

Stoichiometry (stoich) notes

1. What's the mole ratio for this reaction? $4\text{Al}_{(s)} + 3\text{O}_{2(g)} \rightarrow 2\text{Al}_2\text{O}_{3(s)}$ _____

To make 6 good brownies you mix together 1 box of mix, 3 eggs, 1 cup water, and $\frac{1}{2}$ cup oil.

The "recipe" ratio is 1:3:1: $\frac{1}{2}$

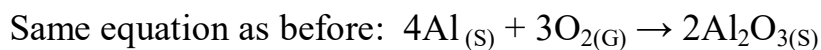
2. How many eggs needed for a double batch? _____

How much oil is needed for a triple batch? _____



4. If you react 9.0 moles of aluminum, how many moles of oxygen are required to complete this reaction?

Take out table H, we are going to draw in the other side of the Mole Island Map. Same tolls on the right as the left side, add in the MOLE RATIO Tunnel — which is the only connection between left and right sides of the map.



5. So, how many grams of oxygen are required to completely react with 64.0 grams of hydrogen?

6. Same reaction again... $4\text{Al} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$

How many liters of oxygen are required to completely react with 105 grams of aluminum?

New Reaction now...

7. 55.0 grams of aluminum metal dissolves into sufficient hydrochloric acid to completely react.
How many grams of hydrogen gas form?

Balanced: _____

Use this reaction: $2\text{Al}_{(s)} + 6\text{HCl}_{(aq)} \rightarrow 2\text{AlCl}_{3(aq)} + 3\text{H}_{2(g)}$

8. If you use up 23.1 moles HCl, how many formula units of aluminum chloride form?

9. 371.5 grams of candle wax ($\text{C}_{21}\text{H}_{44}$) combusts. How many liters of CO_2 gas form, assume STP for the gas.

Balanced: _____

10. Using the same wax combustion reaction, if you consume 23.9 moles of oxygen, how many moles of water form?

11. You have 4.56×10^{25} atoms of Zinc that you want to put into $\text{HCl}_{(\text{AQ})}$ to make them fizz away. How many grams of hydrogen gas form?

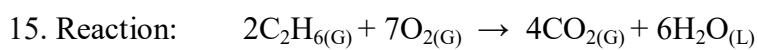
Balanced: _____

12. How many molecules of water form when 55.3 Liters of $\text{CH}_{4(\text{G})}$ combust. Balance the equation first.

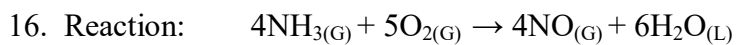
Balanced: _____

14. You need to know how many liters of nitrogen gas are required to combine with 809 liters of hydrogen when ammonia forms. Balance the equation, show the plan on the map.

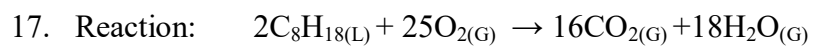
Balanced: _____



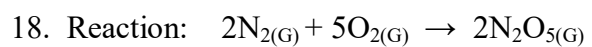
If exactly 15.6 moles of ethane gas combusts, how many moles of oxygen are used?



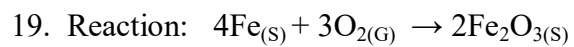
If exactly 649.6 L of $\text{NO}(\text{G})$ form, how many liters of O_2 are used?



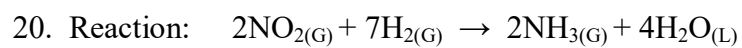
During this combustion, 125 g of oxygen are used up. How many g of H_2O are produced?



If 105 g of N_2 react with oxygen to form dinitrogen pentoxide.
How many molecules of N_2O_5 actually form in this reaction?



In synthesis between an iron truck + the air, 12,525 moles of oxygen will convert how many moles of iron into rust?



In a test tube reaction, 0.135 moles of H_2 will react to form how many grams of NH_3 ?