



Name _____

Date _____ Period _____

Heat vs. Temperature

QUESTION: What is the difference between heat and temperature?

MATERIALS: 250ml beaker, thermometer, stirring rod, hotplate, tongs, goggles, apron

GROUPS OF 4: timer, temperature reader/stirrer, recorder, boil watcher

PROCEDURE:

1. Put 100ml of cold tap water in the beaker.
2. Using the thermometer, measure and record the initial temperature of the water (in °C).
3. CAUTION: Make sure the outside bottom of the beaker is dry!
4. Place the beaker on the hotplate turned to high setting.
5. Measure and record the temperature of the water (in °C) every minute for 10 minutes.
6. TECHNIQUE: Be sure to keep the thermometer in the water and stir water with stirring rod.
7. Put a * on the data table at the temperature at which the water begins to boil.
8. After 10 minutes, use the tongs and carefully dump the 100ml of water.
9. Rinse the beaker in cold tap water and repeat the process with 200ml of cold tap water.

Data table

(in °C)	Initial	1 min	2 min	3 min	4 min	5 min	6 min	7 min	8 min	9 min	10 min
100 ml											
200 ml											

Line Graph:

1. Use graph paper.
2. Draw a time vs. temperature line graph for the 100 ml and the 200 ml samples?
3. Put both the lines on the same grid using different colors for each line.
4. Include the * for the boiling point on each of the lines.
5. Label both axis and give the graphs a title.

Questions:

1. What was the total temperature change in the 100 ml sample of water?
2. What was the total temperature change in the 200 ml sample of water?
3. How was the total temperature change the same in each of the samples?

4. Is the same amount of heat added to the water in each beaker? In other words, did you adjust the setting on the hotplate or did you leave the setting the same?

5. How was the total temperature change different in each of the samples?

6. What reason can you give to explain the difference in the temperature changes even though the water in each beaker received the same amount of heat?

7. Predict and explain how the temperature change would be different with a sample that had 50 ml of water?

8. Draw a curve on your graph that represents 50 ml of water heating up
9. Predict and explain how the temperature change would be different with a sample that had 400 ml of water?

10. Draw a curve on your graph that represents 400 ml of water heating up.
11. Use the rest of the page to define and explain the difference between heat and temperature. Use examples and be specific in your definitions and explanation.