

Name:

Date:

Class:

Hot Stuff! Activity 2 Worksheet

Investigation # 1

Materials List

- 2 identical, large plastic jars with lids
- 2 outdoor thermometers (must fit in jar with lid on)
- 25g baking soda
- 1 cup vinegar
- Plastic wrap (2 large squares to fit over jar openings)
- 2 rubber bands
- Masking tape and pen

Procedure

1. Using the masking tape, label one jar “vinegar” and the other “vinegar + baking soda.”
2. Place a thermometer in each jar.
3. Place $\frac{1}{2}$ cup of vinegar in each jar.
4. Securely seal the “vinegar” jar with plastic wrap and a rubber band.
5. Put 25g of baking soda in the “vinegar + baking soda” jar and securely seal it with plastic wrap and a rubber band.
6. Put the jars in bright sunlight and record the temperatures every minute for about 30 minutes.
7. Place the jars in the shade (out of direct sunlight) and continue to record the temperature every minute for about 15-20 more minutes.

Analysis

Prepare the following items for a class presentation.

1. Make a graph showing the temperature in each jar during the entire observation period. Be sure to indicate on the graph when you moved the jars from the sun to the shade. On the graph, remember to label each axis, and provide a key and title.
2. Describe how your experiment modeled how air pollution affects global warming. Was there a greenhouse gas present? How fast did the jars heat up? How fast did they cool down? Think about the other class demonstrations you have seen, and incorporate what you learned from them.

Name:

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Investigation # 2

Materials List

- 2 identical, large jars
- 2 outdoor thermometers (must fit in jar, below rim)
- Hot water
- Hot mitt
- Plastic wrap (1 large square to fit over jar opening)
- 1 rubber band
- Masking tape and pen

Procedure

1. Using the masking tape, label one jar “open” and the other “covered.”
2. Place a thermometer in each jar.
3. Fill both jars 2/3 full of hot water.
4. Cover the jar labeled “covered” with plastic wrap and secure it tightly with a rubber band.
5. Record the temperatures in both jars every minute for about 30 minutes.
6. Put the jars in bright sunlight and record the temperatures every minute for about 15-20 more minutes.

Analysis

Prepare the following items for a class presentation.

1. Make a graph showing the temperature in each jar during the entire observation period. Be sure to indicate on the graph when you moved the jars into the sun. On the graph, remember to label each axis, and provide a key and title.
2. Describe how your experiment modeled how atmospheric components affect global warming. Was there a greenhouse gas present? How fast did the jars cool down? Did one cool down faster than the other? Did placing them in the sun seem to have an effect? Think about the other class demonstrations you have seen, and incorporate what you learned from them.

Name:

Date:

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Investigation # 3

Materials List

- 2 identical, large jars
- 2 outdoor thermometers (must fit in jar, below rim)
- Cold water, chilled with ice cubes
- Plastic wrap (1 large square to fit over jar opening)
- 1 rubber band
- Masking tape and pen

Procedure

1. Using the masking tape, label one jar “open” and the other “covered.”
2. Place a thermometer in each jar.
3. Fill both jars 2/3 full of cold water. Make sure not to have any ice cubes in the jars.
4. Cover the jar labeled “covered” with plastic wrap and secure it tightly with a rubber band.
5. Put the jars in bright sunlight and record the temperatures every minute for about 30 minutes.
6. Place the jars in the shade (out of direct sunlight) and continue to record the temperature every minute for about 15-20 more minutes.

Analysis

Prepare the following items for a class presentation.

1. Make a graph showing the temperature in each jar during the entire observation period. Be sure to indicate on the graph when you moved the jars from the sun to the shade. On the graph, remember to label each axis, and provide a key and title.
2. Describe how your experiment modeled how air pollution affects global warming. Was there a greenhouse gas present? How fast did the jars cool down? Heat up? Cool down again? Think about the other class demonstrations you have seen, and incorporate what you learned from them.

Name:

Date:

Class:

Investigation # 4

Materials List

- 2 identical, large jars
- 2 outdoor thermometers (must fit in jar, below rim)
- 2 cups of garden soil
- Plastic wrap (1 large square to fit over jar opening)
- 1 rubber band
- Masking tape and pen

Procedure

1. Using the masking tape, label one jar "open" and the other "covered."
2. Place 1 cup of soil in each jar.
3. Place a thermometer in each jar.
4. Cover the jar labeled "covered" with plastic wrap and secure it tightly with a rubber band.
5. Put the jars in bright sunlight and record the temperatures every minute for about 30 minutes.
6. Place the jars in the shade (out of direct sunlight) and continue to record the temperature every minute for about 15-20 more minutes.

Analysis

Prepare the following items for a class presentation.

1. Make a graph showing the temperature in each jar during the entire observation period. Be sure to indicate on the graph when you moved the jars from the sun to the shade. On the graph, remember to label each axis, and provide a key and title.
2. Describe how your experiment modeled how air pollution affects global warming. Was there a greenhouse gas present? How fast did the jars heat up? Cool down? Did one jar heat up or cool down faster than the other? Think about the other class demonstrations you have seen, and incorporate what you learned from them.