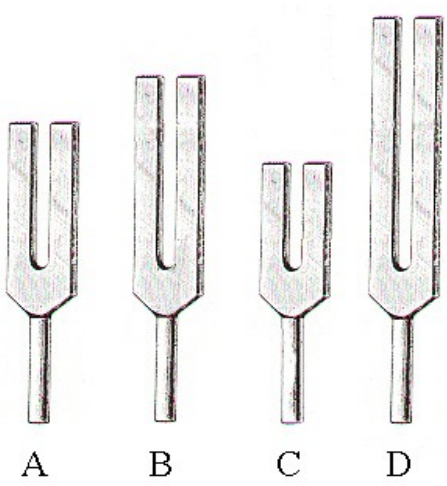
Name:_____ Date:_____

8th Grade Term 3 Review

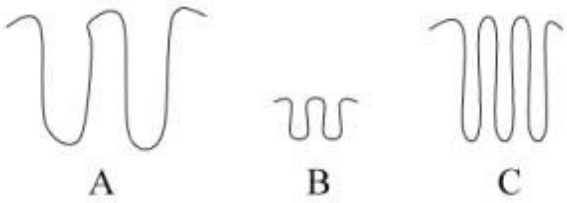
1) What would happen if you reduced the amplitude of a sound wave?
   A. the sound would be louder
   B. the sound would be softer
   C. the sound would be at a higher pitch
   D. the sound would be at a lower pitch



2) Which of the above tuning forks will generate the lowest pitch?
   A. A
   B. B
   C. C
   D. D

3) A student in a laboratory transfers a beaker containing a hot solution from the lab table to a cool water bath. Which of the following parts of the system experiences an increase in heat energy?
   A. beaker
   B. lab table
   C. solution
   D. water bath

4) Isaac Newton wondered what light was made of. He thought light was white and found all over the universe. When he shined light through a prism, he saw the colors of the rainbow. He concluded that white light is a combination of different colors. Which evidence supports his conclusion?
   A. light is white.
   B. light is found all over the universe.
   C. light separates into colors.
   D. light has different wavelengths.



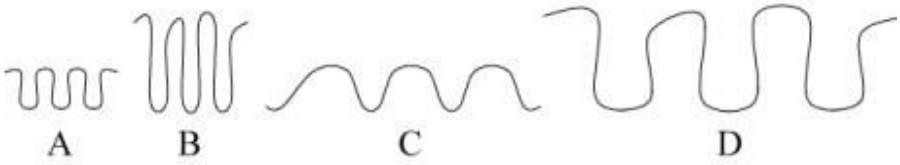
5) Study the drawings above. If these represent three electromagnetic (light) waves, how could you make wave A look more like wave C?
   A. decrease the amplitude
   B. increase the amplitude
   C. decrease the frequency
   D. increase the frequency

6) What change would make wave A look more like wave B?
   A. decrease the amplitude
   B. increase the amplitude
   C. decrease the frequency
   D. increase the frequency

7) How are wave A and wave C similar?
   A. both have the same frequency
   B. both have the same amplitude
   C. both have the same wavelength
   D. wave C has half the amplitude of wave A

8) Which of these best describes how energy spreads from an energy-producing source?
   A. like dominoes falling in a line
   B. like a boulder rolling down a hill, going faster and faster
   C. like rings of water coming from a rock dropped in water
   D. like layers of an onion from the center going out

9) What would wave A look like if you increased its amplitude?
   A. A
   B. B
   C. C
   D. D



10) What would wave C look like if you decreased its wavelength?
   A. A
   B. B
   C. C
   D. D

11) What would wave D look like if you increased its frequency?
   A. A
   B. B
   C. C
   D. D

12) You can estimate how far away a lightning bolt strikes by counting the seconds between seeing the lightning and hearing the thunder. Why does this work?

A. sound waves travel more slowly through air than light waves.
B. sound waves travel slowly through the ear canal before they can be heard.
C. sound waves cannot travel through empty space, they need a medium.
D. sound waves spread out from a source in circles and light does not.

13) Suppose there is an iron pipe that is 3 miles long. It follows the base of a hill so that one end cannot be seen from the other end of the pipe. If you are standing on one end of the pipe, and there is an explosion at the other end of the pipe, how would you first find out about the explosion?

A. you hear the noise of the explosion
B. another worker phones you on his cell phone
C. you feel the vibrations in the pipe
D. you see smoke rising from the blast

14) Why does a prism separate white light into the rainbow colors?

A. different wavelengths of light are bent different amounts
B. the prism acts differently on waves of different amplitude
C. different speeds of light are affected differently
D. the prism changes the amplitude of each of the wavelengths

15) When air near the ground is warmed by sunlight, which of the following occurs?

A. The warm air radiates and becomes cool again.
B. The warm air evaporates into the cooler air.
C. The warm air expands and rises, resulting in convection.
D. The warm air loses its ability to hold water and precipitates.

16) Which of these explains why you see the explosion then hear the boom of fireworks?

A. sound waves travel faster in air than light waves
B. light waves travel faster in air than sound waves
C. the explosion produces the light wave before it produces the sound wave
D. the explosion produces the sound wave before it produces the light wave

17) How could you decrease the gravitational pull between two objects?

A. increase their respective masses
B. make the surface of one of them rough
C. decrease the distance between them
D. increase the distance between them

18) Physicists measure the speed of a falling object and describe gravity in terms of acceleration. Biologists watch a plant seed grow and describe gravity in terms of an effect. Which scientist is correct?

A. the physicist, because they use math to describe the motion.
B. the biologist, because they describe gravity based on observations.
C. neither, gravity should be described a law.
D. both, they do not use the same words but have similar understandings.

19) If astronauts traveled to another planet and discovered that gravity worked in reverse, what would scientists do?

A. revise what they know about gravity in light of the new evidence.
B. reject the new evidence because it does not fit with what we already know.
C. accept that the old ideas did not correctly describe gravity on Earth.
D. decide to stop all research on gravity until the rocket returned home.

20) Which of the following best restates how Earth's gravitational force on an object depends upon the distance of the object from Earth?

A. the closer an object is to Earth, the less the attraction of gravity.
B. the further two objects are from one another the greater the attraction.
C. Earth's gravitational force is proportional to its distance from the Sun.
D. the further an object is from Earth, the less affect Earth's gravity has on it.

21) How are mass and weight different?

A. they both depend on the local gravity system
B. mass depends on the weight and weight depends on the mass
C. weight depends on the local gravity system but mass does not
D. mass depends on the local gravity system but weight does not

22) How are mass and weight different?

A. mass depends on how much matter is in the object but weight does not
B. weight depends on how much matter is in the object but mass
C. weight depends on gravity but mass
D. mass depends on gravity but weight doesn't

23) Catapults were early weapons that used leverage to overcome gravity for a launched object. What happened to the design of catapults as time went by?

A. catapults were made to work without using leverage.
B. a completely new design made it work without adding energy.
C. catapults were designed to work without using gravity.
D. new types were made with different materials and shapes.

24) Isaac Newton discovered that large masses have more gravity than small masses. What evidence supports this discovery?
A. the larger sun holds the smaller planets in orbit.
B. Earth allows smaller objects to escape its gravity.
C. objects in space are sometimes weightless.
D. nothing can escape Earth's gravity or atmosphere.

25) Which of these affects the gravitational pull between two objects?
A. how many layers each one has
B. how fast one of them is moving
C. how far apart they are
D. whether they have a smooth or rough surface

26) Which produces Earth's gravity?
A. mass of Earth.
B. magnetic field of Earth.
C. rotation of Earth on its axis.
D. weight of Earth's atmosphere.

27) Which of these best describes the relationship between the mass of an object and Earth's gravitational pull on the object?
A. the smaller the mass of the object, the greater Earth's gravitational pull on it
B. the smaller Earth's gravitational pull, the greater the mass of the object
C. the greater the mass of the object, the greater Earth's gravitational pull on it
D. the greater Earth's gravitational pull, the greater the mass of the object

28) What are the metric units of measurement for weight?
A. c m3
B. mL
C. g
D. N

29) In which of the situations would a given weight remain the same?
A. on Earth and on the moon
B. on Earth and in a space station orbiting above the Earth
C. in Utah and in Wyoming at the same altitude
D. on Earth and Mars

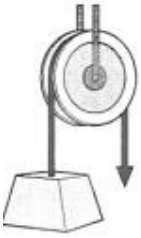
30) Which of the following is an example of how a scientist could help an engineer design and build a bridge?
A. test a model of the bridge.
B. take photographs of existing bridges.
C. discover what traffic patterns are in the city.
D. find out what kinds of bridges people find attractive.

31) How does understanding gravity help a chair designer?
A. the chair must be attractive enough for people to want to buy it.
B. the chair must be strong enough to hold people's weight.
C. the chair must be made out of materials that are easy to find.
D. the chair must be the same shape as other types of chairs.

32) Four levers were built and the effort measured as they lifted the same object. The effort for each is listed below:
Lever A 0.5 kg Lever B 1 kg Lever C 2 kg Lever D 4 kg
Which lever has the greatest mechanical advantage?
A. A
B. B
C. C
D. D

33) Which of the objects shown below is a simple machine?
A.

B.

C

D.


34) If the blades of the a pair of scissors were lengthened, what would happen to the amount of force exerted at their tip?

A. It would not change
B. It would increase
C. It would decrease
D. It would be easier to cut tough materials

35) Students wanted to see the effect different materials had on pulling a 500 g wooden block up an inclined plane with mechanical advantage of 2. They used the same inclined plane and covered it with 4 different materials, one at a time. Their results are found in this table.

MATERIAL USED	FORCE REQUIRED TO PULL OBJECT UP THE PLANE (N)
foam rubber	6.5
sand paper	8.0
short pile carpet	5.5
linoleum	3.0
plain wood	3.5

Which substance resulted in the least amount of friction?

A. foam rubber
B. sand paper
C. linoleum
D. plain wood

36) In this experiment, what was the independent, or manipulated, variable?

A. friction
B. force to pull object up
C. mass of the object
D. type of material

37) Which substance resulted in the most friction pulling the object up the plane?

A. foam rubber
B. sand paper
C. short pile carpet
D. plain wood

38) Two levers were built and the effort measured as they lifted a 2 kg object by 10 cm. The effort for each is listed below:

Lever A 2 kg Lever B 4 kg Which lever did the most <u>work</u>?

A. A
B. B
C. They did the same amount of work.
D. The amount of work cannot be measured.

39) How could the mechanical advantage of an inclined plane be increased?

A. make the height taller
B. increase the weight
C. decrease the weight
D. make the plane longer

40) A simple machine is used to lift a weight. What happens to the amount of force that must be exerted compared to doing the work without a machine?

A. it increases
B. it decreases
C. it stays the same
D. it can't be predicted

41) What simple machines are found in the wheelbarrow?

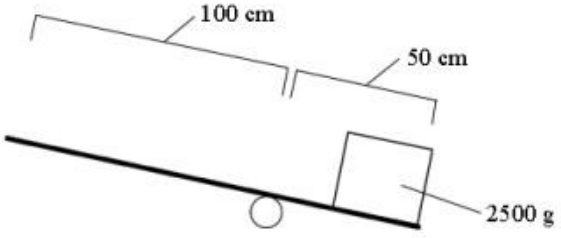
A. inclined plane, lever
B. lever, pulley
C. pulley, inclined plane
D. wheel, lever

42) Which of the following describes the mathematical relationship between the length of the arms on a lever?

A. the longer the effort arm, the less the force needed to lift a mass
B. the longer the effort arm, the greater the force needed to lift a mass
C. the longer the resistance arm, the less the force needed to lift a mass
D. the shorter the resistance arm, the greater the force needed to lift a mass.

43) A simple machine is used to lift a weight. What happens to the <u>amount of force</u> exerted if the work is done without a machine?

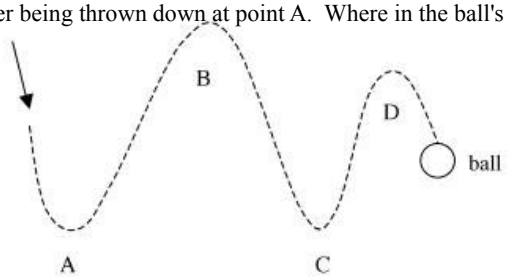
A. it increases
B. it decreases
C. it stays the same
D. it can't be predicted



44) How could you increase the mechanical advantage of this lever?

A. move the fulcrum farther from the weight
B. move the fulcrum closer to the weight
C. make the weight lighter
D. make the weight heavier

45) A ball is bounced on a flat surface and its path is traced in the drawing above after being thrown down at point A. Where in the ball's path is its potential energy the greatest?



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

46) What is happening to the ball's potential and kinetic energy between A and B?

A. potential energy is decreasing and kinetic energy is increasing
B. both kinetic and potential energy first increase then decrease
C. both kinetic and potential energy first decrease then increase
D. kinetic energy is decreasing and potential energy is increasing

47) Where in the ball's path is its kinetic energy the least?

A. A or C
B. B or D
C. C only
D. D only

48) What energy transformation occurs when an electric lamp is turned on?

A. electrical energy to light and heat energy
B. light energy to electrical and mechanical energy
C. heat energy to electrical and light energy
D. electrical energy to mechanical and heat energy

49) As water flows through a dam it can be used to create electrical energy. The electrical energy is formed from the water's stored

A. Electrical energy
B. Heat energy
C. Gravitational Potential energy
D. Nuclear energy

50) A car toy that is powered by batteries would be an example of the conversion of chemical energy to:

A. Heat energy
B. Mechanical energy
C. Nuclear energy
D. Sound energy

51) Which of these is an example of chemical energy being converted to electrical energy?

A. a 9-volt battery in a smoke alarm
B. sunlight used by plants in photosynthesis
C. a windmill generating electricity
D. a blender grinding up strawberries

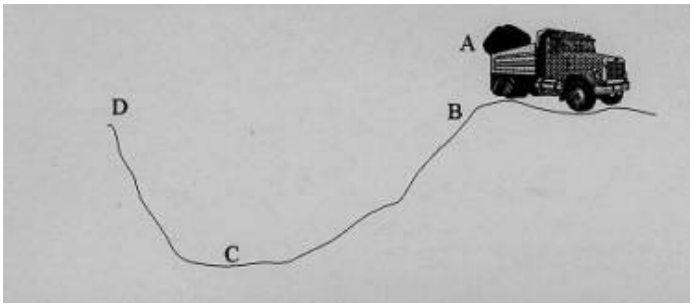
52) What energy conversion takes place during cellular respiration?

A. heat energy to mechanical
B. heat energy to chemical
C. chemical energy to light
D. chemical energy to mechanical

53) Which of the following is a way science has affected the ability of people to sense sound?

A. made telescopes possible
B. designed glasses
C. invented sonar image sensing
D. developed hearing aids

54) A dump truck at the Bingham copper mine in Magna is preparing to dump a boulder of copper ore down a slope.
At what point does the boulder have its maximum gravitational potential energy?



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

55) Assuming the boulder falls steadily down the hill when it is dumped, when will it reach its maximum kinetic energy?

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

56) The burning of vaporized gas in the cylinder of an automobile engine pushes the pistons. This is an example of an energy conversion from chemical to

A. Electrical energy
B. Heat energy
C. Mechanical energy