**Fact or Fiction: Goldilocks and the Three Bears**

In the story of “Goldilocks and the Three Bears”, Goldilocks discovered three bowls of porridge after illegally breaking and entering the home of the Three Bears. The break in used quite a lot of energy, which made Goldilocks very hungry. However, she was a very picky eater. She helped herself the each of the three bowls of porridge which happened to be sitting on the table. Papa’s bowl (the largest) was too hot, so she passed it up. Mama’s bowl (the medium-sized) was too cold, so she passed it up, too. When she got to Baby Bear’s bowl (the smallest), it was just the right temperature, so she ate it all up.

**Problem:** Which of the three Bear’s bowls will be “just right” if we recreate the story as a science investigation?

**Hypothesis: If** we measure \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_bowl, **then** it will be “just right” **because**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Materials:** 3 different sized beakers to represent the Three Bear’s bowls, 3 thermometers, one stopwatch, Hot water

**Procedure:**

1. Get 850-900 mL of hot water.
2. Pour 50 mL in the smallest beaker.
3. Pour 300 mL in the medium beaker.
4. Make sure there is 500 mL remaining in the largest beaker.
5. Record the starting temperature for each of the three beakers in the data table. Make sure you use degrees C.
6. Start the stopwatch. Every two minutes, take readings for the three beakers and record the temperatures in the data table.
7. Calculate the rate of heat loss in the second data table. The rates should tell you which beaker lost the most heat (largest number) and the least amount of heat (smallest number). The rate that is the middle number should be the beaker that is “just right”—not too hot or not too cold.
8. Graph your results. You should have three lines: one representing the data of the Papa beaker, one for the Mama beaker, and one for the Baby beaker. Make a key and/or color code the three lines so you can tell what they represent.
9. After looking at your data, calculations, and graph, answer the two conclusion questions.
10. Re-write the ending (porridge part) of the Goldilocks story to represent the data you collected.

Name: Date:

**Hypothesis:**

**Data Table One:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Papa’s Bowl | Mama’s Bowl | Baby’s Bowl |
| Starting Temp (°C) |  |  |  |
| 2 minutes |  |  |  |
| 4 minutes |  |  |  |
| 6 minutes |  |  |  |
| 8 minutes |  |  |  |
| 10 minutes |  |  |  |
| 12 minutes |  |  |  |
| 14 minutes |  |  |  |
| 16 minutes |  |  |  |
| 18 minutes |  |  |  |
| 20 minutes |  |  |  |

**Data Table Two:**

|  |  |  |  |
| --- | --- | --- | --- |
| Container | Change in Temp  (Subtract the ending temp from the starting temp) | Change in Time | Rate of Heat Loss  Change in Temp divided by 20 min |
| Papa Bear |  | 20 minutes |  |
| Mama Bear |  | 20 minutes |  |
| Baby Bear |  | 20 minutes |  |

When you look at the “Rate of Heat Loss” above, the smallest of the three numbers is the beaker that lost the least amount of heat. The largest number is the beaker that lost the most heat. Your “Just Right” is the number in the middle of these two.

**Graph:**

1. Construct a “Triple Line Graph” to represent the data. One line will represent each of the Bear’s bowls.
2. Make sure you include a title, the labels and units, and an accurate scale. Write your name on it and staple it to this sheet!
3. You may want to “color code” the three lines to make it easier to interpret.

**Conclusion:**

1. Did the size of the container affect the rate of heat loss? Explain.
2. Was your hypothesis correct?
3. Using the information you gathered during this experiment, rewrite the “Porridge Portion” of the Goldilocks story so that it is now scientifically accurate. Make it interesting! ☺

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