

06/09/23

How many joules of heat energy are required to heat 1.0 gallons of water from 20°C to 85°C?

You have 125.0 grams of gold, that has a specific heat capacity of 0.13 J/g•K, and it is at a temperature of 37°C (i.e. a gold necklace that you just took off). You use a hair dryer to blow hot air on the gold, eventually adding a total of 3.2 kJ of heat to the gold. What is the temperature of the gold after this amount of heat energy has been added?

If the addition of 735 J of heat to 200.0 grams of a liquid causes its temperature to go from 31.5°C to 34.2°C, what is the specific heat capacity of that liquid?

The temperature inside your freezer is  $-20^{\circ}\text{C}$ . You remove a chunk of ice from the freezer that weighs 750 grams. How much energy is required to turn all this ice into gaseous water? You can assume that the specific heat capacity of solid water is the same as that of liquid water.

You have a cube of iron (Fe) that measures 1.35 inches on a side. The density of iron is  $7.86\text{g}/\text{cm}^3$  and the specific heat capacity of iron is  $0.45\text{ J}/\text{g}\cdot\text{K}$ . Using a furnace, you heat the cube of iron to a temperature of  $750^{\circ}\text{C}$  and then drop it into a bucket containing 2.5 L of water originally at room temperature ( $20^{\circ}\text{C}$ ). What will the temperature of the water be when everything has equilibrated?