**Prior Knowledge: Think About It…**

1. What is heat?
2. What is temperature?
3. What is thermal energy?
4. True/False: Some things cannot heat up.
5. True/False: Cold objects contain heat.
6. Which has higher temperature an iceberg or a cup of coffee? Explain your reasoning.
7. Which has more thermal energy an iceberg or a cup of coffee? Explain your reasoning.
8. Does a cup of water boil at a different temperature than a pot of soup? Explain your reasoning.

**Notes**

I. Thermal Energy-

 A. A form of Kinetic Energy.

 B. Total thermal energy of a substance is

II. Thermal Energy of Objects

 A. Thermal energy depends on

 Ex. Twice the mass gives twice the thermal (kinetic) energy.

B. Different objects at the same the same temperature can

III. Temperature-

 A. “hotness” and “speed”

 B. Higher temperature ->

 C. Lower temperature ->

 D. Temperature       depend on the number of particles.

 Ex. Twice the mass gives the same temperature.

IV. These two beakers have the same temperature but different amounts of thermal energy.

V. Which has more thermal energy? 1 liter of hot cocoa at 75\*C or 1 cup of hot cocoa at 75\*C

VI. Heat-

 A. \*\* Different definition than in everyday language\*\*

 B. An object does not contain heat… it contains thermal energy.

VII. Cold-

VIII. What does HEAT do?

1.

 Ex. Pot on the stove.

2.

 Ex. Ice cube melting, freezer making ice cubes

3.

 Ex. Heat Engine

IX. Measuring Temperature

 A.      - Tool used to measure temperature.

B. Thermometers measure the average

|  |  |  |  |
| --- | --- | --- | --- |
| Unit | Used In | Water Boils at… | Water Freezes at… |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

0\*K (-273\*C) is the lowest temperature possible->

It means there is NO THERMAL ENERGY in the matter, so NO movement of particles.

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NOW ANSWER THE PRIOR KNOWLEDGE QUESTIONS AGAIN… How are your answers different?

1. What is heat?
2. What is temperature?
3. What is thermal energy?
4. True/False: Some things cannot heat up.
5. True/False: Cold objects contain heat.
6. Which has higher temperature an iceberg or a cup of coffee? Explain your reasoning.
7. Which has more thermal energy an iceberg or a cup of coffee? Explain your reasoning.
8. Does a cup of water boil at a different temperature than a pot of soup? Explain your reasoning.
9. How are your answers different than above? What did you learn?