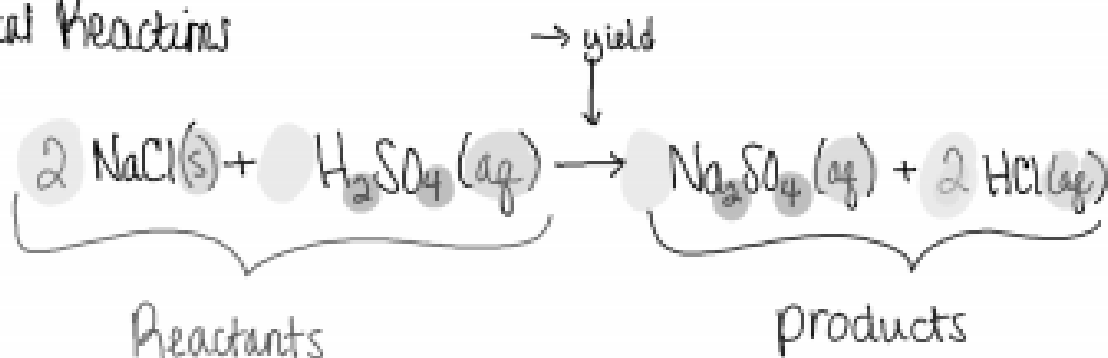
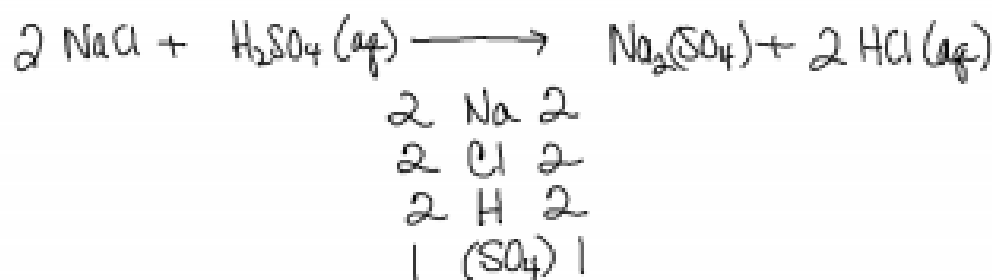


Chemical Reactions

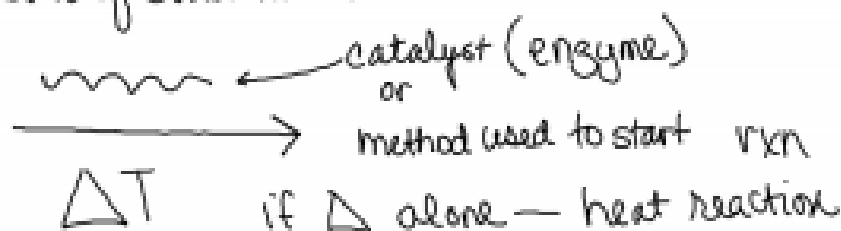


- Coefficient = multiply all elements in compound or atom behind it.
 - Subscripts = multiply only the element they touch
- If both are present multiply together for individual atom
- States of matter (s) (l) (g) (aq) (ppt) precipitate

The # of atoms present as reactants must equal the # of atoms in products

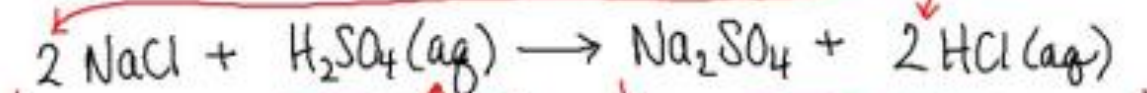


Law of Conservation: matter can not be created or destroyed



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Chemical Reactions (Chm Rxn)

Balance the equation
Coefficients

reactants

yields

products

State of matter

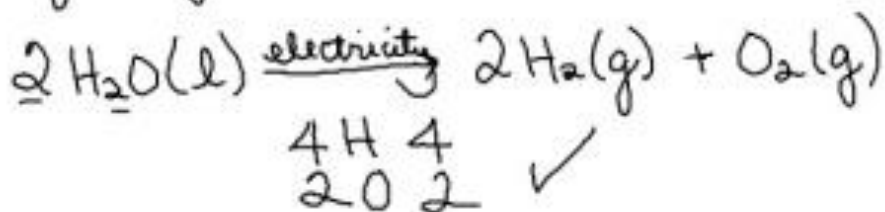
(s) solid (l) liquid (g) gas

(aq) aqueous (ppt) precipitate

Coefficients balance equations

Subscripts balance formulas

- if both are present multiply these together to determine quantity.



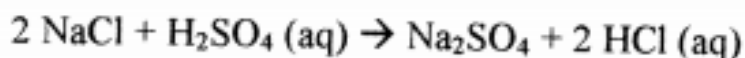
Law of Conservation of matter - matter can not be created or destroyed - it can only change form



Steps to writing a balanced equation:

- record balanced formulas (based on names)
- balance equations using coefficients
- Doublecheck work - did you include catalysts or state of matter

Practice: If we go back to the equation from earlier, we can determine its various parts.



1. What are the reactants? _____
2. What are the products? _____
3. How many atoms of sodium enter the reaction? _____
4. How many atoms of sodium are produced? _____
5. What does the \rightarrow stand for? _____
6. How many moles of hydrogen go into the reaction? _____
7. How many moles of hydrogen are produced? _____
8. How many molecules of HCl are produced? _____
9. What are the coefficients for NaCl? ____ H_2SO_4 ? ____ Na_2SO_4 ? ____ HCl? ____

Balance the following equations.

10. ____ Zn + ____ HCl \rightarrow ____ ZnCl₂ + ____ H₂ (g)
11. ____ KClO₃ \rightarrow ____ KCl + ____ O₂ (g)
12. ____ S₈ + ____ F₂ (g) \rightarrow ____ SF₆
13. ____ Fe + ____ O₂ (g) \rightarrow ____ Fe₂O₃
14. ____ C₂H₆ + ____ O₂ (g) \rightarrow ____ CO₂ + ____ H₂O
15. ____ Mg + ____ O₂ (g) \rightarrow ____ MgO
16. ____ H₂O + ____ N₂O₃ \rightarrow ____ HNO₂ (aq)
17. ____ Na₂O + ____ H₂O \rightarrow ____ NaOH (aq)
18. ____ Fe + ____ H₂O \rightarrow ____ Fe₃O₄ + ____ H₂ (g)

Understanding reaction terminology

element or a diatomic molecule — it is considered "single"

molecule or compound — both referred to as "double" or compound

