Name:_____ Date:_____

1. In Colonial America, people used ice to help keep foods fresh. They cut the ice from lakes and ponds during the winter and stored the ice in icehouses. They sometimes used hay as an insulator to prevent the ice from melting.

If you wanted to build an icehouse today, which of the following would be the **best** material to use as an insulator?

A. dried leaves

B. foam blocks

C. plastic wrap

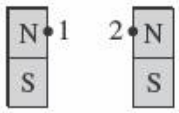
D. rock salt

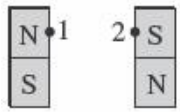
This online assessment item contains material that has been released to the public by the Massachusetts Department of Education.

2. In which case would it take the **most** effort to make points 1 and 2 on the magnets touch each other?

A. 

B. 

C. 

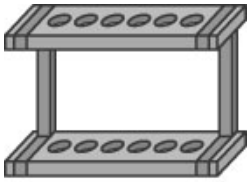
D. 

This online assessment item contains material that has been released to the public by the Massachusetts Department of Education.

3. What happens to the liquid inside the thermometer when the temperature increases?

A. It expands and gets taller.
B. It contracts and gets shorter.
C. It changes into a gas.
D. It changes into a solid.

4. Which item helps you measure the temperature of water?

A. 
test tube rack

B. 
holder

C. 

D. 
thermometer

5. What makes the most heat energy?

A. 

B. 

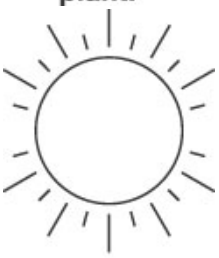
C. 

D. 

6. We can use heat energy from

A. 
a glass of ice water

B. 
a flowering plant.

C. 
the Sun.

D. 
a rabbit.

---

7. Bob is in the kitchen making dinner. Heating water will help him to

A. cool the drinks.
B. make ice cubes.
C. cook noodles.
D. clean the vegetables.

---

8. If you put a metal spoon in hot water, the spoon will

A. melt.
B. dissolve.
C. get cold.
D. get hot.

---

9. Ellie's grandmother asked her to stir hot soup cooking on the stove. Which spoon should she use to be safe?

A. a metal spoon
B. a wooden spoon
C. a plastic spoon
D. an iron spoon

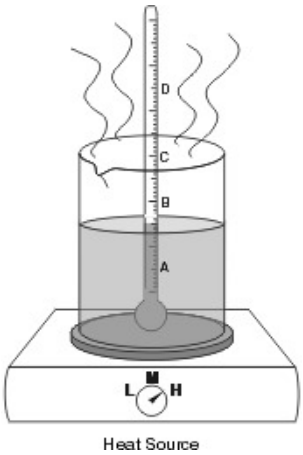
---

10. Your bare foot burns when you step onto the hot pavement because the heat moves

A. from the pavement to the air.
B. from the pavement to your foot.
C. from your foot to the pavement.
D. from your foot to the air.

11.

Use the picture below to answer this question.

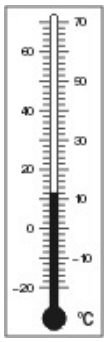


Morgan is doing a science experiment. When the water in the beaker is heated, the thermometer reading will go from

A. A to B to C to D.
B. D to B to A to C.
C. C to A to B to D.
D. B to C to D to A.

---

12. *Use the picture below to answer this question.*



The temperature reading is

A. 10°C.
B. 12°C.
C. 15°C.
D. 20°C.

---

13. Vern is doing an experiment to measure the heating effect of the Sun. He needs to use a small dish of water, a clock, and a

A. light meter.
B. hydrometer.
C. pH meter.
D. thermometer.

---

14. Which is an insulator?

A. copper coin
B. aluminum ladder
C. glass
D. water

---

15. When one end of a steel rod is held in a flame, the other end also gets hot. This happens because steel

A. makes its own heat.
B. is a good conductor of heat.
C. makes the flame hotter.
D. keeps cold away from the flame.

---

16. Which does NOT make heat?

A. a burning candle
B. an electric current
C. a campfire
D. a sweater

---

17. Which is a source of heat energy?

A. rain
B. fire
C. wind
D. water

---

18. Four different spoons were put into a pan of boiling water. Which spoon will have a hot handle first?

A. metal spoon
B. rubber spoon
C. wooden spoon
D. plastic spoon

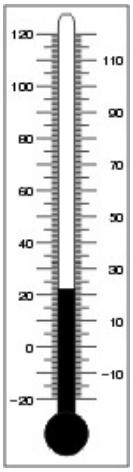
---

19. May stirs her glass of iced lemonade with a spoon. At first the spoon feels warm but soon it feels as cold as the lemonade. Which tells what happens?

A. The spoon loses heat to the lemonade until they are both the same temperature.
B. The lemonade loses heat to the spoon until they are both the same temperature.
C. The spoon and the lemonade get colder because they use May's energy from stirring.
D. The spoon and the lemonade get colder because they both lose heat to the glass.

20.

Use the picture below to answer this question.



Most thermometers are read by looking at the position of the red liquid in a glass tube. Which tells how this type of thermometer works?

A. The glass expands (gets larger) when hot.
B. The glass contracts (gets smaller) when hot.
C. The red liquid expands (gets taller) when hot.
D. The red liquid contracts (gets shorter) when hot.

---

21. Estelle put hot water in a cup. When she picked up the cup, the handle was very hot. Which tells why the handle was hot?

A. Heat moved from the handle to the air.
B. Heat moved from the hot water to the handle.
C. Heat moved from Estelle to the handle.
D. Heat moved from the air to the handle.

---

22. Where is the BEST place to find information about heat convection?

A. an encyclopedia or computer
B. a map or globe
C. a chart or graph
D. a TV or radio

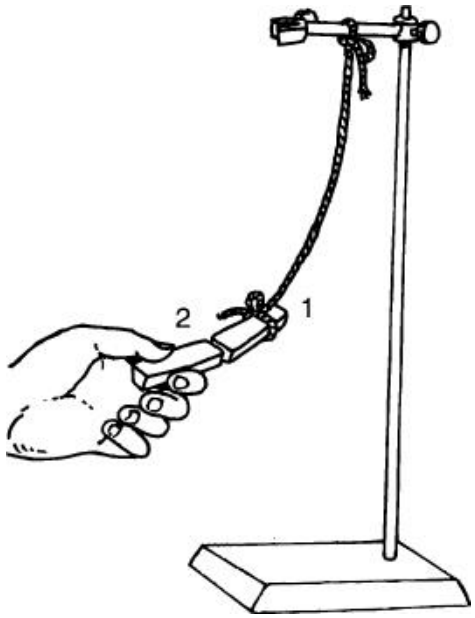
---

23. Ammon was at the beach and walked from his blanket onto the sand. He felt his feet burning on the sand and ran back to his blanket. What heated the sand?

A. his feet
B. the Sun
C. the Earth
D. his blanket

---

24. Tony's class was observing the properties of magnets. Using the diagram, what would happen if magnet #2 was turned around so the other end was next to magnet #1?



A. The magnets would move away from each other.

B. The magnets would become negatively charged.

C. The magnets would create an electromagnetic field.

D. The magnets would stick together in the same way.

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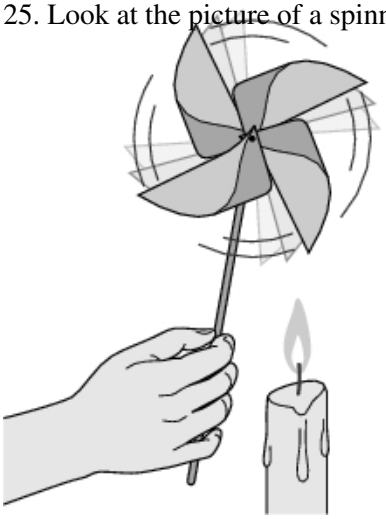
25. Look at the picture of a spinning pinwheel held over a lit candle.

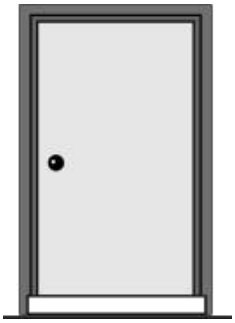


Which of these BEST explains why the pinwheel is spinning?

A. heat energy from the candle
B. solar energy from the candle
C. heat energy from the pinwheel
D. wind energy from the pinwheel

26. Which object is a source of heat energy in a home?

A. 

B. 

C. 

D. 

---

27. Sarah knows that she can warm her hands by rubbing them together. What causes them to get warmer?

A. electricity
B. fire
C. friction
D. gravity

28.

You make a 100 on your most recent test. To display it proudly, you stick it to the _____ with a magnet.

A. couch
B. TV screen
C. refrigerator
D. front window

29.

Which of these will a magnet attract?

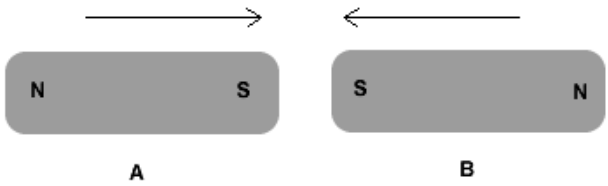
A. aluminum
B. brass
C. copper
D. iron

30.

Which of these statements is true?

A. A larger magnet attracts only large objects.
B. Unlike poles repel, and like poles attract.
C. Like poles repel, and unlike poles attract.
D. All magnets will stick to any metal.

31.



As the two magnets in the image are brought closer to one another, what is likely to happen next in this image, and why?

A. The magnets will get closer because the parts that make up the magnet are aligned.
B. The magnets will get closer because the two magnets have opposite ends.
C. The magnets will move apart because the two magnets have the same ends.
D. The magnets will move apart because the two magnets have opposite ends.

32.

Which of these statements is true of magnets??

A. All magnets attract glass.
B. Some magnets attract paper.
C. Some magnets attract plastic.
D. Magnets attract certain metals.

33.

Which of these is true about magnets?

A. All magnets are the same size.
B. Magnets can attract all metals.
C. Magnets can attract other magnets.
D. Small objects will attract to magnets.

34.

The force that creates heat energy when an eraser is rubbed across paper is

A. electricity.
B. friction.
C. fire.
D. radiation.

35.

Which method describes a way to create friction?

A. Place a plate in soapy water.
B. Burn a piece of paper in a fire.
C. Connect a battery to a remote control.
D. Smooth a piece of wood with sandpaper.

36.

Which of these examples produces heat energy through friction?

A. a log burning in a fireplace
B. an ice cube melting in a glass of soda
C. mixing a chemical to produce an instant hot pack
D. an eraser being moved back and forth across a paper

37.

Two houses are identical in every way except one. House A has styrofoam insulation behind every wall, beneath the floor, and above the ceiling. House B has empty space (air) behind every wall, beneath the floor, and above the ceiling.

Which statement is true?

A. The family in House A will spend more to cool the house during the summer.
B. The family in House B will spend less to heat the house during the winter.
C. The family in House A will spend less to warm the house during the winter.
D. The families in Houses A and B will spend equal amounts to cool and heat the house.

38.

Which answer best explains why you would wear thick, warm clothes in bitterly cold weather?

A. to conduct heat
B. to keep you cool
C. to make heat
D. to help insulate against the cold

39.

What purpose does a bear's fur have in a cold environment?

A. keeps him cool
B. helps the bear blend in
C. prevents bears from drowning
D. insulates bears against the cold weather

40.

What is used to keep objects cold?

A. outlet
B. chemicals
C. conductor
D. insulator

41.

Temperature is measured in what kind of units?

A. pounds
B. degrees
C. kilograms
D. centimeters

42.

Early one morning a thermometer reads 65 degrees Fahrenheit. Later that day the same thermometer reads 90 degrees Fahrenheit. What is the difference in temperature that day?

A. 30 degrees warmer
B. 35 degrees colder
C. 24 degrees difference
D. 25 degrees difference

43.

This is an experiment that could be done in science class.
Place a thermometer in a glass of warm water. Record the temperature. Place a thermometer in a glass of cold water. Record the temperature.
Which answer explains how you would determine the difference in temperature between the two glasses of water?

A. multiply the two temperatures
B. add the two temperatures together
C. subtract the lower temperature from the higher temperature
D. You will not be able to determine a difference with the data.

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44. **Which of these is attracted to a magnet?**

A. An iron nail

B. A copper penny

C. A silver spoon

D. An aluminum pan

45.

The picture shows some ring magnets on a pencil. A student pushed the magnets together, but they came apart as soon as the student let go. The magnets stay apart from each other because the —

A. magnets are too weak to stay together

B. materials that make up the magnets are not magnetic

C. same poles of the magnets are facing each other

D. pencil stops the force of the magnets

---

46. **A piece of metal is probably a magnet if it —**

A. can pull some metals to it.

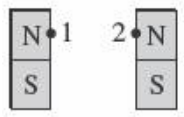
B. has a dull metal color.

C. becomes rusty in the rain.

D. has the letter N on it.

Answer Key

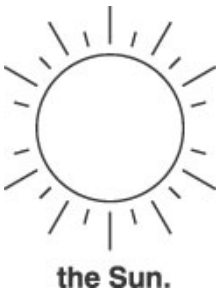
1. B) foam blocks

2. C) 

3. A) It expands and gets taller.

4. D) 

5. B) 

6. C) 

7. C) cook noodles.

8. D) get hot.

9. B) a wooden spoon

10. B) from the pavement to your foot.

11. A) A to B to C to D.

12. B) 12°C.

13. D) thermometer.

14. C) glass

15. B) is a good conductor of heat.

16. D) a sweater

17. B) fire

18. A) metal spoon

19. A) The spoon loses heat to the lemonade until they are both the same temperature.

20. C) The red liquid expands (gets taller) when hot.

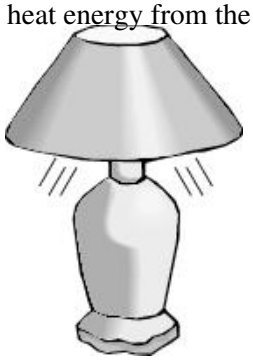
21. B) Heat moved from the hot water to the handle.

22. A) an encyclopedia or computer

23. B) the Sun

24. A) The magnets would move away from each other.

25. A) heat energy from the candle

26. C) 

27. C) friction

28. C) refrigerator

29. D) iron

30. C) Like poles repel, and unlike poles attract.

31. C) The magnets will move apart because the two magnets have the same ends.

32. D) Magnets attract certain metals.

33. C) Magnets can attract other magnets.

34. B) friction.

35. D) Smooth a piece of wood with sandpaper.

36. D) an eraser being moved back and forth across a paper

37. B) The family in House B will spend less to heat the house during the winter.

38. D) to help insulate against the cold

39. D) insulates bears against the cold weather

40. D) insulator

41. B) degrees

42. D) 25 degrees difference

43. C) subtract the lower temperature from the higher temperature

44. A) An iron nail

45. C) same poles of the magnets are facing each other

46. A) can pull some metals to it.