

Additional Teacher Background

Chapter 2 Lesson 1, p.64

Specific Heat and Heat Capacity

When room temperature metal washers are placed in hot water, the temperature of the washers goes up and the temperature of the water goes down. This makes sense because energy was transferred from the hot water to the cooler washers. But the amount of temperature decrease of the water may not match the amount of temperature increase by the washers. Even though the same amount of energy left the water as went into the washers, the change in temperature of the two substances is different. This is because the water and the washers have a different specific heat.

Specific heat is the amount of energy required to raise the temperature of 1 gram of a substance by 1 °C. It makes sense that different substances have different specific heats because the size, mass, attractions, and arrangements of their atoms or molecules are different. Based on these differences, the amount of energy required to increase the motion of these atoms or molecules by a certain amount is different.