

# Chemical Reactions

## Evidence of Chemical Reactions

1. color change
2. odor change
3. state change
4. energy change
5. diagnostic tests.

**Endothermic Reaction** - those in which the heat is taken in by the system and the temperature of the surroundings drops.

**Exothermic Reaction** - those in which heat is given out by the system and the temperature of the surroundings increases.

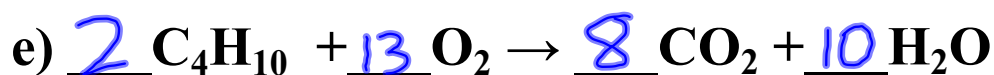
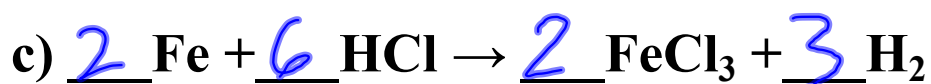
## Main principles of the **collision-reaction theory**:

1. all chemical reactions involve collisions between atoms, ions or molecules
2. a certain amount of energy is required for a reaction to occur
3. a certain orientation of particles is required

## **Tips for Balancing Equations:**

- **Don't balance atoms present in more than two substances until the end**
- **Balance polyatomic ions as 'one'**
- **If a fractional coefficient is needed, multiply all coefficients by denominator**

## Balancing Equations



$$\begin{array}{r} 16 \qquad 10 \\ \qquad \diagdown \quad \diagup \\ \qquad \qquad 26 \end{array}$$

# Worksheet

p. 327 #3,4

p. 328 #5,6

p. 329 #11-12