Energy Unit Test

* Required

1. **First and Last Name**

2. **Class Period**
   Mark only one oval.
   - 2nd
   - 4th

Forms of Energy

Standard 6.PS3.1 Analyze the properties and compare sources of kinetic, elastic potential, gravitational potential, electric potential, chemical, and thermal energy.

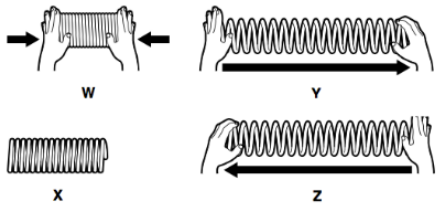
3. **1. A rubber band is stretched between a person's fingers and then released. This best demonstrates** *
   Mark only one oval.
   - products and reactants.
   - friction and air resistance.
   - physical and chemical changes.
   - potential and kinetic energy.

4. **2. Which type of energy is converted when fireworks release heat, light, and sound?** *
   Mark only one oval.
   - kinetic energy
   - elastic potential energy
   - chemical potential energy
   - electromagnetic energy

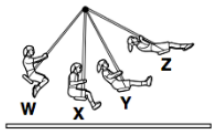
5. **3. What is the energy stored in the nucleus of an atom called?** *
   Mark only one oval.
   - electrical energy
   - nuclear energy
   - thermal energy
   - chemical energy

6. **4. When you heat a pot of water over a flame, what form of energy is added to the water?** *
   Mark only one oval.
   - Sound energy
   - Thermal energy
   - Light energy
   - Electric energy

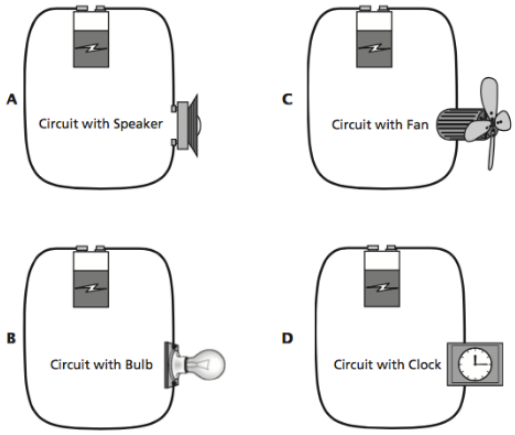
7. **5. When a button is pushed, a circuit is completed and a buzzer is activated. The buzzer transferred electrical energy into** *
   Mark only one oval.
   - sound energy.
   - chemical energy.
   - light energy.
   - nuclear energy.



8. **6. Elastic potential energy is energy stored in an object, such as a spring, due to the object being stretched or compressed. In which position is it most likely that the spring has lost its elastic potential energy?** *
   Mark only one oval.
   - W
   - X
   - Y
   - Z



9. **7. At which position does the child on the swing have the most gravitational potential energy?** *
   Mark only one oval.
   - W
   - X
   - Y
   - Z



10. **8. Which simple circuit most likely produces heat and light energy?** *
    Mark only one oval.
    - A
    - B
    - C
    - D

11. **9. What form of energy does wind have?** *
    Mark only one oval.
    - Chemical energy
    - Nuclear energy
    - Mechanical energy
    - Thermal energy

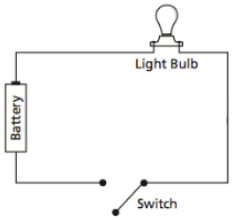
12. **10. Batteries convert chemical energy into what form of energy that powers devices?** *
    Mark only one oval.
    - Thermal energy
    - Radiant energy
    - Electric energy
    - Nuclear energy

Energy Transfer & Transformation

Standard 6.PS3.2 Construct a scientific explanation of the transformations between potential and kinetic energy.

13. **1. When turning on a flashlight, a chemical reaction in the battery produces electricity that lights a bulb. According to the Law of Conservation of Energy, the energy exchanged between the battery and the flashlight** *
    Mark only one oval.
    - is created
    - loses matter
    - is destroyed
    - changes forms

The diagram below shows a simple electrical circuit.



14. **2. What energy conversions occur when the switch is closed?** *
Mark only one oval.

- chemical energy → electrical energy → light energy
- light energy → electrical energy → thermal energy
- thermal energy → electrical energy → light energy
- light energy → chemical energy → electrical energy

15. **3. An object moves rapidly as it is thrown upward. Its motion slows as it reaches a maximum height, and then it falls back down. What causes the upward motion to become slower?** *
Mark only one oval.

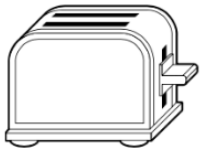
- The kinetic energy is converted to wind energy.
- The kinetic energy is converted to gravitational potential energy.
- The gravitational potential energy is converted to kinetic energy.
- The gravitational potential energy is converted to light energy.

16. **4. What energy conversion occurs when a person rubs his or her hands together rapidly?** *
Mark only one oval.

- electrical energy to thermal energy
- electrical energy to chemical energy
- thermal energy to kinetic energy
- kinetic energy to thermal energy

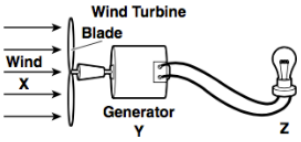
17. **5. When you drive a car, not all the chemical energy in gasoline is transformed into useful kinetic energy. What happens to it?** *
Mark only one oval.

- Some of the initial amount of energy is destroyed.
- Some of the initial amount of energy is recycled.
- Some of the initial amount of energy is converted to radioactive energy.
- Some of the initial amount of energy is converted to waste thermal energy.



18. **6. What energy transformation takes place in this toaster?** *
Mark only one oval.

- electrical energy to radiant energy
- chemical energy to radiant energy
- gravitational energy to potential energy
- atomic energy to thermal energy



19. **7. Identify the energy transformations taking place in the wind turbine diagram.** *
Mark only one oval.

- X: gravitational; Y: kinetic to electrical; Z: electrical to radiant
- X: kinetic; Y: kinetic to electrical; Z: electrical to radiant
- X: kinetic; Y: kinetic to chemical; Z: radiant to electrical
- X: kinetic; Y: kinetic to nuclear; Z: nuclear to radiant

20. **8. Why does a pendulum eventually slow down and stop swinging?** *
Mark only one oval.

- Friction transforms some of the mechanincal energy to thermal energy
- Kinetic energy changes to potential energy
- Gravity pulls the pendulum toward earth's center
- Potential energy changes to kinetic energy

21. **9. Which energy transformation takes place when wood is burned?** *
Mark only one oval.

- Nuclear energy is transformed to thermal energy
- Thermal energy is transformed to electric energy
- Chemical energy is transformed to thermal energy
- Mechanical energy is transformed to thermal energy

22. **10. Fusion reactions in the sun change nuclear energy into** *
Mark only one oval.

- Mechanical energy
- Chemical energy
- Electromagnetic energy
- Potential energy

Kinetic Energy, Mass, and Speed

Standard 6.PS3.3 Analyze and interpret data to show the relationship between kinetic energy and the mass of an object in motion and its speed.

23. **1. Which is the best definition of kinetic energy?** *
Mark only one oval.

- Kinetic energy is potential energy.
- Kinetic energy is energy of motion.
- All forms of energy are kinetic energy.
- Only living things can have kinetic energy

24. **2. What is the formula for KE?** *
Mark only one oval.

- Mass X Speed
- Weight X Height
- Potential Energy + Kinetic Energy
- Mass X Speed(Squared) /(Divided By) 2

25. **3. What has more of an impact on kinetic energy?** *
Mark only one oval.

- Increasing the mass
- Increasing the speed
- Increasing the potential energy
- Increasing the elasticity

26. **4. Object A has a mass of 5 kg and a speed of 3 m/s. Object B has a mass of 10 kg and a speed of 3 m/s. Which has more kinetic energy?** *
Mark only one oval.

- Object A
- Object B
- They are the same
- None of the above

27. **5. Object A has a mass of 5 kg and a speed of 7 m/s. Object B has a mass of 5 kg and a speed of 3 m/s. Which has more kinetic energy?** *
Mark only one oval.

- Object A
- Object B
- They are the same
- None of the above

28. **6. A girl who weighs 30 kg is inline skating at a speed of 5m/s. What is the girl's kinetic energy?** *
Mark only one oval.

- 750 J
- 375 J
- 150 J
- 30 J

29. **7. What is the kinetic energy of a 3 kg ball that is rolling at 2 m/s?** *
Mark only one oval.

- 6 J
- 12 J
- 3 J
- 9 J

30. **8. What would your kinetic energy be if you are 55 kg and you ran at 3 m/s?** *

Mark only one oval.

- 3 J
- 247.5 J
- 165 J
- 495 J

31. **9. What is the kinetic energy of a 25 kg object moving at 4 m/s?** *

Mark only one oval.

- 400 J
- 200 J
- 25 J
- 4 J

32. **10. What is the kinetic energy of a 12 kg object moving at 7 m/s?** *

Mark only one oval.

- 84 J
- 12 J
- 294 J
- 588 J

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