Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Teacher: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Endothermic vs Exothermic Reaction

**Aim:** How can we differentiate between endothermic and exothermic reactions based on surrounding temperature change?

**Do now:** Circle the correct answer and explain your choice:

A student observed that when sodium hydroxide was dissolved in water, the temperature of the water increased. The student should conclude that the dissolving of sodium hydroxide

A)is endothermic

B)is exothermic

C)produces an acid solution

D)produces a salt solution

My answer is \_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Procedure:**

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| --- | --- | --- |
|  | Hydrogen peroxide and Yeast Reaction  | Baking soda and vinegar reaction  |
| Procedure  | 1. Pour 2 tablespoons of hydrogen peroxide into a cup. Place the thermometer into the cup. Hold the thermometer and cup so they do not fall over. Read the temperature and record it in the chart under "Time 0".
2. Measure 1 teaspoon of yeast. Have one partner watch the thermometer and another look at the second hand on a watch.
3. Dump all the yeast into the cup. Gently swirl the cup while one partner calls out the time every 5 seconds. When each 5 seconds is called, another partner should call out the temperature. The third partner should record the temperature in the chart.
4. Record your observation
5. Plot graph to show the temperature change. Label your graph properly.
 | 1. Place 2 tablespoons of vinegar in the cup. Put the thermometer in the cup. Hold the thermometer and cup so they do not fall over. Read the temperature and record it in the chart under "Time 0".
2. Measure 1 teaspoon of baking soda. Dump all the baking soda in the cup. Gently swirl the cup while one partner calls out the time every 3 seconds. When each 3 seconds is called, another partner should record the temperature in the chart.
3. Record your observation
4. Plot graph to show the temperature change. Label your graph properly.
 |
| Record your observation here  |  |  |
| Record your data here  |

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| --- | --- |
| Time (Second) | Temperature (Celsius) |
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| --- | --- |
| Time (Second) | Temperature (Celsius) |
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| Plot your graph (Label your graph properly and draw a best fit line) |  |  |

**Summary:**

1. Based on your observation of the two experiments that we did today. How can you tell which one is an endothermic reaction and which one is an exothermic reaction?
2. Draw potential energy diagrams for those two experiments.
3. How long did you take to collect the data and plot the graph for this experiment? How about groups who used wireless connection? Discuss with your elbow partner and write down some possible ways that wireless connect could benefit your learning.