Different substances take different amounts of thermal energy to change temperature.
For example if you have, 1 kg of Aluminum and 1 kg of Water, and you put them both on the stove, which would change temperature the fastest?
If you said the Aluminum you would be correct, this is because water has a higher specific heat than Aluminum, the water would heat much slower as it takes more energy to change temperature. The specific heat of an object is the amount of energy it takes to raise 1 kg of the substance 1 °C or °K.
Below is a table that shows the specific heat of some common substances. Notice that water has a very high specific heat. The high specific heat of water means that the ocean can absorb a great deal of energy without having a large change in temperature; this is what allows the oceans to regulate the temperature of the earth.

Substance	Aluminum	Brass	Copper	Glass	Ice	Iron	Sand	Sliver	Water
Specific Heat	903	376	385	664	2,060	450	670	235	4,180

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VIDEO LINK
Watch U14_Specific_Heat

$$Q = m \cdot C \cdot \Delta T$$

(Q) Change in energy = (m)mass X (C)Specific Heat X (ΔT)Change in Temperature
(Remember the change in anything is ending - beginning)

Decide whether the following statements are "True" or "False". If the statement is false, write the word that would replace the *italicized* word and make the statement true in the space provided.

_____ **1.** Particles that make up matter are in *constant* motion.

_____ **2.** The faster particles move the *less* kinetic energy they have.

_____ **3.** *Temperature* is the measure of the average kinetic energy of the particles in an object.

_____ **4.** When temperature *increases*, the kinetic energy of the particles decreases.

_____ **5.** The thermal energy of an object is the *total* energy of the particles in a material.

_____ **6.** A 5-kg chunk of aluminum and a 5-kg block of silver that are at the same temperature have *the same* thermal energy.

_____ **7.** Heat flows from a *higher* temperature to a lower temperature.

_____ **8.** Heat is measured in *newtons*.

_____ **9.** Different materials need *the same* amounts of heat to have similar changes in temperatures.

_____ **10.** The amount of energy it takes to raise the temperature of 1 kg of a material 1 kelvin is the *specific heat* of the material.

_____ **11.** Water has a relatively *low* specific heat.

_____ **12.** Materials with a high specific heat can absorb a lot of energy and show *little* change in temperature.

Directions: *Answer the following questions about specific and thermal energy.*

13. Change in thermal energy can be calculated using the equation $Q = m \times C \times \Delta T$

a. In this equation, what does Q represent? _____

b. What does m represent? _____

c. What does ΔT represent? _____

d. What does C represent? _____

e. What does the symbol Δ mean? _____

f. Why is the symbol Δ used with T but not Q? **Q T** is the **independent dependent** variable which means it responds to changes in the **independent dependent** variable **Q T** which is controlled by the experimenter who can determine the change by subtracting the ending temperature from the beginning.

14. What formula is used to calculate ΔT? _____

How much energy would it take to raise the temperature of 1 kg of water 10 degrees C or K?

Joules

input number without commas

How much energy would it take to raise the temperature of 100 kg of water 10 degrees C or K?

Joules

input number without commas