

Energy Unit Post-Test
** DO NOT WRITE ON THIS TEST**

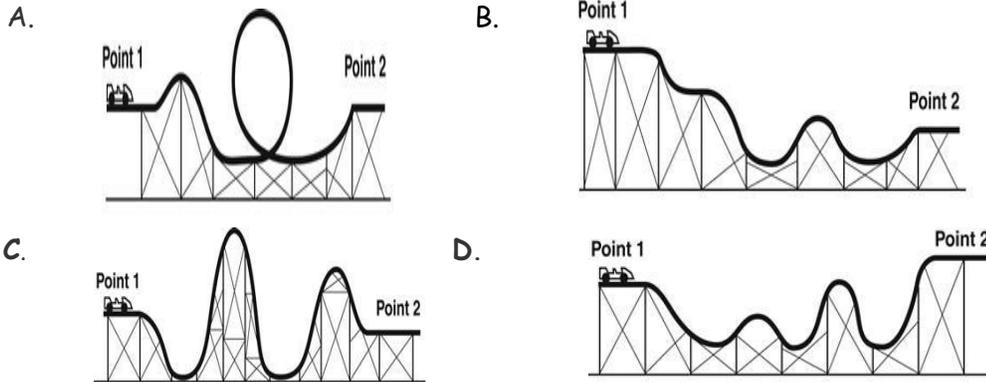
1. A student moves a 1.50 kg book to a shelf 1.20 meters high. What is the gravitational potential energy of the book?

- A. 1.8 J
- B. 17.6 J
- C. 18.0 J
- D. 2.7 J

2. In gym class a student kicks a soccer ball high into the air. As the ball goes upward, which type of energy is increasing?

- A. Kinetic energy
- B. Thermal energy
- C. potential energy
- D. mechanical energy

3. A student plans to build a model rollercoaster for a science fair. The only energy for the car is the potential energy it contains. The student wants the car to roll from Point 1 to Point 2. Which design allows the car to roll to Point 2 by converting its potential energy into kinetic energy?



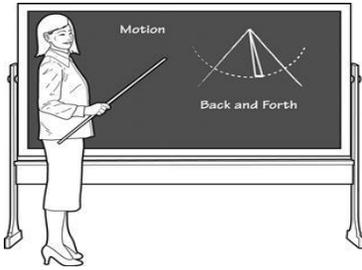
4. As the velocity of a runner increases, which type of energy also increases?

- A. Kinetic
- B. chemical
- C. Potential
- D. electrical

5. A baseball has a mass of 10 kg and a velocity of 40 m/s, what is the kinetic energy of the baseball.

- A. 16,000 J
- B. 160,000 J
- C. 80,000 J
- D. 8000

6. While teaching a lesson on the conservation of energy, a teacher diagrams the path of the motion of a swing moving back and forth.



Which energy transformation is the teacher most likely illustrating?

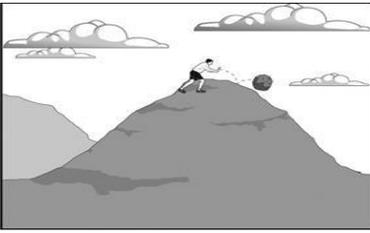
- A. thermal to kinetic C. chemical to potential
B. Potential to kinetic D. electrical to mechanical
7. Some new cars use special braking systems to recover energy when the brakes are applied. This energy is stored in special batteries and is used to power the electric motor. What type of energy are the brakes storing as they slow down the car?
- A. Gravitational C. potential
B. Kinetic D. thermal
8. The drawing shows a wind-up toy. The key is wound or turned. When it is released, the toy will move.



When would the wind-up toy have the greatest potential energy?

- A. before it is wound C. while it is in motion
B. after it is wound D. when it has come to a stop
9. A roller coaster is climbing up the highest hill on its track. At which point will the front car of the coaster most likely have its greatest potential energy?
- A. At the bottom of the highest hill C. at the start of the track
B. At the top of the highest hill D. at the end of the track
10. What is the difference between potential energy and kinetic energy?
- a. Potential energy is the energy of an object due to its position, while kinetic energy is energy due to its motion.
b. Potential energy is the energy of an object due to its motion, while kinetic energy is energy due to its position.
c. Potential energy is the energy of an object due to an applied force, while kinetic energy is energy stored after the applied force.
d. Potential energy is the energy stored after an applied force, while kinetic energy is the energy used from the applied force.
11. If power could be transmitted wirelessly to electronic devices, batteries might become outdated. Which type of energy would most likely not be needed in electronic devices?
- A. Chemical C. nuclear
B. Mechanical D. thermal

12. A student pushed a rock from the top of a hill.



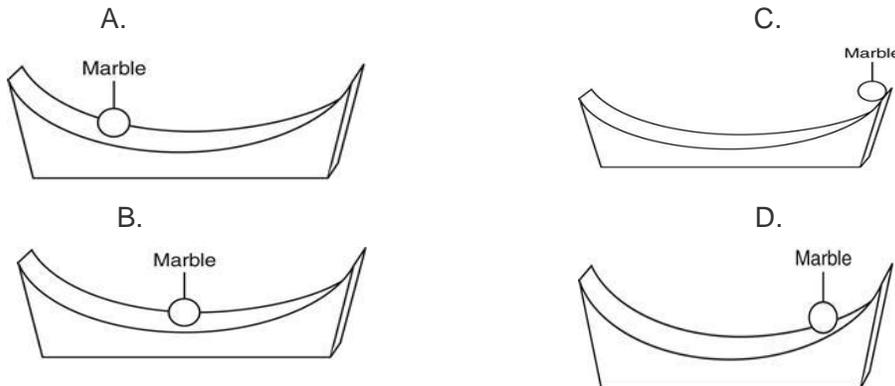
What type of energy change occurred after the rock was pushed?

- A. heat energy was converted to potential energy
- B. electrical energy was converted to heat energy
- C. potential energy was converted to kinetic energy
- d. kinetic energy was converted to electrical energy

13. What kind of energy change occurs when a battery is operating a remote control toy?

- A. Heat energy is changed to light energy.
- C. Potential energy is changed to kinetic energy.
- B. Light energy is changed to heat energy.
- D. Kinetic energy is changed to chemical energy.

14. Barbara placed a marble at different places on a ramp. At which place will the marble have the most potential energy?



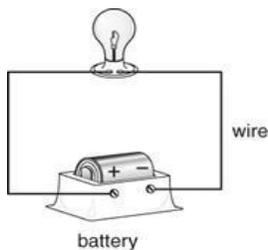
15. Which of the following could be used as a conductor?

- A. wood
- C. plastic
- B. rubber
- D. water

16. In order for electricity from a battery to power a light bulb, the wire has to provide the electricity a path to do what?

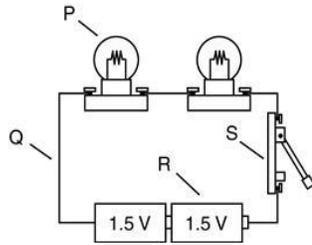
- A. Flow around the circuits
- C. Jump from one battery terminal to the other
- B. Charge the air molecules near the circuit
- D. Change the chemical properties of the wire

17. The diagram below is an example of:



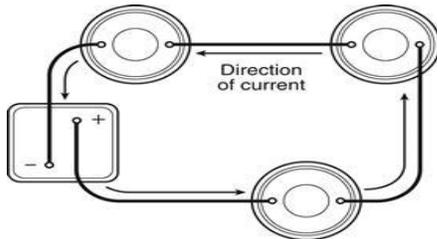
- A. Series
- C. parallel
- B. closed
- D. open

18. The diagram shown below represents:



- A. series and open circuit
- B. series
- C. open
- D. closed and series

19. A student set up this electrical circuit. The student then realizes that turning off one light turns off all the lights. In order to make it possible for each light to be turned on and off separately, the student should convert the circuit into a:



- A. short circuit
- B. series circuit
- C. Closed circuit
- D. Parallel circuit

20. Electric circuits provide energy for lightbulbs. Which of these prevents the flow of electrons?

- A. A circuit that is closed
- B. A series circuit
- C. a circuit that is open
- D. a parallel circuit

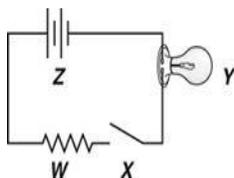
21. Which statement best describes the conservation of energy?

- A. Energy is lost when a match burns.
- B. Energy is produced when a green plant grows.
- C. Gasoline creates energy in an engine
- D. A toaster changes electricity to heat energy.

22. Students are attempting to make a doorbell ring using some wire and a battery. Which is needed to make the bell ring?

- A. Friction
- B. Gravity
- C. a convection current
- D. an electrical circuit

23. Look at the diagram of a simple circuit. What is the function of the part labeled Z?



- A. causes resistance to electric current
- B. opens and closes the circuit
- C. provides an energy source for the circuit.
- D. allows a path for the current to flow.

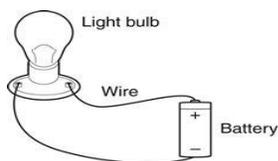
24. Which items are needed to create a simple circuit?

- A. Wire, switch, and light bulb
- B. Wire, battery, and light bulb
- C. Light bulb and switch
- D. Light bulb and battery

25. An electric bulb will stop shining when a light switch is shut off because:

- A. it draws electrons away from the light
- B. it inserts a semiconductor
- C. it creates an incomplete circuit
- D. it reverses the direction of the current.

26. A light bulb is connected to a battery by a wire as shown. What happens when the wire is removed from the light bulb?



- A. The light bulb stops shining.
- B. The wire produces electricity.
- C. The light bulb glows brighter.
- D. The battery loses power.

27. A switch that can open or close an electric circuit can be used to:

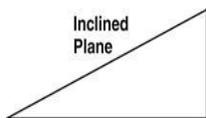
- A. increase the amount of current.
- B. reverse the currents direction.
- C. stop the current
- D. accelerate the current.

28. Which machine could be considered to be a type of inclined plane?

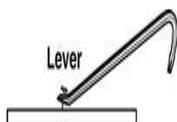
- A. wheel and axle
- B. lever
- C. screw
- D. pulley

29. Which simple machine uses a fulcrum to redirect a force?

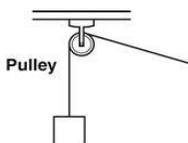
A.



B.



C.



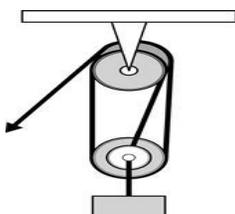
D.



30. Which of the following is used as a wedge?

- A. A baseball bat
- B. A bicycle pedal
- C. a faucet handle
- D. a doorstep

31. The picture shows a pulley. How does a pulley help make work easier?



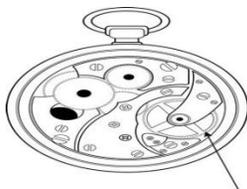
- A. It reduces friction
- B. It redirects the force.
- C. It holds things together.
- D. It pushes materials apart.

32. A wheelbarrow is a compound machine that uses simple machines to change the direction or size of a force. Which simple machines are used to form this compound machine?



- A. Lever, pulley
- B. Lever, wheel and axle
- C. Inclined plane, wedge
- D. Wedge, wheel and axle

33. The picture shows the inside of a watch. This watch uses both a battery and a simple machine to measure time. The arrow points to the simple machine inside the watch. What simple machine helps make the watch measure time?

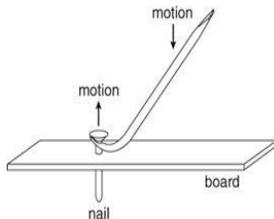


- A. wheel and axle
- B. inclined plane
- C. screw
- D. lever

34. Mr. Moyers' class was studying how work is done on an object. In which situation is the amount of work done on the object equal to zero?

- A. A shopper pushes a cart with a broken wheel.
- B. An apple growing on a tree falls to the ground.
- C. A person pushes on a heavy box but is unable to move it.
- D. An athlete swings a bat in the air without hitting anything.

35. A student removes a nail from a wooden board using this simple machine. The machine is useful because it increases:

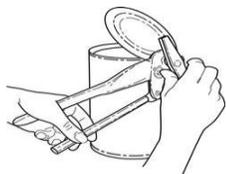


- A. Work
- B. Force
- C. Mass
- D. distance

36. Joshua lifted a 50 Newton box a distance of 14m. How much work did he do?

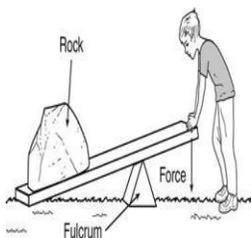
- A. 64 J
- B. 700 J
- C. 700 W
- D. 3.6 J

37. The picture shows a can opener being operated. Which form of energy is most likely used to open the can?



- A. Thermal
- B. Chemical
- C. Electrical
- D. Mechanical

38. A student uses the fulcrum and board shown below to move a large rock. The student's friends suggest ways to revise the design. Which suggestion best helps the student move the rock while using less force?



- A. put the fulcrum on top of the board
- B. move the fulcrum closer to the rock
- C. apply force directly above the fulcrum
- D. completely remove the fulcrum

39. Student A uses 4 Newtons of force to move a chair 8 meters. Student B uses 3 Newtons of force but does not move the chair. Which student did more work?

- A. Student B
- B. Student A
- C. Neither student did any work
- D. They both did the same amount of work.