

Name \_\_\_\_\_

## Endothermic vs Exothermic

### LAB 1 The rusting of steel

#### Hypothesis:

Do you think rusting metal is going to get warm or cold? \_\_\_\_\_

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#### Materials:

Thermometer

Beakers

Steel Wool

Vinegar

Saran Wrap

#### Procedure:

1. Place the thermometer in a beaker and cover the top with a piece of plastic wrap. Allow about 5 minutes for the thermometer to record the temperature.

**Starting Temperature** \_\_\_\_\_

2. Remove the thermometer from the beaker. (if you didn't already in Step 1).

3. Soak a piece of steel wool in vinegar for 1 minute.

4. Squeeze the excess vinegar out of the steel wool.

5. Wrap the wool around the thermometer and place the wool/thermometer in the Styrofoam coffee cup.

6. Allow 5 minutes, then read the temperature and compare it with the first reading.

**Ending Temperature** \_\_\_\_\_

#### Discussion:

Did the temperature increase or decrease after the 5 minutes? \_\_\_\_\_

Was the reaction exothermic or endothermic? \_\_\_\_\_

Why do you think the temperature changed?

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\_\_\_\_\_  
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Name \_\_\_\_\_

## Endothermic vs Exothermic

### LAB 2 Orange Juice Acid and baking soda

#### Hypothesis:

Do you think the acid found in orange juice will get warm or cold while reacting with baking soda?

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#### Materials:

25 ml citric acid soln  
15g baking soda  
Styrofoam cup  
Thermometer  
Stirring rod

#### Procedure:

1. Pour the citric acid solution in a Styrofoam coffee cup. Use a thermometer to record the initial temperature.

Starting Temperature \_\_\_\_\_

2. Stir in the baking soda (sodium bicarbonate). Track the change in temperature as a function of time.

Temperature after 30 sec \_\_\_\_\_

Temperature after 60 sec \_\_\_\_\_

Temperature after 2 min \_\_\_\_\_

Temperature after 5 min \_\_\_\_\_

3. When you have completed your demonstration or experiment, simply wash the cup out in a sink.

#### Discussion:

Did the temperature increase or decrease after the 5 minutes? \_\_\_\_\_

Was the reaction exothermic or endothermic? \_\_\_\_\_

Why do you think the temperature changed?

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Name \_\_\_\_\_

## Endothermic vs Exothermic

### LAB 3 Vinegar and baking soda

#### Hypothesis:

Do you think vinegar will get warm or cold while reacting with baking soda?

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#### Materials:

25 ml vinegar  
15g baking soda  
Styrofoam cup  
Thermometer  
Stirring rod

#### Procedure:

1. Pour the citric vinegar in a Styrofoam coffee cup. Use a thermometer to record the initial temperature.

Starting Temperature \_\_\_\_\_

2. Stir in the baking soda (sodium bicarbonate). Track the change in temperature as a function of time.

Temperature after 30 sec \_\_\_\_\_

Temperature after 60 sec \_\_\_\_\_

Temperature after 2 min \_\_\_\_\_

Temperature after 5 min \_\_\_\_\_

3. When you have completed your demonstration or experiment, simply wash the cup out in a sink.

#### Discussion:

Did the temperature increase or decrease after the 5 minutes? \_\_\_\_\_

Was the reaction exothermic or endothermic? \_\_\_\_\_

Why do you think the temperature changed?

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