Thermodynamics Worksheet

Matching

A. Absolute Zero	G. Heat	N. Radiation
B. Celsius	H. Heat Engine	O. Refrigerator
C. Conduction	I. Internal Energy	P. Temperature
D. Convection	J. 0^{th} Law of Thermodynamics	Q. Thermal Energy
E. Entropy	K. 1^{st} Law of Thermodynamics	R. Thermodynamics
F. Fahrenheit	L. 2^{nd} Law of Thermodynamics	S. Thermometer
	M. 3^{rd} Law of Thermodynamics	

1. _____ The total amount of energy contained in an object.
2. _____ This states that when two objects are in contact, heat will flow until they are in thermal equilibrium.
3. _____ Heat that is transferred by movement of a fluid.
4. _____ The energy transferred between objects in contact as a result of temperature difference.
5. _____ A device that uses heat to do work and but is 100% efficient and expels excess heat.
6. _____ A measure of the average molecular kinetic energy.
7. _____ Thermal energy in motion.
8. _____ This states that it is impossible to achieve a temperature of absolute zero.
9. _____ A device that uses work to move heat from a cold place to a hotter one.
10. _____ The amount of disorder in a system.
11. _____ A transfer of heat energy through space by means of electromagnetic waves.
12. _____ The study of the flow of heat energy.
13. _____ This states that heat will always flow from hot objects to cold objects, efficiency is always less than 100%, and total disorder can never decrease.
14. _____ The lowest possible temperature on the Kelvin scale where all molecules would stop.
15. _____ This states that energy is never created or destroyed: heat lost by an object is gained by another.
16. _____ A unit of measurement that was once called Centigrade because there are 100 degrees between the freezing and boiling points of water in this scale.
17. _____ A unit of temperature in which the freezing point of water is 32 degrees.
18. _____ A capillary tube with a liquid that is calibrated to measure temperature.
19. _____ The total energy of motion of the molecules in an object.

Multiple Choice.

20. Which of the following things has the most thermal energy?
A) The ocean B) A camp fire C) A hot oven D) A hot water bottle

21. What is the causes heat to flow?
A) Temperature B) Thermal Energy C) Temperature Difference D) Coldness

22. Two objects in thermal equilibrium have
A) the same energy B) the same temperature C) different temperatures D) the same heat

23. Which of the following is the best conductor of heat?
A) Wood B) Water C) Aluminum D) Plastic

24. If the average kinetic energy of the particles that make up a liquid increases,
A) the liquid changes state C) the liquid loses heat to its surroundings
B) the temperature of the liquid increases D) all of the above take place

25. If 25 g of hot water are added to 35 g of cold water, the heat lost by the hot water is _____ the heat gained by the cold water.
A) greater than B) less than C) equal to

26. When mechanical work is done on a system, there can be an increase in its
A) internal energy B) temperature C) both of these D) neither of these

27. The disorder in a system
A) usually increases B) can decrease C) can remain the same D) A and C

Short Answer.
28. List four things that affect internal energy of an object.

29. How does a thermometer work? How does a thermostat work?

30. On a winter day, does cold flow into the house through the windows?

31. When a piece of aluminum and a piece of wood are at room temperature, which feels colder? Why?

32. Describe the three ways heat energy can be transferred.

33. If 100 J of work is done on a system and 200 J of heat leave the system, what is the change in internal energy?

34. If 500 J of heat are added to a system and the system does 250 J of work, what is the change in internal energy of the system.