is the back page from the day the Substitute was here on Wednesday

- d. Combination  $\text{Mg} + \text{N}_2 \rightarrow \text{Mg}_3\text{N}_2$
- e. decomposition  $\text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \text{O}_2$
- f. Single rep.  $\text{Cd} + \text{HCl} \rightarrow \text{CdCl}_2 + \text{H}_2$
- g. double rep.  $\text{NiSO}_4 + \text{Li}_3\text{PO}_4 \rightarrow \text{Ni}_3(\text{PO}_4)_2 + \text{Li}_2\text{SO}_4$
- h. Combustion  $\text{C}_8\text{H}_{18} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- i. Combination  $\text{SO}_2 + \text{O}_2 \rightarrow \text{SO}_3$
- j. Combination  $\text{Fe} + \text{O}_2 \rightarrow \text{Fe}_2\text{O}_3$
- k. single rep  $\text{Fe} + \text{CuSO}_4 \rightarrow \text{Fe}_2(\text{SO}_4)_3 + \text{Cu}$
- l. combination  $\text{Li} + \text{N}_2 \rightarrow \text{Li}_3\text{N}$
- m. combination  $\text{Al} + \text{O}_2 \rightarrow \text{Al}_2\text{O}_3$
- \* → n. single repl. The reaction we did in lab last week with the nail (see your notes)
- o. decomp.  $\text{Na}_2\text{CO}_3 \rightarrow \text{Na}_2\text{O} + \text{CO}_2$
- p. Single replac  $\text{Zn} + \text{H}_3\text{PO}_4 \rightarrow \text{Zn}_3(\text{PO}_4)_2 + \text{H}_2$
- q. Single repl  $\text{Cl}_2 + \text{LiI} \rightarrow \text{LiCl} + \text{I}_2$
- r. decomp.  $\text{NaOH} \rightarrow \text{Na}_2\text{O} + \text{H}_2\text{O}$
- s. Single rep.  $\text{Mg} + 2 \text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2$
- t. double rep.  $\text{FeCl}_3 + \text{NaOH} \rightarrow \text{Fe}(\text{OH})_3 + \text{NaCl}$
- u. single rep  $\text{Na} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \text{H}_2$

*This material will be about a third of Friday's quiz.*

*Friday's quiz will be 1/3 each from Monday, Tuesday, and Today.*