**Physical Science Quiz #8 Study Guide – Thermal Energy – Chapter 6**

1. Temperature measures the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the particles of a material.
2. Explain what thermal energy is.
3. Explain the relationship between thermal energy and temperature.
4. What is the unit for measure thermal energy?
5. What are the 3 units for measuring temperature?
6. What is an insulator?
7. How is passive solar heating different from active solar heating?
8. Explain the first and second laws of thermodynamics.

**Transferring Thermal Energy –** *fill in the chart below with the appropriate information*

|  |  |  |
| --- | --- | --- |
| **Type of Transfer** | **How it works** | **Example** |
| **Conduction** |  |  |
| **Convection** |  |  |
| **Radiation** |  |  |

**Converting Heat to Work -** *fill in the chart below with the appropriate information*

|  |  |  |
| --- | --- | --- |
| **Device** | **What it does/how it works** | **Examples** |
| **Heat Engine** |  |  |
| **Internal Combustion engine** |  |  |
| **Heat mover** |  |  |

**Specific Heat calculations –**

1. What is the formula for determining the change in thermal energy? What do each of the letters stand for?
2. Brass is an alloy made from copper and zinc. A 0.5 kg brass candlestick has an initial temperature of 371 K. If 21,100 J of energy is removed from the candlestick to lower its temperature to 279K, what is the specific heat of brass?
3. A 0.15 kg drinking glass is filled with a hot liquid. The liquid transfers 7550 J of energy to the glass. If the temperature of the glass increases by 22 K, what is the specific heat of the glass?
4. A potato chip burned and gave off enough energy to heat up 0**.**2 Kg of water from 20oC to 25oC. The specific heat of water is 4,184 J/goC. Assuming that the energy gained by the water is the heat produced by the chip, then how many Joules of energy are in a chip?
5. Bismuth’s specific heat is 121 J/kg\*K, the lowest of any non-radioactive metal. What is the mass of a bismuth sample if 25 J raises its temperature 5.0 K?