

## Chemical Reactions and Equations - Ch. 10

### I. Chemical Reactions to form

A. Occur when matter

1. Signs a chemical reaction has occurred:

- a.
- b.
- c.
- d.

B.

- 1.
- 2.

### II. Chemical Equations

A. How chemical reactions are communicated

1. Types:

- a.
- b.

B. Parts of a chemical equation

1.            -                            in the reaction (        of the arrow)
2.            -                            in the reaction(        of the arrow)
3.            -

4. States of matter - Shown using a

- i.
- ii.
- iii.
- iv.

5.

### III. Balancing Chemical Equations

A. Goal: ensure that you have the

B. Write the                            reactants and products.

What do you need for a hot dog?

Complete dog:

C. Determine                            on both sides.

D. If the number of                            on both sides,                            one at a time to make it equal.

1. Remember, adding a coefficient will affect all the elements in that molecule.
2. Every time you add a coefficient, recount your atoms!
- 3.

4. HINT: Balance the single or diatomic elements last.

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### IV. Types of Chemical Reactions

A. Reactions are classified into (p. 291)

1. By knowing the type, you can predict the products of a chemical reaction.

B. The types are:

1. Reactions

a.

b. The

c.

d. General formula:

e.

f.

2. Reactions ( )

a. Two or more substances ( ).

b. General Formula:

3. Reactions

a. A , which simpler products, either elements or compounds.

b. General Formula:

4. Reactions

a. Two of the elements in the , forming two new products.

b. Involves a

c.

d. General Formula:

5. Reactions

a. Both reactants and both products

b. The compounds to form the products.

c. Again,

d. General Formula:

### V. Predicting Reactions

A. Not all reactions will occur!

1. First,

2. Then, use the to predict the products.

a. Combustion:

i.

ii. If a is the other reactant, the

b. Single replacement:

i. If a is the element, it will of the compound.

ii. If a is the element, it will of the compound.

iii. Make sure that the ions recombine to make

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- c. Double replacement:
  - i. The cations are going to
  - ii. Remember that cations are bonded to anions. There is
  - iii. Make sure that the ions recombine to make correct chemical formula (ionic rules!)
- 3. Figure out if the reaction will happen!
  - a. ALL
  - b. For Single Replacement reactions
    - i. Check
    - ii. An element can
    - iii. If the compound on the product side includes the more reactive element,
    - iv. If the compound on the product side includes the less reactive element,
  - c. For Double Replacement reactions
    - i. Check
    - ii. If
    - iii. If
    - iv. If
- 4. Lastly,