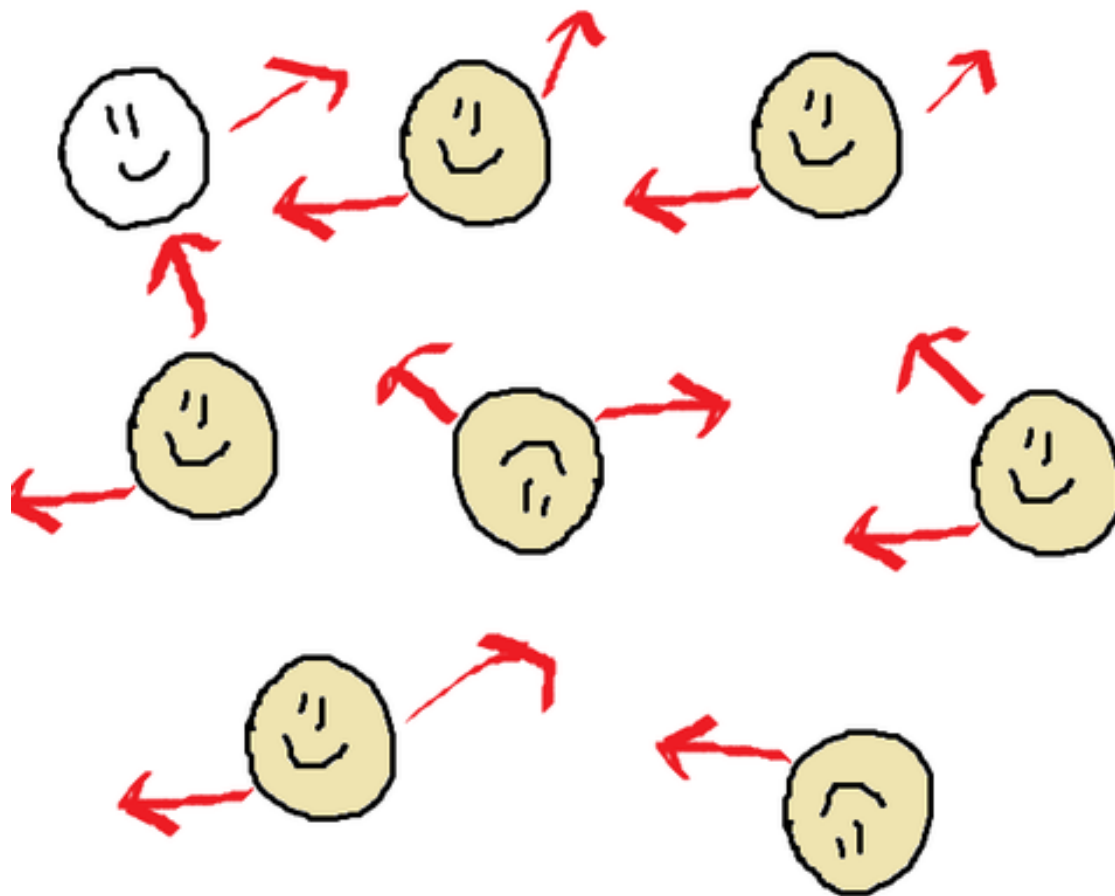


Rates of Reactions

Mr. Skirbst

Rates of Reactions

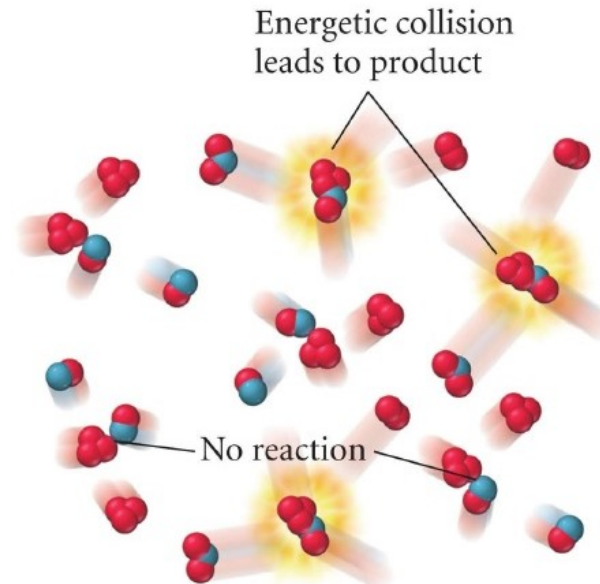
Collision Theory



Rates of Reactions

Collision Theory

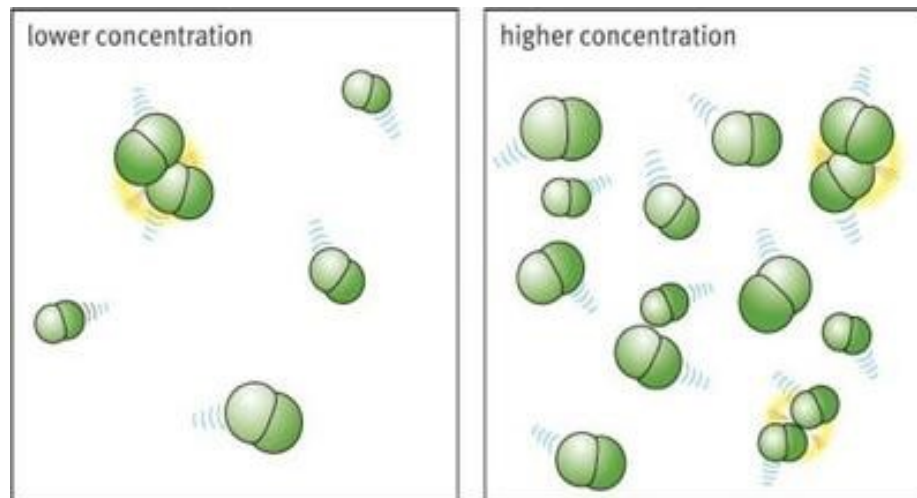
Rate (speed) of reaction
determined by molecular
collisions



Factors Affecting Rate

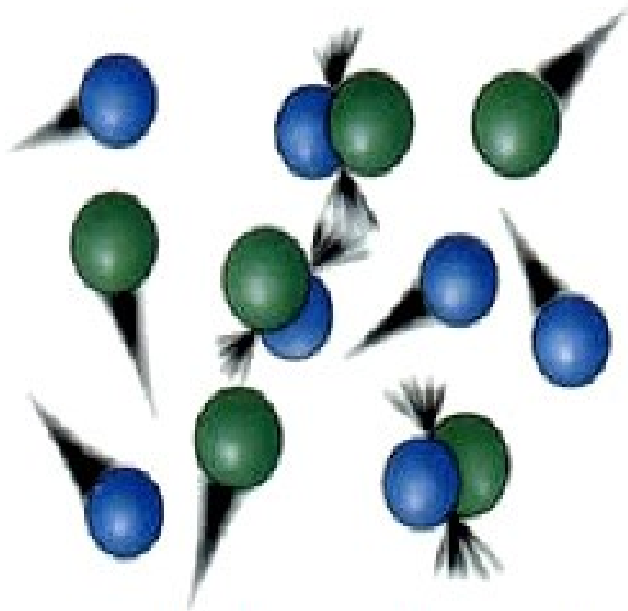
1- Concentration

amount of substance in a given volume

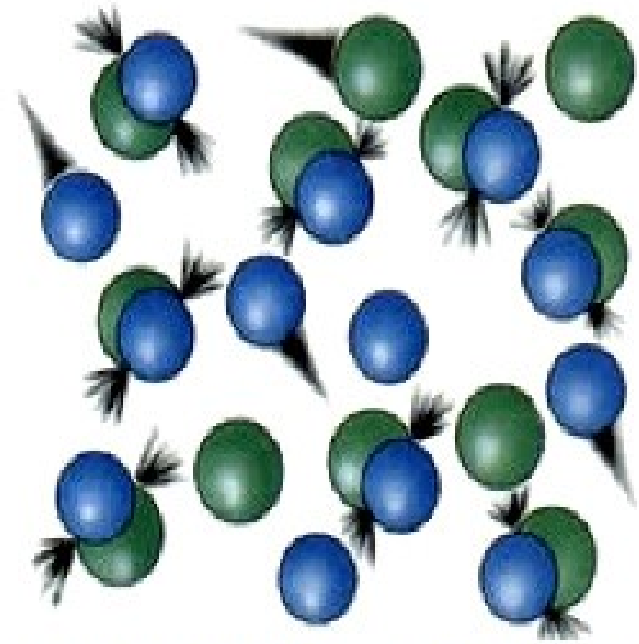


Factors Affecting Rate

1- Concentration



Low concentration = Few collisions

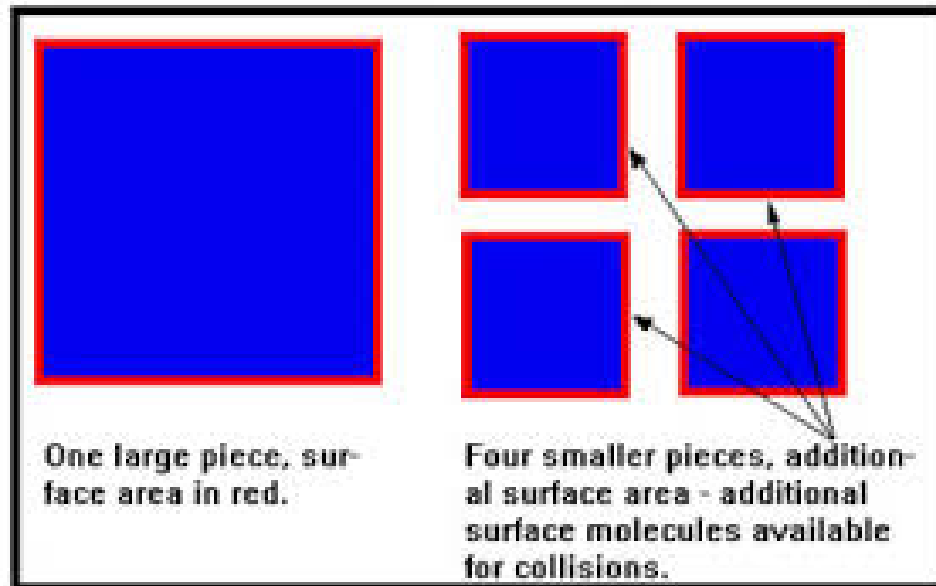


High concentration = More collisions

Factors Affecting Rate

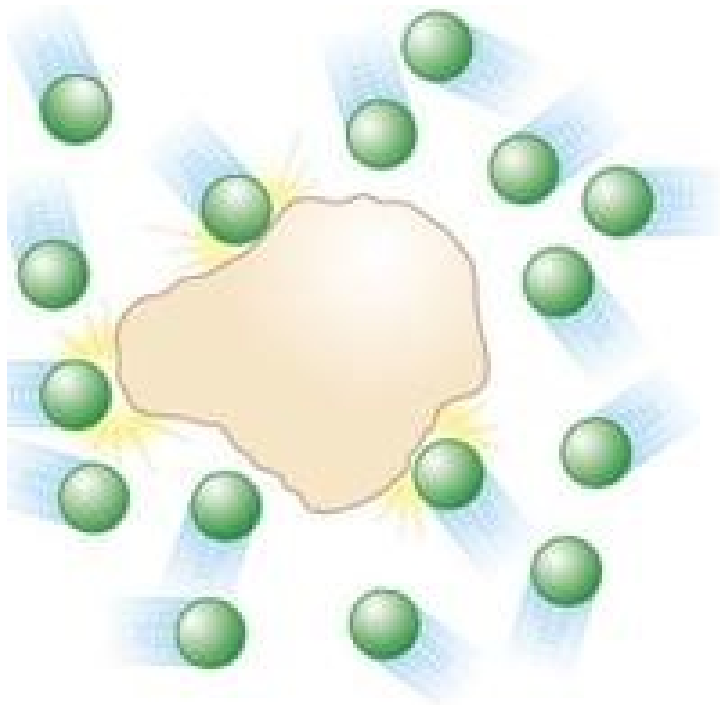
2- Surface Area

amount of substance that is exposed (outside surface)

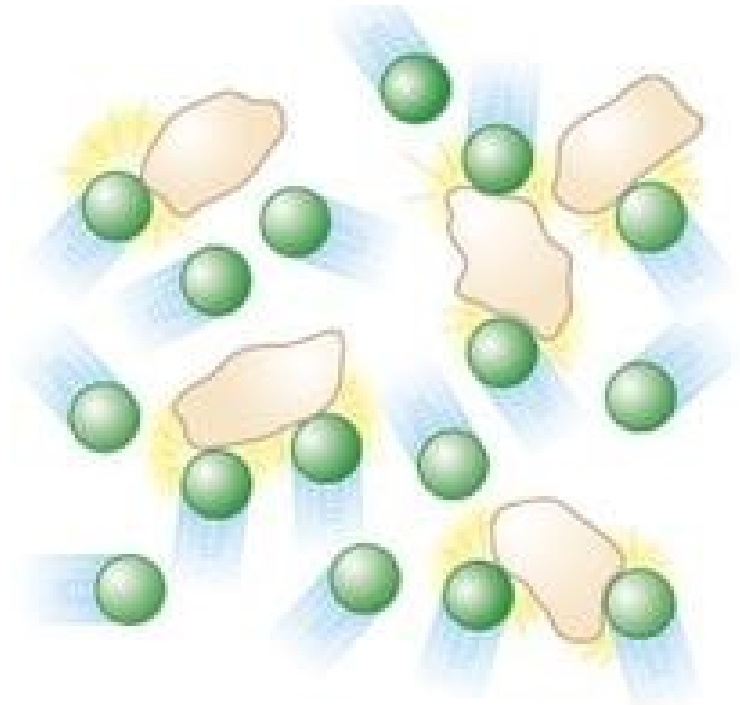


Factors Affecting Rate

2- Surface Area



one big lump (slow reaction)

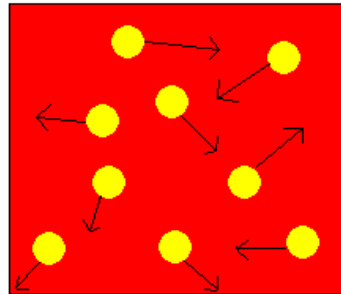


several small lumps (fast reaction)

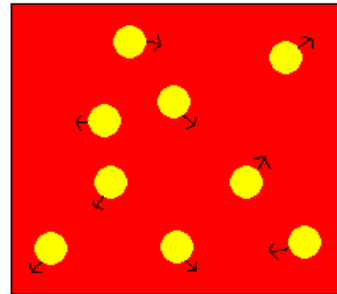
Factors Affecting Rate

3- Temperature

a measure of a particle's energy of motion



High
Temperature



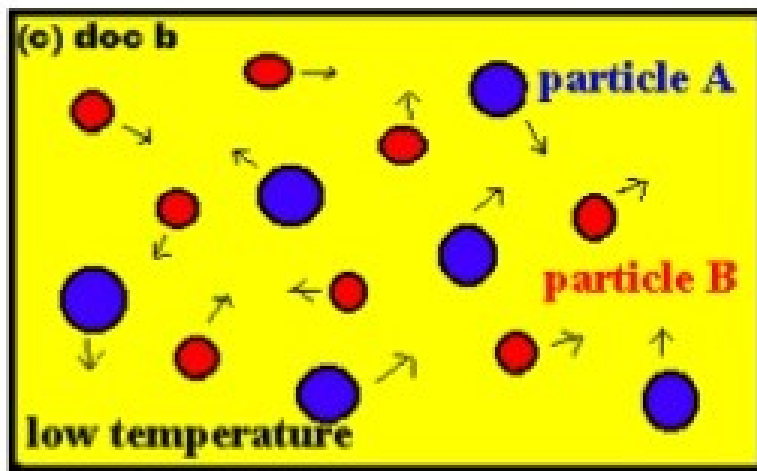
Low
Temperature

 = High speeds

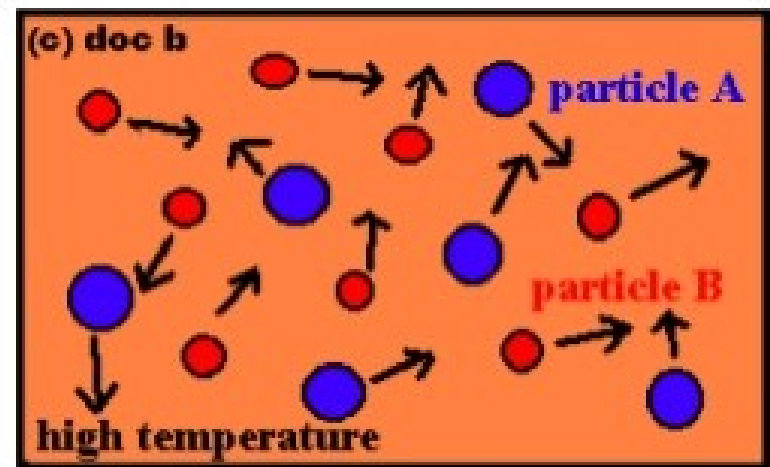
 = Low speeds

Factors Affecting Rate

3- Temperature



REACTION: SLOWER
ROR : LOW

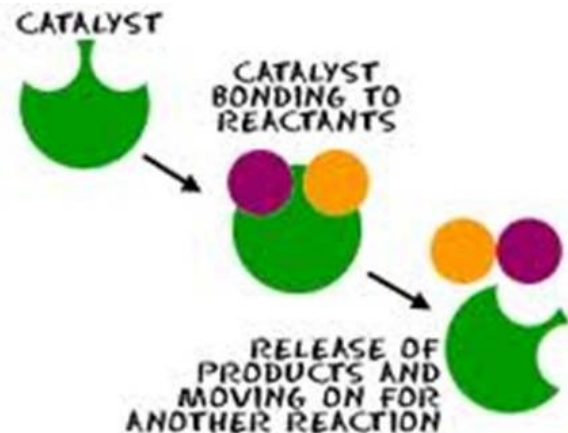


REACTION: FASTER
ROR: HIGH

Factors Affecting Rate

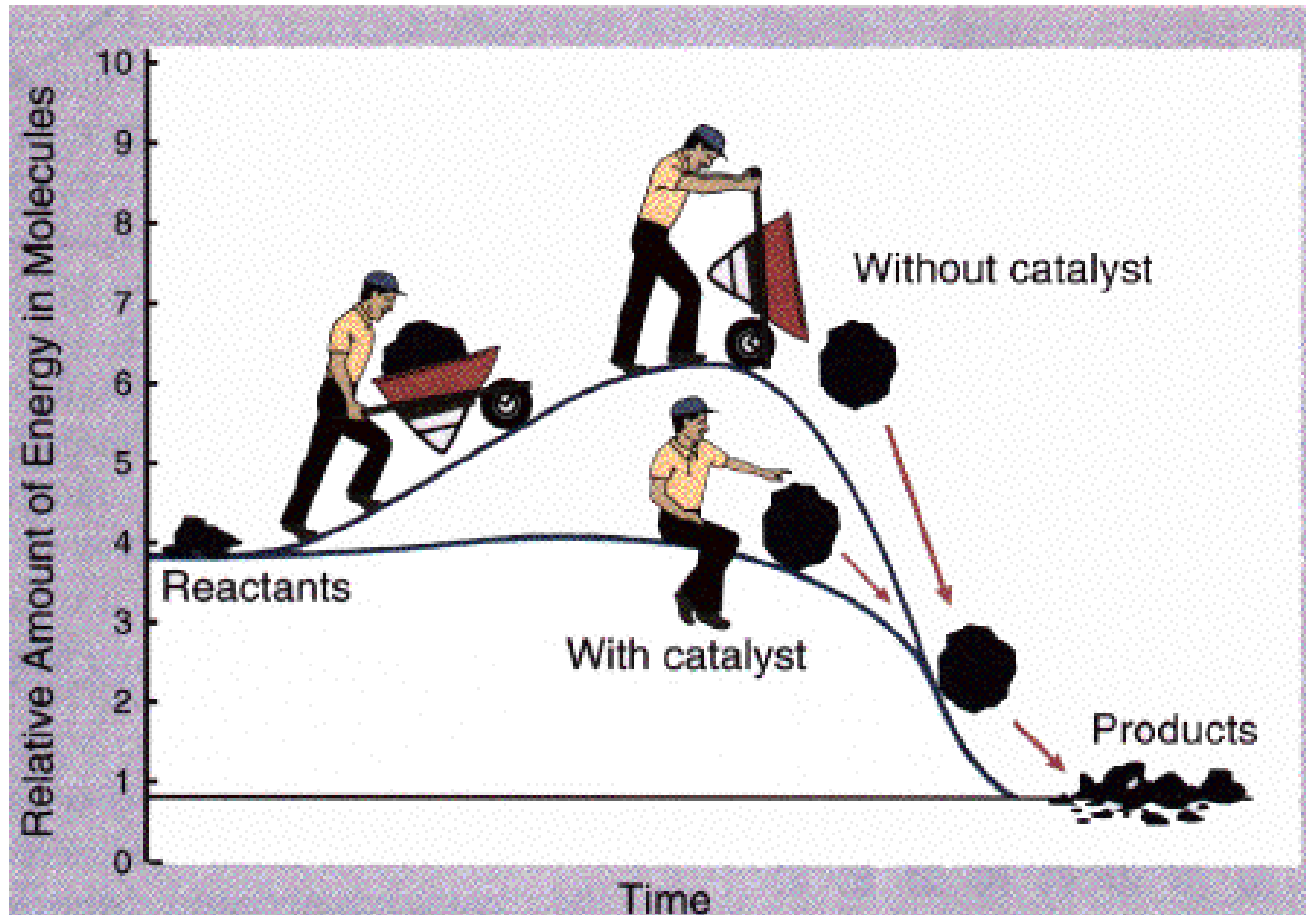
4- Catalysts

substance(s) that change the rate of reaction, but are not changed themselves



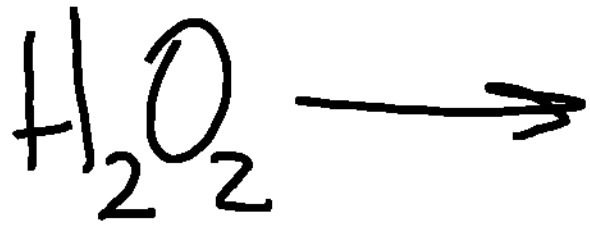
Factors Affecting Rate

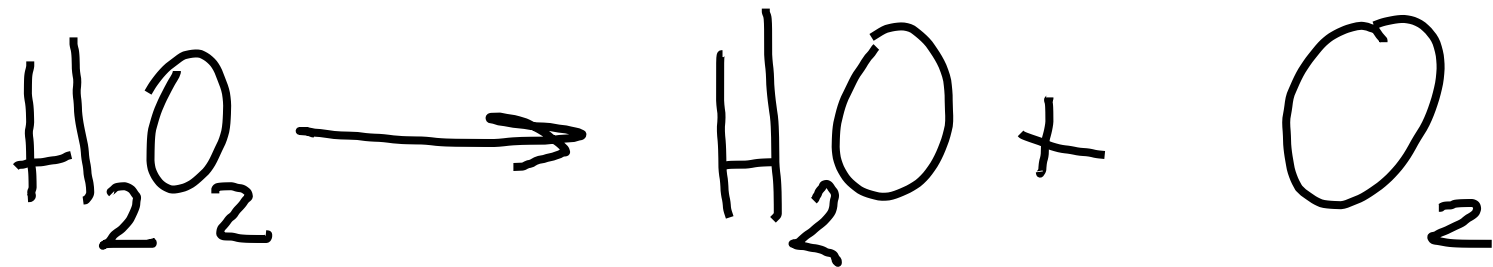
4- Catalysts



chlorophyll







Energy of Reactions

Energy of Reactions

Based on the type of energy change taking place

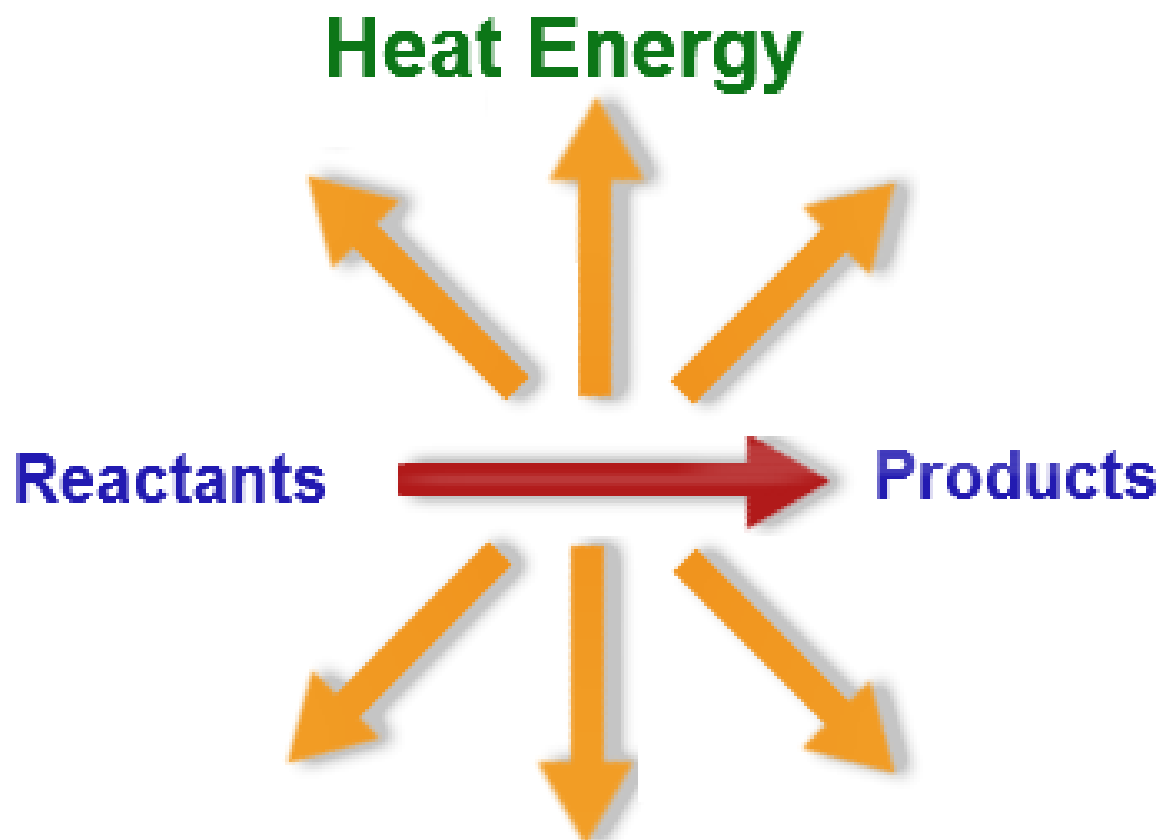
Energy of Reactions

1- Exothermic

- (heat) energy released out of a chemical reaction
- (ex. Lighting match, explosion)

Energy of Reactions

1- Exothermic



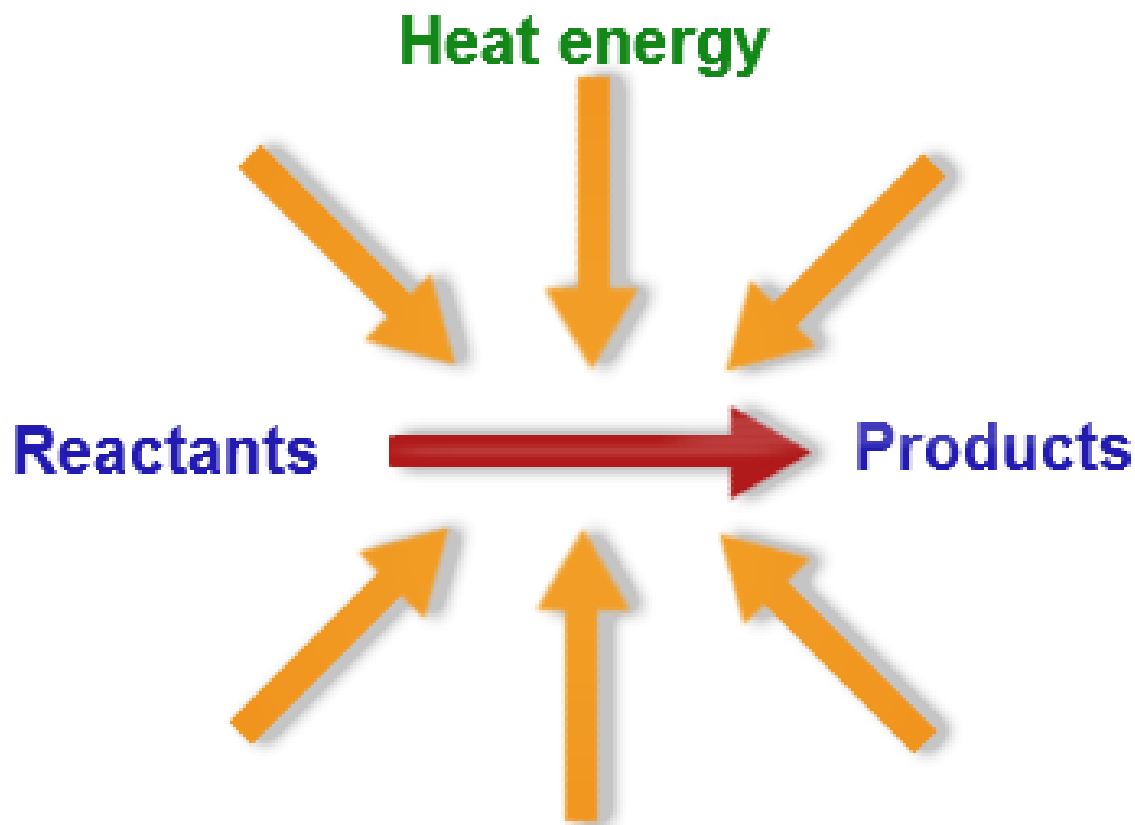
Energy of Reactions

2- Endothermic

- (heat) energy absorbed
into a reaction
- ex. Baking, ice pack

Energy of Reactions

2- Endothermic



Energy of Reactions

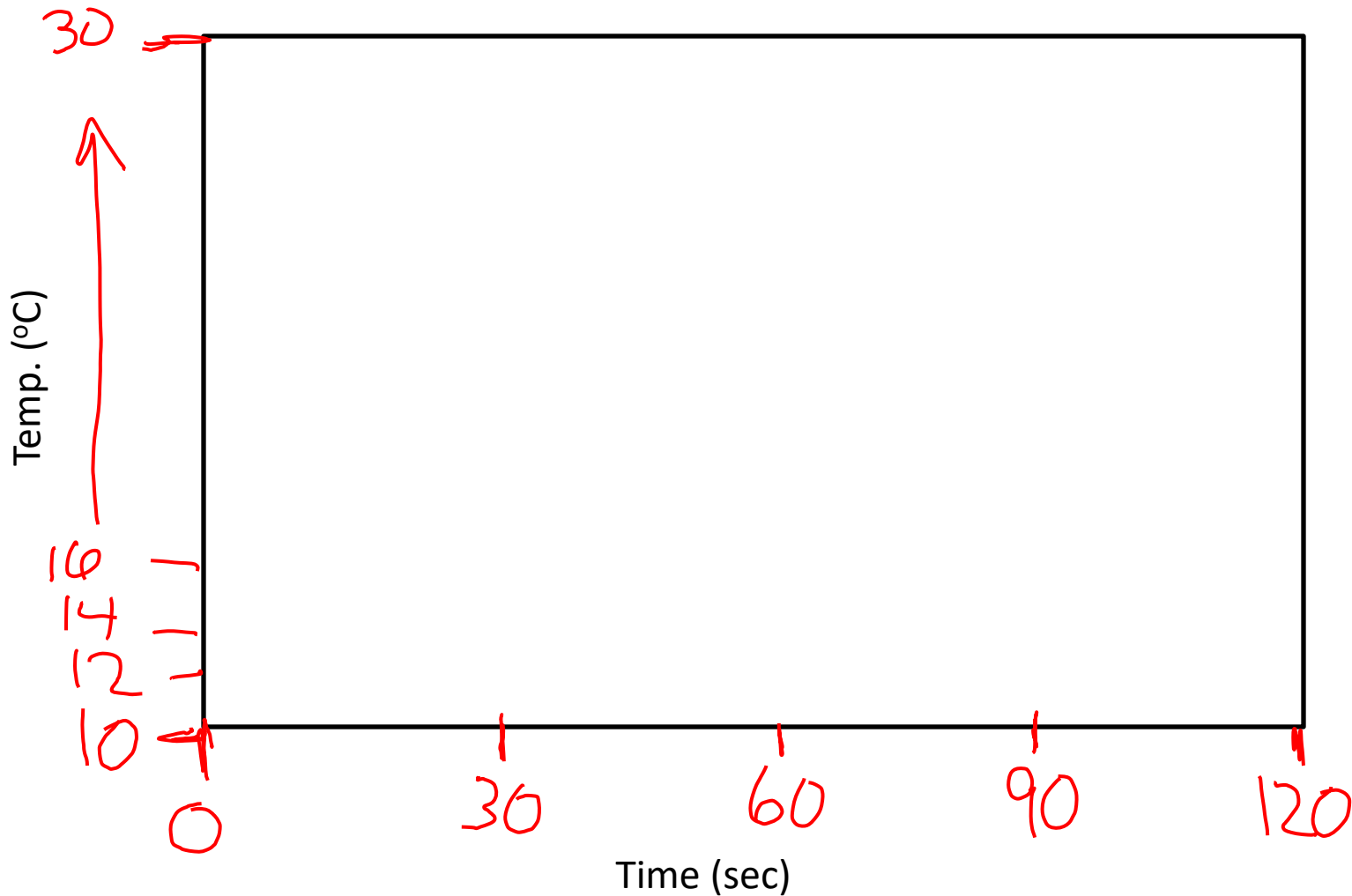
DATA TABLE:

| | |
|---|--|
| Beaker A: H_2O (initial temp) | |
| A: $H_2O + CaCl_2$ (final temp) | |
| A: $H_2O + CaCl_2$ (change in temp) | |
| Beaker B: H_2O (initial temp) | |
| B: $H_2O + NH(NO_3)$ (final temp) | |
| B: $H_2O + NH(NO_3)$ (change in temp) | |

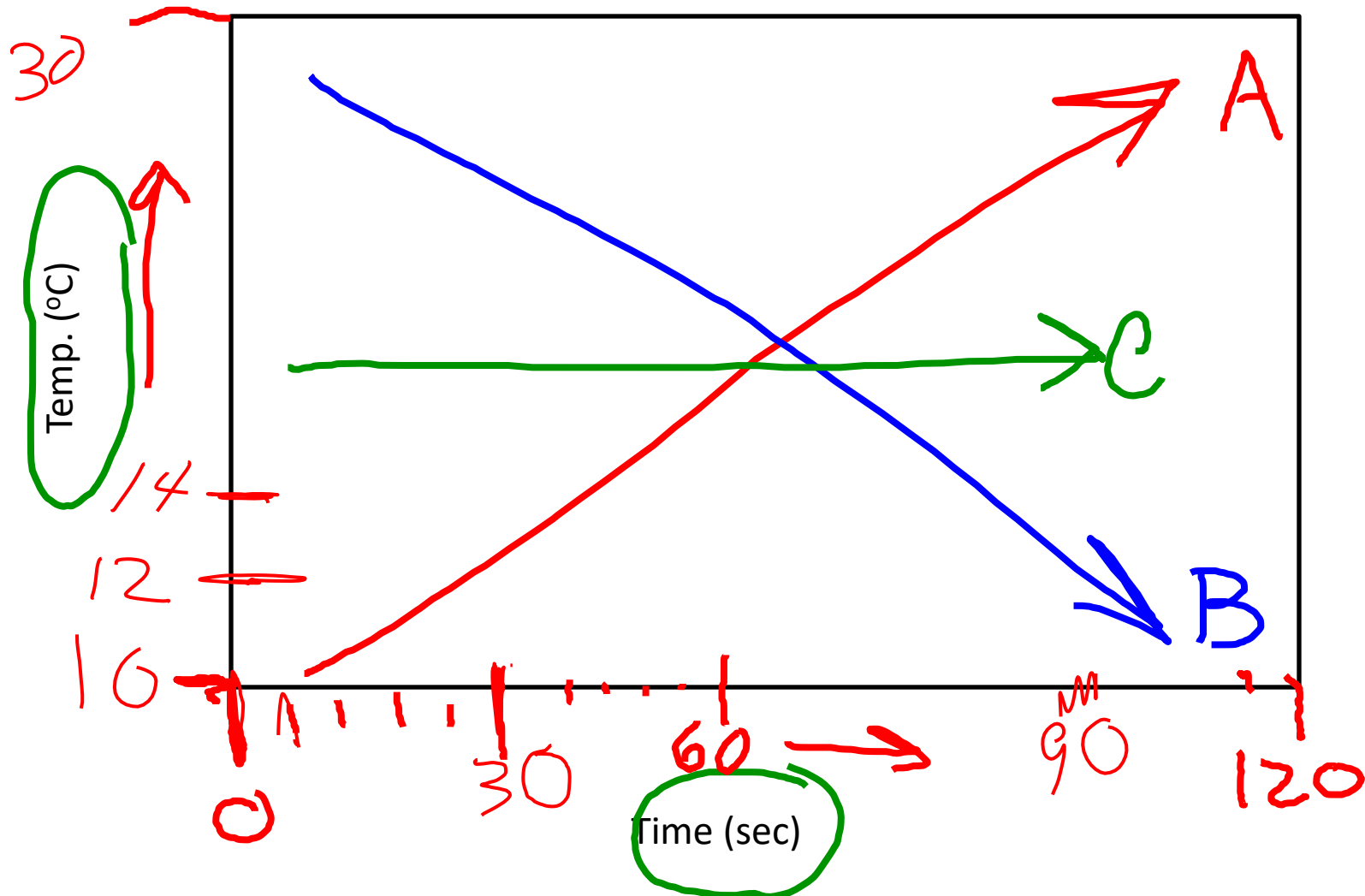
Energy of Reactions GRAPH



Energy of Reactions GRAPH



Energy of Reactions GRAPH



Rate of Reactions GRAPH

