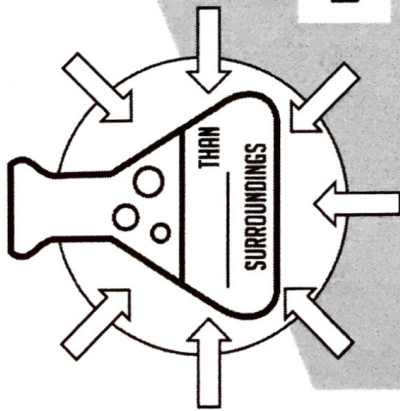


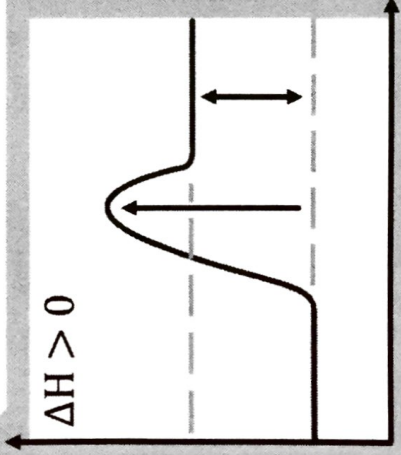
# ENERGY CHANGES IN REACTIONS

Color – Endothermic Cold colors/Exothermic Hot colors. Fill in missing information, add diagrams & complete each graph.



REACTANTS + \_\_\_\_\_ → PRODUCTS

ENDOTHERMIC REACTIONS \_\_\_\_\_ (OR \_\_\_\_\_)  
ENERGY FROM THE SURROUNDINGS. THE REACTION IS \_\_\_\_\_.

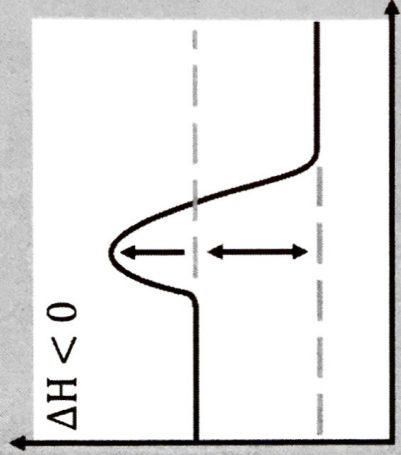


IN AN \_\_\_\_\_, THE ENERGY  
OVER TIME \_\_\_\_\_  
AS HEAT IS \_\_\_\_\_  
INTO THE SYSTEM.  
THEREFORE, THE OVERALL  
INCREASES.

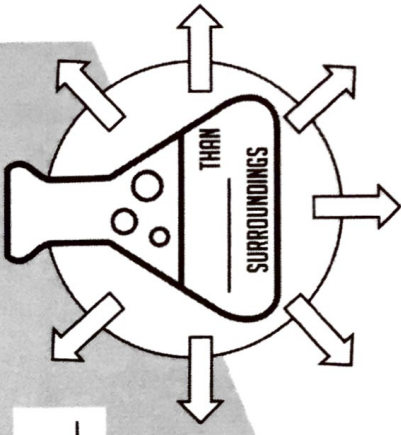
ENDOTHERMIC

EXOTHERMIC

IN AN \_\_\_\_\_, THE ENERGY  
OVER TIME AS  
HEAT IS \_\_\_\_\_  
FROM THE SYSTEM.  
THEREFORE, THE OVERALL  
DECREASES.



EXOTHERMIC REACTIONS \_\_\_\_\_ (OR \_\_\_\_\_)  
ENERGY TO THE SURROUNDINGS. THE REACTION IS \_\_\_\_\_.



REACTANTS → PRODUCTS + \_\_\_\_\_

# RATES OF REACTION

## Collision Theory

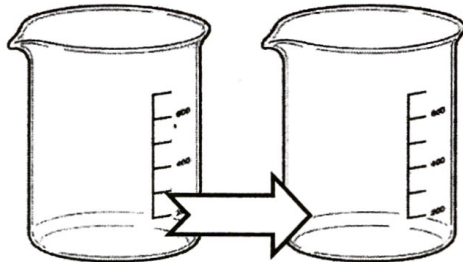
Collision theory states that, for a \_\_\_\_\_ to occur, particles must \_\_\_\_\_ with the correct \_\_\_\_\_ and with sufficient \_\_\_\_\_.

Diagrams:

\* Add your own explanations to your diagrams

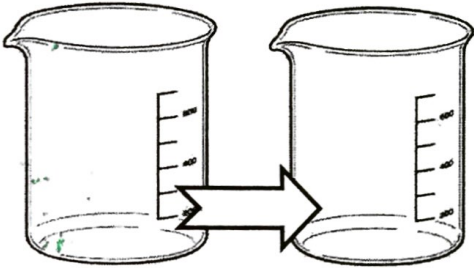
## Concentration

\_\_\_\_\_ concentration provides a greater number of \_\_\_\_\_ available to \_\_\_\_\_. This increases the frequency of \_\_\_\_\_.



## Stirring

\_\_\_\_\_ reactants together. \_\_\_\_\_ their ability to \_\_\_\_\_ together. This increases the frequency of \_\_\_\_\_.



## Temperature

\_\_\_\_\_ temperature increases the \_\_\_\_\_ energy of particles. This increases the frequency of \_\_\_\_\_ and a greater \_\_\_\_\_ of those collisions have the \_\_\_\_\_ required to \_\_\_\_\_.



## Catalysts

A catalyst \_\_\_\_\_ up reactions by \_\_\_\_\_ the \_\_\_\_\_ energy required for \_\_\_\_\_ collisions.



## Surface Area

\_\_\_\_\_ surface area of a \_\_\_\_\_ increases the number of \_\_\_\_\_ that are exposed. This increases the frequency of \_\_\_\_\_.

