

Grade 7 - Heat and Temperature Unit Test

Student _____

Class _____

1. This type of Thermal Energy source can be used to cook food, but they are hard to control, dangerous and messy.

- A. open fires
- B. fireplaces
- C. pioneer stove
- D. modern gas stove

2. New technologies have been developed to provide thermal energy, without scorching your body. One of these has micro sensors that work like invisible thermostats, that measure the temperature of different parts of your body and generates thermal energy accordingly. This technology is ...

- A. still in the development stage
- B. found only in research labs
- C. an electric blanket
- D. thermal underwear

3. A technology that has replaced boiling water over an open campfire gives us a warning when the water has boiled. This technology is ...

- A. a micro-sensing digital boiler
- B. a solar powered water heater
- C. an electric kettle
- D. a hot water heater

4. Pressure affects the boiling point and freezing point of water. Extreme pressure under a glacier can cause the ice to flow or even melt at temperatures

- A. above 0°C
- B. below 0°C
- C. around 0°C
- D. consistent with 0°C

5. Absolute zero is a temperature on the Kelvin scale. Although no one has ever been able to cool anything down to absolute zero, scientist know that it is ...

- A. - 137.15 K
- B. - 237.15 K
- C. - 173.15 K
- D. - 273.15 K

6. A material, which is affected by changes in some feature of the environment, such as temperature is called a ...

- A. circuit
- B. sensor
- C. signal
- D. responder

7. Recording thermometers are called thermographs. The 'temperature writer' uses a rotating drum to record changes in temperature. Tiny movements of this device can make large movements on the recording instrument. The device which makes these tiny movements is the ...

- A. lever
- B. pen
- C. bimetallic strip
- D. rotating drum

8. Another important idea about temperature and the particle theory is that the motion of particles increases when the temperature increases. Which statement below is also correct?

- A. as the motion of particles decreases the temperature remains the same
- B. as the temperature decreases the motion of the particles also increases
- C. as the motion of the particles decreases the temperature decreases
- D. as the temperature increases the motion of the particles decreases

9. Energy is the measure of something's ability to do work. Which of the following has the most thermal energy?

- A. a dead battery
- B. a melted slurpee
- C. a swimming pool
- D. a cup of hot chocolate

10. Which of the following energy transfers would be correct?

- A. thermal energy in a hot drink is transferred to cold hands
- B. thermal energy is transferred from a room to a heater, to be heated
- C. an ice cube loses thermal energy when it melts in hot lemonade
- D. thermal energy is lost by a match when it is lit

11. When a substance is heated the particles gain energy and spread out, creating more volume (spaces between the particles). So what about the mass of the substance? What happens to the mass of a substance when it is heated?

- A. mass increases
- B. mass decreases
- C. mass remains the same
- D. mass is lost

12. Solids made of different metals were all heated to 100°C to determine how their volume and length would be affected. Which statement describes the most likely outcome of this experiment?

- A. all the volumes changed the same amount and the lengths remained constant
- B. all the volumes changed, but each substance was the same length
- C. only some of the volumes changed with their length being increased
- D. all of the volumes changed and so did their lengths

13. An experiment testing the effect of heat on different liquids was performed by some students. Which of the following variables would have been the manipulated variable?

- A. the amount of heat used
- B. the different types of liquids
- C. the size and type of glass tubing each liquid would rise
- D. the different levels each of the liquids reached in the glass tubing

14. When a substance undergoes a change of state, energy is involved. Which change of state involves a release of energy?

- A. melting
- B. sublimation
- C. evaporation
- D. fusion

15. As high-energy particles escape from the surface of a liquid, by evaporation, the remaining liquid cools. This surface cooling phenomenon is described by scientists as ...

- A. evaporative cooling
- B. subliminal cooling
- C. fusion
- D. condensive evaporation

16. During a phase change, the temperature remains the same, so the particles have ...

- A. less average energy
- B. more average energy
- C. the same average energy
- D. a faster speed

17. A certain type of thermal energy transfer moves the energy by direct collisions, particle-to-particle. This type of thermal energy transfer is called ...

- A. concurrent
- B. conductive
- C. conduit
- D. convective

18. The transfer of energy in a fluid is very different. The heated particles become less dense and so they rise, with the colder, more dense particles rushing in to take their place. This type of thermal energy transfer creates a ...

- A. conduction current
- B. concurrent current
- C. radiative pathway
- D. convection current

19. Energy systems have five things in common - input energy, energy transfer, output energy, waste energy and ...

- A. collisions between particles
- B. energy source
- C. energy equilibrium
- D. concentrated flow

20. Much of the energy used in Alberta is found in the vast resources of fossil fuels. This type of energy source is useful and stored until we need it. Fossil fuels are considered to be sources of ...

- A. chemical energy
- B. industrial energy
- C. biological energy
- D. geothermal energy

21. Electrical energy can be generated at a Dam and can also be generated by thermo-electric generating stations, which burn coal. The reason that thermo-generating stations are used is because ...

- A. coal is so abundant
- B. it is cleaner and cheaper
- C. a large waterfall may not be available
- D. heated water is more efficient

22. Thermal energy from inside the Earth's crust can be harnessed as a useful thermal energy source. Volcanoes, hot springs and geysers are example of this type of thermal energy source. This type of thermal energy is ...

- A. an environmental pollutant
- B. a clean alternative to using fossil fuels
- C. called geovolcanic energy
- D. used to generate fossil fuel resources

23. Programmable thermostats can be used while the occupant of the home is asleep or away. These devices ...

- A. adjust the temperature
- B. increase the temperature
- C. decrease the temperature
- D. reduce the humidity

24. An **ENERGUIDE** label is found on most household electrical appliances and tells the consumer how much electricity is ...

- A. needed to run the appliance
- B. used running the appliance
- C. wasted by the appliance
- D. generated while running the appliance

25. Thermal energy has the power to hurt us and destroy our possessions. All of the following practices are dangerous and harmful **EXCEPT** ...

- A. reclamation programs
- B. dumping of toxic chemicals
- C. forest fires
- D. volcanic eruptions

26. A dangerous by-product, from the use of fossil fuels enters the atmosphere when it is burned. This by-product causes irritations to the eyes, nose and throat and greatly affects asthma sufferers. It is ...

- A. carbon dioxide
- B. carbon monoxide
- C. sulfur dioxide
- D. sulfur monoxide

27. An experiment to test heat transfer in solids was demonstrated in the class. The reason that the toothpicks fell off each rod at different times demonstrated that ...

- A. solids expand and contract
- B. expansion is affected by heating and cooling
- C. different solids transfer heat at different rates
- D. different solids expand the same

28. A badminton bird is struck, with a racket, by Allison. The bird is sent over the net, landing on the ground and bouncing to a stop. The input energy source is ...

- A. Allison
- B. the racket
- C. the strings of the racket
- D. the floor

29. An insulation material is used to prevent heat loss in a house. Using the table provided, which material would provide the best RSI value (insulation value).

<u>Material</u>	<u>RSI per cm</u>
blue plastic foam	0.35
white plastic foam	0.29
fibreglass	0.24
vermiculite	0.16
plywood	0.087
glass	0.017

- A. 2 cm of fibreglass
- B. 24 cm of glass
- C. 1 cm of blue plastic foam
- D. 4 cm of vermiculite

30. When warm air expands and rises, cooler air rushes in to take up the empty space. The warm air cools as it rises away from the heat source. A good example of this in action is ...

- A. an expansion joint on a bridge
- B. a lava lamp
- C. a thermal, used by birds, during migration
- D. the convection currents in the outer core

31. The components of a home heating system include a furnace, a blower, a heat exchanger, a filter, air ducts and registers. The heat source would be found in the ...

- A. registers
- B. furnace
- C. heat exchanger
- D. blower

32. A roadway is usually built with spaces. These spaces are ...

- A. meant to trap debris from gravel trucks
- B. mistakes made by the engineers
- C. joints for expansion and contraction
- D. temperature gradients to test weathering

33. The two outer metal sections of a door are usually separated by a layer of solid wood. This layer of wood is a poor conductor of thermal energy, so it prevents heat loss from the inside of the house. The layer of wood is called a ...

- A. thermal conductor
- B. thermal break
- C. conductor threshold
- D. conduction barrier

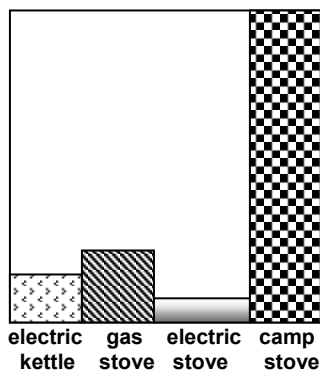
34. An environmentally conscious decision, by an aircraft company, that would have the greatest impact would be to ...

- A. use biodegradable engine parts
- B. burn less fuel
- C. recycle waste from the passengers
- D. use only high grade petroleum products

35. The ice shelves in Antarctica are floating extensions of the ice sheets that cover the Antarctic land. Scientists are concerned about these ice shelves because they are ...

- A. breaking up faster than they should
- B. overtaking the water passage ways
- C. growing larger than normal
- D. melting unevenly and at a much slower rate than usual

36. Use the following graph to answer the question.



This graph represents the cost of heating water for cooking. Each device transfers thermal energy to the water, which gains thermal energy. The height of the graph represents cost. Which is the most inexpensive appliance to use for cooking?

- A. electric kettle
- B. gas stove
- C. electric stove
- D. camp stove

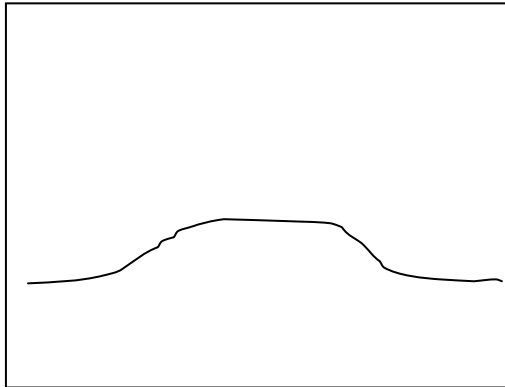
37. Liquids that evaporate easily at low temperatures are used in refrigerators. They are called

- A. vapour coolants
- B. refrigerants
- C. condenser fluids
- D. evaporative liquids

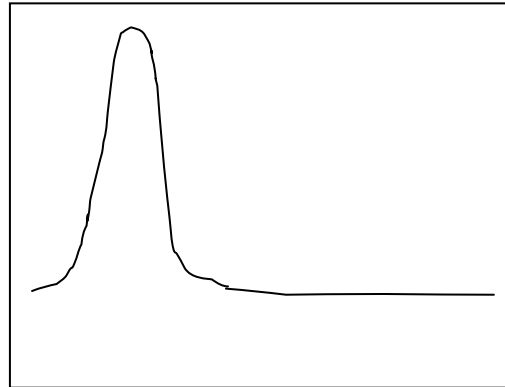
38. A tsunami carries enormous amounts of energy in the energy system it is a part of. The energy source for the tsunami is the ...

- A. earthquake
- B. ocean floor
- C. giant wave
- D. weather pattern

39. Compare the graphs to answer the question



Warming 100g of water



Warming 100g of silver

These graphs represent temperature change over time. The height of the graph shows the range of temperature, with the higher peak showing the greatest change. Which of the materials has the highest heat capacity?

- A. neither
- B. can't tell
- C. water
- D. silver

40. Which of the following explanations would account for the increase in temperature inside a beehive?

- A. the bees have a secret heat source
- B. honey is a fuel that provides the heat source
- C. honeycombs are able to generate heat
- D. the activity of the bees makes the hive warmer

Answer Key
for
Heat and Temperature
Unit 3 Test

1	A	21	C
2	C	22	B
3	C	23	A
4	B	24	B
5	D	25	A
6	B	26	C
7	C	27	C
8	C	28	A
9	D	29	D
10	A	30	C
11	C	31	B
12	D	32	C
13	B	33	B
14	B	34	B
15	A	35	A
16	C	26	C
17	B	37	B
18	D	38	A
19	B	39	C
20	A	40	D