

Heat Transfer Test

Name: _____ Date: _____ Score: _____

Instructions: Encircle the letter of your choice for the following questions.

1. Abigail noticed that metal gets very cold during winter, colder than other materials such as wood and plastic. What question can she ask about this observation that she can test in an experiment?
 - A. Will wet objects stick to cold metal?
 - B. Does metal weigh more than wood of the same size?
 - C. Will cold metal bend as easily as warm metal?
 - D. Does metal heat up more easily than wood and plastic too?
2. Nora's Experiment: Insulating Materials (Insulating means prevent/block/does not allow the transfer of heat, electricity or sound)

Nora wanted to know what kind of coat would keep her most warm in winter. She tested four fabrics to find out which one is most insulating against the cold: wool (hair from goat and other animals), fleece (hair from a sheep), leather and denim. She tested this by wrapping glasses of warm water in the different materials while allowing a fan to blow cool air against the glasses. Each glass of water began at a temperature of 40°C. She then times how long it took for each one to cool to 30°C. She conducted three trials. The table below shows her results. In the trials and in the averages, she rounded her data up

Results of Insulation Experiment

	Length of Time it Took the Temperature to Drop from 40°C to 30°C (minutes)			
	Trial 1	Trial 2	Trial 3	Average
control	29	26	32	29
denim	38	35	40	38
fleece	65	62	67	65
leather	48	45	50	48
wool	52	50	45	49

- From Nora's experiment: Insulating Materials, what trend does the data communicate?
- A. All five containers of water took 5 minutes longer to cool in Trial 3 than in Trial 2
 - B. All five containers of water took 3 minutes longer to cool in Trial 1 than in Trial 2
 - C. In each trial, the water wrapped in fleece took 17 minutes longer to cool than the water wrapped in leather
 - D. In each trial, the water wrapped in denim took 9 minutes longer to cool than the water that was not insulated
3. Bryce conducted an investigation to find out whether stirring salt into water would dissolve the salt faster than just adding it to water. His results led him to conclude that salt dissolves faster in water if it is stirred.

Which best uses qualitative information to communicate the results of the investigation?

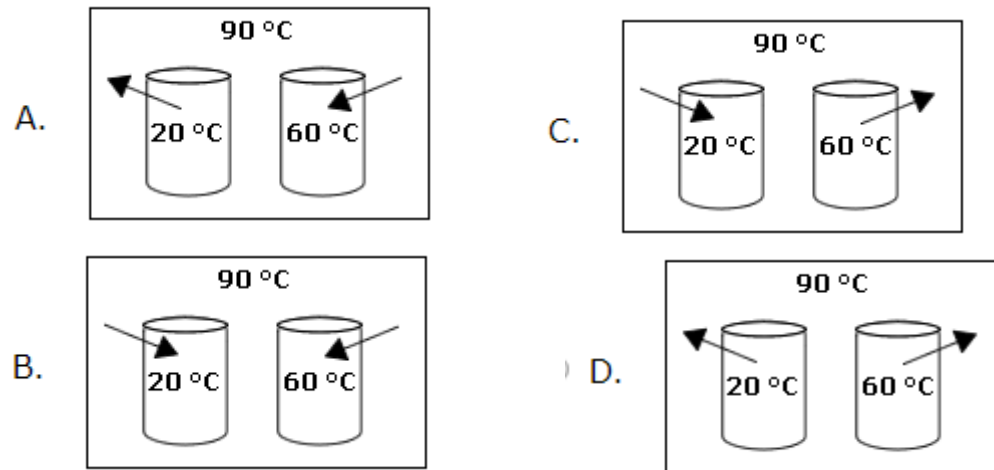
 - A. The salt dissolved in 3 minutes with stirring and in 12 minutes without stirring.
 - B. Stirring caused the salt crystals to dissolve in the water more quickly than without stirring.
 - C. While stirring increases the rate of solvation, heat increases the rate of salvation even more

D. Salt dissolved faster when stirred in water because stirring allows more solvent molecules to contact more solute molecules.

4. What happens to water vapor as it condenses (means change from water to gas)?

- A. Water molecules absorb heat
- B. Water molecules become more acidic
- C. Water molecules get closer to each other
- D. Water molecules divide to form new molecules

5. Which diagram shows the movement of heat in this system?



6. What happens to water as it boils?

- A. It gains mass
- B. It becomes acidic
- C. It changes state
- D. It forms precipitate

7. How is heat energy transferred by convection?

- A. Heat is transferred by the movement of warmed matter.
- B. Heat is transferred by particles that touch each other.
- C. Heat is transferred from high elevation to low elevation
- D. Heat is transferred between atoms that are packed tightly together

8. How is heat energy transferred by conduction?

- A. Heat is transferred by warm matter rising and cool matter sinking
- B. Heat is transferred through empty space by electromagnetic waves
- C. Heat is transferred by hot liquids turning into cooler gases that rise in the atmosphere
- D. Heat is transferred from warm objects to cool objects that are in contact with each other.

9. How is heat energy transferred by radiation?

- A. Heat is transferred from one object to another through contact
- B. Heat is transferred from one location to another by the movement of warmed matter.
- C. Heat is transferred through space without the aid of solid or liquids
- D. Heat is transferred by phase changes in atmosphere

