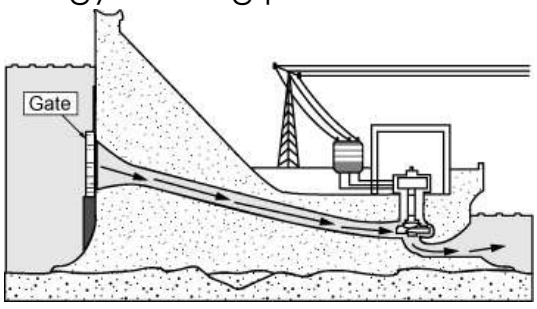
Name: _____

Physical Science Unit 2 Practice Sheet

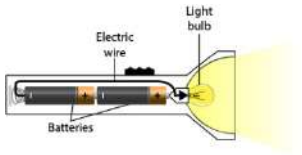
Chapter 15:

1. There are two windmills near Brittany's town. Brittany wonders which one converts more wind energy into mechanical energy. What is the BEST way for Brittany to find out which windmill generates more mechanical energy?
   a. measure the height of each windmill
   b. stand next to each windmill to feel where the wind is strongest
   c. find out which windmill was built more recently
   d. count how many times each windmill spins in one minute
2. Some dams are designed to make electricity. How do dams make electricity?
   a. The force of the moving water makes energy that the dam changes into electricity.
   b. The force of gravity pulling down on the dam creates energy that turns into electricity.
   c. The light energy hitting the water from the Sun makes energy that the dam can change into electricity.
   d. The sound energy made by the water moving through the dam creates energy that turns into electricity.
3. What is described as a device that converts chemical energy to electrical energy?
   a. battery
   b. capacitor
   c. lightbulb
   d. resistor
4. What transformation of energy is taking place when the gate is opened?



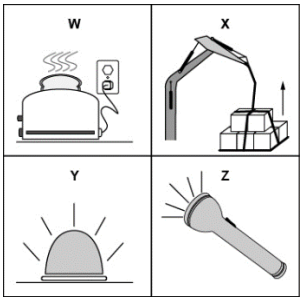
   a. potential energy to kinetic energy as the water level rises behind the dam.
   b. kinetic energy to potential energy as the water flows into the plant.
   c. kinetic energy to potential energy as the water level lowers behind the dam.
   d. potential energy to kinetic energy as the water flows into the plant
5. Moving water can be used to produce electrical energy because
   a. most forms of energy can be converted into other forms.
   b. energy cannot be created into other forms.
   c. potential energy can only be converted into kinetic energy.
   d. kinetic energy can only be converted into potential energy.

6. Which situation BEST demonstrates the law of conservation of energy?
   a. ice water transforming into liquid water when it absorbs heat energy
   b. batteries being able to store potential energy over a long period of time
   c. a long distance runner conserving her energy to sprint at the end of the race
   d. the potential energy of a ball being dropped from a cliff being converted to kinetic energy
7. Which BEST describes the energy transformation within the flashlight?



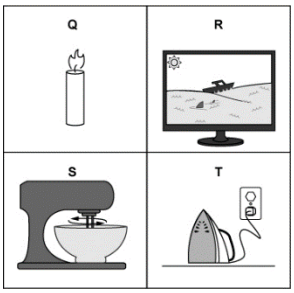
   a. The batteries contain electrical energy that is converted into chemical energy. The chemical energy is transformed into light and heat energy.
   b. The batteries contain chemical energy that is converted into electrical energy. The electrical energy is transformed into light and heat energy.
   c. The batteries contain light energy that is converted into chemical energy. The chemical energy is transformed into electrical and heat energy.
   d. The batteries contain heat energy that is converted into electrical energy. The electrical energy is transformed into light and chemical energy.
8. Melanie is watching one of her favorite programs on television. The television transforms electrical energy from an outlet into other kinds of energy. Which types of energy are released by a television?
   a. light energy and sound energy
   b. heat energy and chemical energy
   c. electrical energy and solar energy
   d. chemical energy and magnetic energy
9. What kind of energy transformation is taking place when a hair dryer is used?
   a. Mechanical energy is being transformed into thermal energy.
   b. Electrical energy is being transformed into thermal energy.
   c. Sound energy is being transformed into electrical energy.
   d. Magnetic energy is being transformed into wind energy.
10. Which picture BEST shows electrical energy being converted into thermal energy?

   a. W
   b. X
   c. Y
   d. Z



11. Electric swings for babies primarily transform electrical energy into
   a. mechanical energy.
   b. thermal energy.
   c. sound energy.
   d. light energy.

12. Which picture shows the transformation of electrical energy into mechanical energy?



a. Q
b. R
c. S
d. T

13. The visible glowing of a burner on a stove shows that the energy in the burner is transforming from
    a. light energy to electrical energy.
    b. electrical energy to light energy.
    c. thermal energy to mechanical energy.
    d. mechanical energy to thermal energy.
14. Which of the following is the energy transformation that occurs when gasoline is burned to power a car?
    a. heat energy to sound energy
    b. chemical energy to sound energy
    c. heat energy to mechanical energy
    d. chemical energy to mechanical energy
15. Which statement is the BEST example of the law of conservation of energy?
    a. A train traveling down a hill loses potential energy that is then stored in the ground.
    b. An animal's energy is permanently stored in chemical bonds when it eats food.
    c. Chemical energy in a car engine is destroyed as it burns and releases exhaust into the air.
    d. Radiant energy from the Sun is not lost but transformed into other forms of energy.

Chapter 16:

16. How many joules are absorbed by a pot of water with a mass of 500 g in order to raise the temperature from 20°C to 30°C? (The specific heat of water is 4.184 J/g°C.)

17. If it takes 420 J to warm 100 g of aluminum from 20°C to 25°C, what is the specific heat of aluminum?

18. If the specific heat of iron is 0.46 J/g◦C, how much heat is needed to warm 50 g of iron from 20◦C to 100◦C?

19. If it takes 31,500 joules of heat to warm 750 g of water, what was the temperature change? (The specific heat of water is 4.184 J/g◦C.)

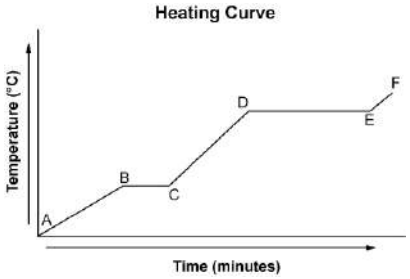
20. When water changes phase, it gains or loses energy. During which of the following types of phase changes do the particles of water gain energy?
    a. freezing
    b. condensation
    c. deposition (gas to solid)
    d. melting

21. Which of the following BEST explains why the sand at the beach is hotter than the water?
    a. Sand has a higher specific heat than water.
    b. Sand has a lower specific heat than water.
    c. There is more water than sand at the beach.
    d. There is more sand than water at the beach.

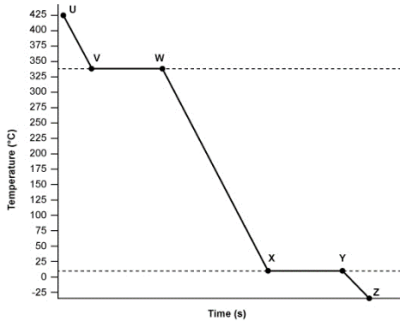
22. What happens to the average kinetic energy of a substance as its temperature increases?
    a. It increases.
    b. It decreases.
    c. It remains the same.
    d. It decreases, then increases.

23. Which of the following statements concerning the melting of ice is true?
    a. The particle motion decreases.
    b. The particle motion is unaffected.
    c. The temperature increases throughout the phase change.
    d. The temperature stays the same until all the ice has melted.

24. Which line segment corresponds to the GREATEST increase in kinetic energy?
    a. AB
    b. BC
    c. CD
    d. DE



Use the following graph to answer the next two questions.



25.In the graph above, what is the melting point of the substance?

a. 10◦C
b. 175◦C
c. 337◦C
d. 425◦C

26.In the graph above, what is the boiling point for the substance?

a. 10◦C
b. 175◦C
c. 337◦C
d. 425◦C

27.The air molecules around a candle flame are excited by the increased energy and spread out, decreasing in density and rising above the cooler, denser air around it. The denser air fills the space of the lighter air, continuing the cycle. Which process is being described?

a. conduction
b. convection
c. radiation
d. subduction

28.When Peter touches a warm radiator, heat is transferred to his body by

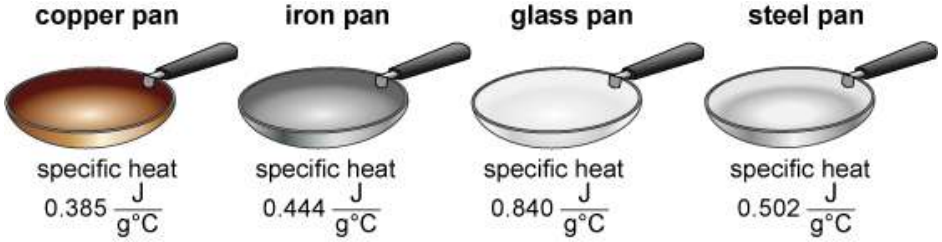
a. convection.
b. radiation.
c. insulation.
d. conduction.

29.Javier is designing a container to hold cold items. Which substance should Javier use to BEST insulate the container?

Substance	Specific Heat (J/g◦C)
air	1.020
copper	0.385
glass	0.840
iron	0.444

a. air, because it requires a lot of energy for air to change temperatures
b. copper, because it requires very little energy for copper to change temperatures
c. glass, because it requires a lot of energy for glass to change temperatures
d. iron, because it requires very little energy for iron to change temperatures

30.Which frying pan should Carter use that will heat up and cool down the fastest?



a. copper
b. iron
c. glass
d. steel

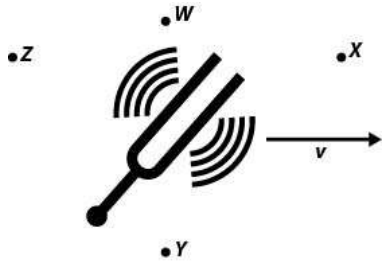
Chapter 17:

31.When the pitch of a musical note increases, what characteristic of the sound wave also increases?

a. wavelength
b. amplitude
c. period
d. frequency

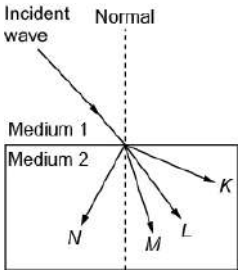
32. Dave strikes a tuning fork that rings at a constant frequency. Dave moves the tuning fork to the right at a constant speed while observers are located at points W, X, Y, and Z. Which observer hears the lowest frequency?

a. W
b. X
c. Y
d. Z

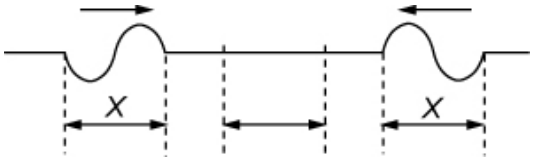


33. If the speed of the ray increases at it passes from medium 1 into medium 2, which arrow BEST represents the direction of the ray in medium 2?

a. K
b. L
c. M
d. N



34. Which diagram BEST represents the shape of the rope when the pulses meet each other?



a.
b.

c.
d.

35. The superposition of two waves traveling in the same medium produces a standing wave pattern when the two waves have which of the following characteristics?

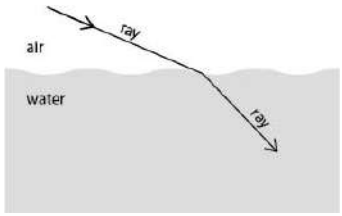
a. the same frequency, different amplitudes, and the same direction of travel
b. the same frequency, the same amplitude, and opposite directions of travel
c. the same frequency, different amplitudes, and opposite directions of travel
d. the same frequency, the same amplitude, and the same direction of travel

36. Which of the following types of interference will occur when the pulses in the figure meet?

a. no interference
b. constructive interference
c. destructive interference
d. total interference

37. A train blows its whistle as it moves rapidly towards a stationary observer. Which of the following BEST describes the sound of the whistle as heard by the observer in comparison to the sound as heard by a passenger on the train?
    a. The sound heard by the observer will be the same as the sound heard by the passenger.
    b. The sound heard by the observer will be of a higher volume than the sound heard by the passenger.
    c. The sound heard by the observer will be higher in pitch than the sound heard by the passenger.
    d. The sound heard by the observer will be lower in pitch than the sound heard by the passenger.
38. Which of the following statements is true with regard to the angles of incidence and reflection?
    a. The angles of incidence and reflection are equal.
    b. The angle of incidence is greater than the angle of reflection.
    c. The angle of incidence is less than the angle of reflection.
    d. The angle of incidence can be greater than or less than the angle of reflection.
39. Which of the following BEST describes refraction?
    a. The bending of a wave as it reflects at an angle from a surface.
    b. The bending of a wave as it passes at an angle from one material to another.
    c. The bending of a wave as it goes around, or passes through, openings in a barrier.
    d. The bending of one wave as two or more waves try to occupy the same space at the same time.
40. Which of the following BEST describes diffraction?
    a. the bending of a wave as it crosses the boundary between two materials
    b. the bending of a wave as it reflects from a rough surface
    c. the bending of a wave as it goes around, or passes through, openings in a barrier
    d. the bending of a wave as it reflects from a smooth surface
41. Which phenomenon is represented in the diagram?

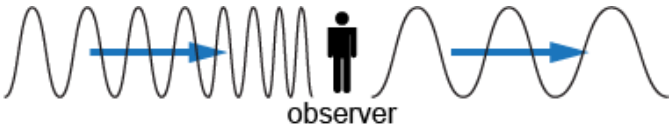
    a. refraction
    b. reflection
    c. diffraction
    d. interference

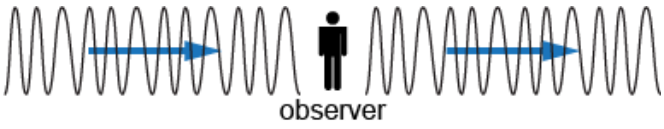


42. A student wants to create a model to demonstrate the change in sound waves from a moving source. Which model should the student create?

a. 

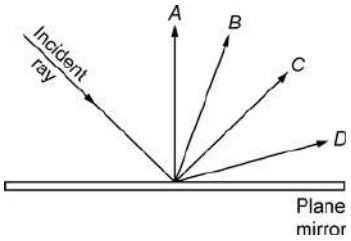
b. 

c. 

d. 

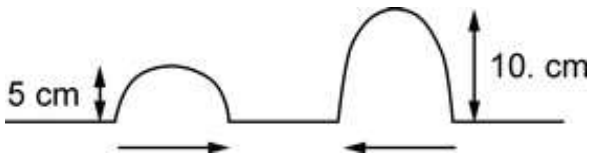
43. Which ray BEST represents the reflected ray?

a. A
b. B
c. C
d. D

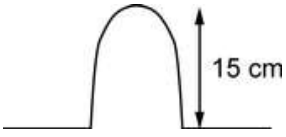


44. A wave is diffracted as it passes through an opening in a barrier. The amount of diffraction that the wave undergoes depends on
    a. the amplitude and frequency of the incident wave.
    b. the wavelength and speed of the incident wave.
    c. the amplitude of the incident wave and the size of the opening.
    d. the wavelength of the incident wave and the size of the opening.

45. Which of the following diagrams BEST represents the superposition of the two pulses?



a. 

b. 

c. 

d.