

Quiz.

1. A small iron ball and a large iron block are heated to the same temperature and then dropped into two identical buckets of room-temperature water.
 - a) The large block heats its container of water more because it has more internal energy to impart to the water.
 - b) The large block heats its container of water more because it has a higher temperature than the small ball.
 - c) The small ball and large block heat the water in each bucket the same amount.

2. If you see a photo of power lines that are sagging down low, then the picture was probably taken
 - a) on a cold winter day.
 - b) on a hot summer day.

3. Temperature is measured in
 - a) Joules
 - b) calories
 - c) degrees

4. Heat is a _____ of thermal energy.
 - a) quantity
 - b) flow
 - c) ratio

5. When you remove a pizza from the oven, the oven air does not burn you because
 - a) its temperature is lower than the temperature of the metal in the oven.
 - b) it is a poor conductor of heat.
 - c) it is a good conductor of heat.
 - d) it moves out of the way when you stick your hands inside.

6. The air pressure in your tires is _____ in the summer and _____ in the winter.
 - a) higher, lower
 - b) lower, higher
 - c) the same as in winter, the same as in summer

7. Coastal regions have more moderate temperatures than deserts due to
 - a) the low specific heat capacity of water.
 - b) the high specific heat capacity of sand.
 - c) the high specific heat capacity of water.

8. A hole in a sheet of metal will _____ when heated.
 - a) get smaller
 - b) stay the same
 - c) get bigger

9. What's the difference between a hot cup of coffee and a cold cup of coffee?
- a) the mass of the coffee molecules
 - b) the size of the coffee molecules
 - c) how quickly the coffee molecules are jiggling

Answer Key.

1. a)

Although they have the same initial temperature (the same average kinetic energy per molecule), the block has more molecules and therefore more total energy.

2. b)

Power lines are metal, and metals expand when heated. As they stretch due to thermal expansion they become longer and hang lower.

3. c)

Temperature can be measured in degrees Celsius, degrees Fahrenheit, or kelvins.

4. b)

Heat cannot be contained. It spontaneously flows from an object or an area with a higher temperature to an object or area of lower temperature.

5. b)

The air in the oven is at the same temperature as the metal and even the food inside the oven, but air is a good insulator and therefore a poor conductor of heat.

6. a)

Gases expand and contract more than rubber does during temperature changes. When a gas is heated it expands and exerts more pressure on its container, and when a gas is cooled it contracts and exerts less pressure.

7. c)

Water has a high specific heat capacity, or a high resistance to temperature change. Sand has a low specific heat capacity.

8. a)

All dimensions of an object expand at the same rate when heated and contract at the same rate when cooled.

9. c)

Temperature is a measure of the average translational kinetic energy or velocity of the molecules within a substance.