

## RQ Transfer of Thermal Energy

Name: \_\_\_\_\_

Date: \_\_\_\_\_

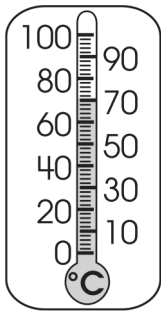
1. A class conducts an experiment to determine the best color to paint a solar water heater that they plan to build.

For their experimental test, the students have four identical cans. They paint one black, one green, one red, and one white. Each can is filled with 500 mL of 22°C water, and is allowed to sit in the sun for two hours.

Which colored can will have the *greatest* increase in water temperature?

A. black   B. green   C. red   D. white

2. Use the information below to answer the question.

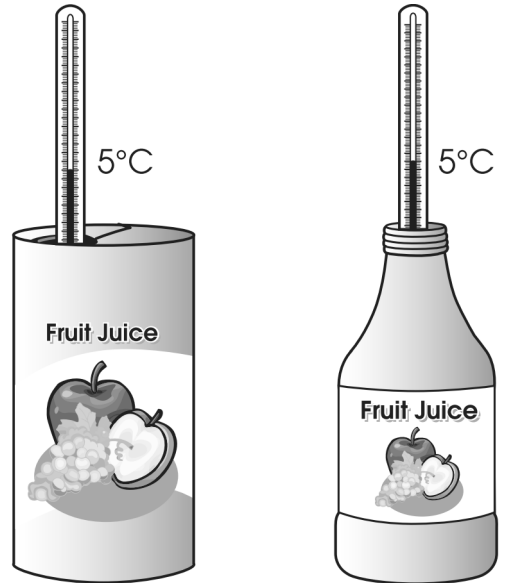


Students observe the liquid in the thermometer rising as the temperature increases.

What is the effect of the transfer of thermal energy that explains this observation?

- A. The liquid expands.  
B. The liquid contracts.  
C. The glass around the liquid expands.  
D. The glass around the liquid contracts.

3. Two juice containers are in a cooler. One is plastic and one is metal. The metal can feels colder than the plastic bottle. Students place a thermometer in each container. They find that the juices in the bottle and in the can are the same temperature.

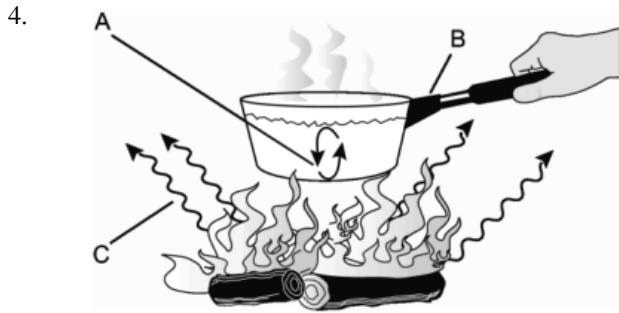


**Metal Can**

**Plastic Bottle**

Why does the can feel colder than the bottle?

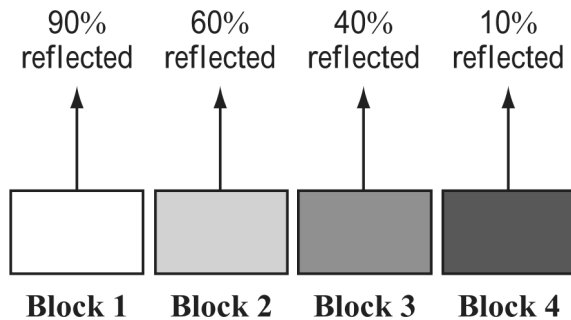
- A. The metal can holds colder juice than the plastic bottle.  
B. Plastic is a better conductor of thermal energy than metal.  
C. Metal is a better conductor of thermal energy than plastic.  
D. The outside of the metal can is drier than the plastic bottle.



What type of heat transfer is indicated by the letter B, in the above diagram?

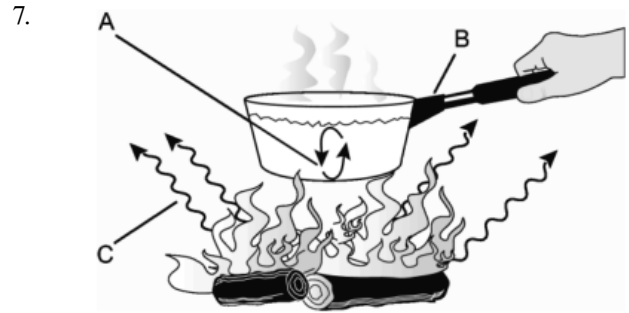
- A. Conduction      B. Convection  
C. Radiation

5. Four different-colored blocks are placed outside in bright sunlight. The blocks are identical except for color. The diagram below shows the amount of light reflected from each block.



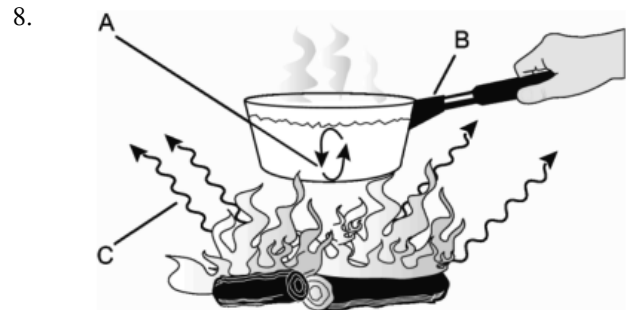
Which block will increase in temperature *most* rapidly?

- A. block 1      B. block 2  
C. block 3      D. block 4
6. The primary reason an ice cube feels cold to the touch is that
- A. conduction causes coldness to leave the ice.  
B. radiation from the hand enters the ice.  
C. conduction causes heat to leave the hand.  
D. convection currents leave the hand.



What type of heat transfer is indicated by the letter A, in the above diagram?

- A. Conduction      B. Convection  
C. Radiation



What type of heat transfer is indicated by the letter C, in the above diagram?

- A. Conduction      B. Convection  
C. Radiation

9. Heat energy from the Sun is transferred to Earth primarily by which of the following processes?
- A. conduction      B. convection  
C. evaporation      D. radiation

10. Which statement *best* describes how energy transfer within Earth's atmosphere can affect a weather condition?
- A. During radiation, objects directly transfer heat to each other which affects the air temperature.
  - B. During radiation, electromagnetic waves transfer heat and light energy which affects the air temperature.
  - C. During convection, objects directly transfer heat to each other which affects the amount of precipitation.
  - D. During convection, electromagnetic waves transfer heat and light energy which affects the amount of precipitation.