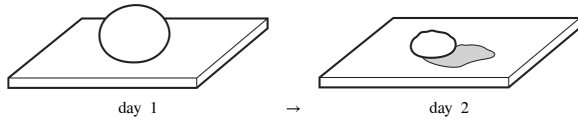


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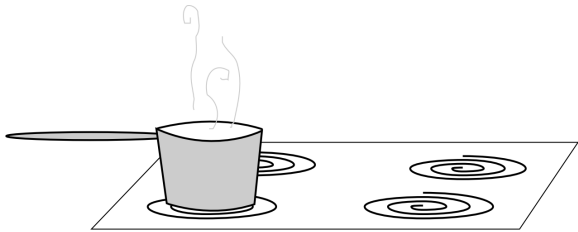
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1. A student made a snowball and left it on a shelf outside. The next day, the student observed the snowball.



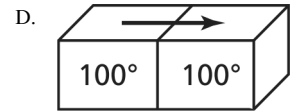
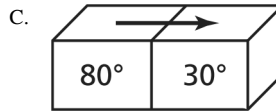
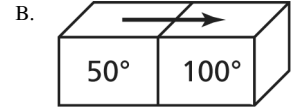
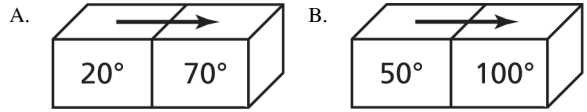
Which statement *best* explains a change in the snowball?

- A. The air temperature increased, causing part of a solid to become a liquid.
 - B. The air temperature decreased, causing part of a solid to become a liquid.
 - C. The air temperature increased, causing part of a liquid to become a solid.
 - D. The air temperature decreased, causing part of a liquid to become a solid.
2. Which situation is an example of heating that occurs **primarily** by the process of conduction?
- A. Steam is rising from a cup of hot chocolate.
 - B. The sun shines through a window and warms a table.
 - C. Grains of rice move around in a pot of boiling water.
 - D. A hot bread roll is set on a plate and warms the plate.
3. Why might the handle on this pot get hot?

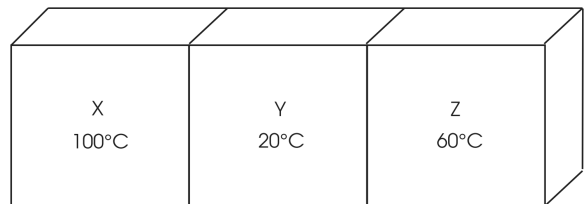


- A. The food removes heat.
- B. The handle is away from the flame.
- C. The heat moves through the pot to the handle.
- D. The handle is magnetic.

4. The pictures below show pairs of metal blocks and their temperatures. Which of these correctly shows the direction that heat energy will move?



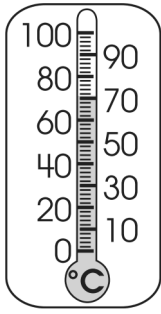
- A. Heat transfer by radiation makes the rice vibrate.
 - B. The rice is carried along by conduction.
 - C. The chef stirred the pot before the rice was added.
 - D. The rice is carried along by convection currents.
5. A chef pours a cup of rice into a pot of boiling water and observes the rice swirling around in the pot. Which of the following explains the cause of this action?
- A. metal lid to contract.
 - B. metal lid to expand more than the glass jar expands.
 - C. glass jar to contract.
 - D. glass jar to expand more than the metal lid expands.
6. A tight metal lid on a glass jar of jelly may loosen when held under a flow of hot water. The hot water causes the
- A. metal lid to contract.
 - B. metal lid to expand more than the glass jar expands.
 - C. glass jar to contract.
 - D. glass jar to expand more than the metal lid expands.
7. Three identical blocks are pushed together. The starting temperature of each is shown.



Which traces the transfer of thermal energy among the blocks?

- A. $X \leftarrow Y \rightarrow Z$
- B. $X \rightarrow Y \rightarrow Z$
- C. $X \rightarrow Y \leftarrow Z$
- D. $X \leftarrow Y \leftarrow Z$

8. 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.
9. Bill stands in a swimming pool and notices that the water around his feet is a lot cooler than the water near the surface. Which process causes this difference in temperature?
- A. convection B. evaporation
C. radiation D. conduction
10. What happens to metal railroad tracks during the heat of a summer day?
- A. decrease in weight B. increase in weight
C. decrease in length D. increase in length
11. A person near a fire can feel the heat from the fire. Which process causes the person to feel the heat?
- A. convection B. radiation C. conduction

12. Which is an example of convection?
- A. hot air rising, and sinking as it cools
B. a light bulb giving off heat
C. a stove heating a metal pan
13. An empty glass is at room temperature. A student pours cold water into the glass. What will *most likely* result?
- A. Heat energy will transfer from the cold water to the glass until both are at the same temperature.
B. Heat energy will transfer from the glass to the cold water until both are at the same temperature.
C. Heat energy will transfer from the glass to the cold water until the glass has no more heat energy.
14. How does heat from the sun get to Earth?
- A. by radiation, using electromagnetic waves to transfer the heat
B. by convection, using liquids and gases to transfer the heat
C. by conduction, using solids to transfer the heat
D. by absorption, using primary waves to transfer the heat
15. A closed container of gas may explode when heated mainly because heating the gas causes the pressure to increase. Which statement *best* explains why the pressure increases when the gas is heated?
- A. The gas molecules expand.
B. The gas molecules chemically react.
C. The gas molecules become electrically charged.
D. The gas molecules collide more often with the container.