

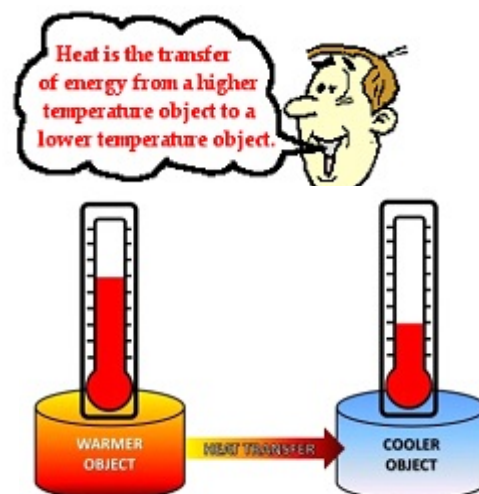
Intermediate Science 7
Unit 1: Heat and Temperature
Topic 5: Heat and Temperature



Student Name _____

What is heat?

- is the total internal added together.
- the transfer of energy from a hot object to a colder object.
- is measured in Joules

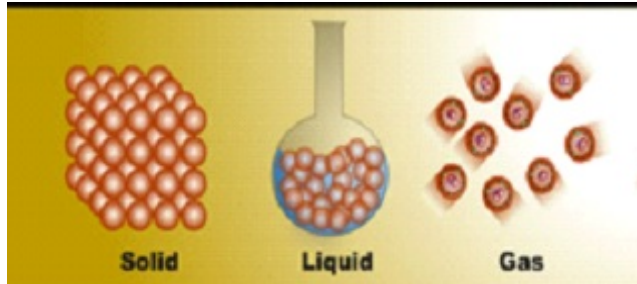


Specific Heat: the amount of energy required to raise the temperature of 1 gram of a substance by 1°C. Some substances change temperature more easily than others

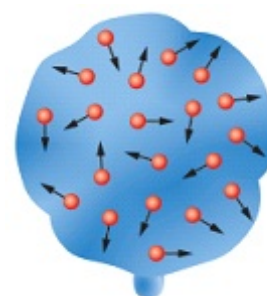
The Kinetic Theory of Matter:

All of the particles that make up matter are constantly in motion

- Solid= vibrating atoms
- Liquid= flowing atoms
- Gas= move freely

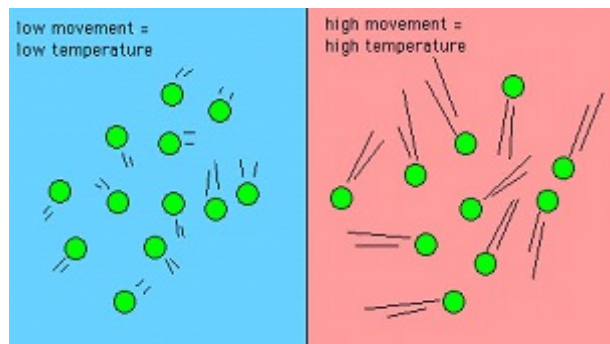
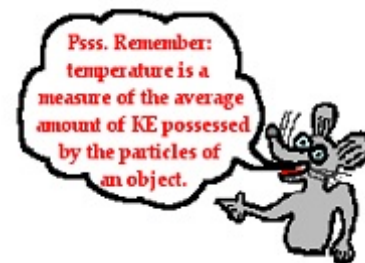


Kinetic energy refers to energy that all moving objects possess; a particle has more kinetic energy when moving faster and less kinetic energy when moving slower



What is Temperature?

- refers to the measurement of the average kinetic energy of all the particles in the object
- The motion of the particles increase as the temperature increase
- The motion of the particles increase as the temperature increase
- Temperature can be measured in
 - Celsius
 - Fahrenheit
 - Kelvin
- As particles gain kinetic energy they move faster, temperature increases
- As particles lose kinetic energy they move slower, Temperature decreases
- The higher the temperature of an object is, the greater the tendency of that object to transfer heat.



PART A: MULTIPLE CHOICE

Instructions: Shade the letter of the correct answer on the computer scorable answer sheet provided

1. Which of the following is true for heat?
 - (A) It is the sum of the internal energy
 - (B) Is the average kinetic energy of the particle
 - (C) The transfer of energy from cold to hot
 - (D) It is measured in degrees Celsius

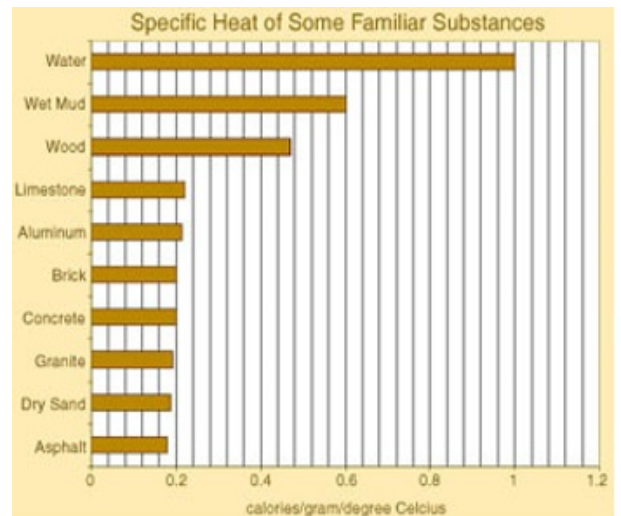
Use the statements below to answer questions 2 and 3:

- I) The transfer of energy from a hot object to a colder object.
II) Measurement of the average kinetic energy of all the particles in the object
III) It is measured in Joules
IV) Can be measured in Celsius, Fahrenheit and Kelvin
2. Which of the following describes heat?
 - (A) I and III
 - (B) I and IV
 - (C) II and III
 - (D) II and IV
3. Which of the following describes temperature?
 - (A) I and III
 - (B) I and IV
 - (C) II and III
 - (D) II and IV

4. What is true for a large and small container of water with the same temperature?
- (A) The same total amounts of internal energy.
 - (B) The same amounts of internal and external energy.
 - (C) Different amounts of heat.
 - (D) The same amounts of all forms of energy.
5. Anytime a temperature difference occurs, what can you expect?
- (A) Cold to move to where it is warmer.
 - (B) Energy movement from higher temperature regions.
 - (C) No energy movement unless it is warm enough, at least above the freezing temperature.
 - (D) Energy movement flowing slowly from cold to warmer regions.
6. Which of the following refers to the amount of heat necessary to change an object's temperature by 1 degree?
- (A) Heat
 - (B) Kinetic Energy
 - (C) Specific Heat
 - (D) Temperature

7. Using the chart below, which object has the greatest specific heat capacity?

- (A) Aluminium
- (B) Brick
- (C) Dry sand
- (D) Wet Mud



8. How do particles behave in a hot substance?
- (A) Move more faster than the cooler object
 - (B) Move more slower than the cooler object
 - (C) Move at the same rate as the cooler object
 - (D) May move faster or slower than the cooler object
9. How would you increase the temperature of a substance?
- (A) Decrease the amount of heat
 - (B) Don't change the amount of Heat
 - (C) Increase the amount of heat
 - (D) Remove heat from the substance

10. What does the term heat refer to?
- (A) Force
 - (B) Energy transfer
 - (C) Power
 - (D) Temperature
11. 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

PART B: MATCHING

Fill in the blanks on the left with the terms on the right. Please, place your answers on the scantron

12. ___ Kinetic theory of matter	A. average kinetic energy of an object's particles
13. __ Temperature	B. Energy of motion
14. ___ Kinetic energy	C. The flow of energy from a hot object to a cooler object
15. ___ Heat	D. All matter is made up of particles in constant motion
16. ___ Specific Heat	E. The amount of energy needed to raise the temperature of 1 gram of a substance 1 degree Celsius

PART C: WRITTEN RESPONSE

1. What is the connection between the kinetic energy of the particles in an object and the temperature of the object?

2. Explain why rubbing your hands together makes them feel warmer. In what other way could you use motion to make yourself feel warmer?

3. One golf ball has been lying in the sun and another one has been in the shade. The particles of which ball have a larger average kinetic energy? Explain.

4. Why do we sweat?



5. (A) Use the particle theory to explain the difference between a cup of water with a temperature of $80\text{ }^{\circ}\text{C}$ and a bathtub with a water temperature of $30\text{ }^{\circ}\text{C}$?

(B) Use the particle theory to explain what would happen if you floated the hot cup in the bathtub.

6. Use the particle theory to explain why your hand gets hot for the picture below?

