

# Energy Test 1 Review

Name: \_\_\_\_\_

**S8P2b. Explain the relationship between potential and kinetic energy.**

1. Which of the following has the *least* potential energy?
  - a. A car driving on the highway.
  - b. A man on the top of a ladder.
  - c. An orange sitting on top of a table.
  - d. A ball in the pitcher's hand waiting to be thrown.
  
2. Which of the following has the least kinetic energy?
  - a. Ice Cream.
  - b. Sweet Tea.
  - c. Helium in a balloon.
  - d. Raindrops falling on my head.
  
3. Where does a roller coaster have the most potential energy?
  - a. At the top of a loop.
  - b. A third of the way around a loop.
  - c. At the exit of a loop.
  - d. At the entrance of a loop.
  
4. Which has the least potential energy?
  - a. A 150 pound man standing still.
  - b. A 150 pound man walking at 2 miles per hour.
  - c. A 150 pound man jogging at 10 miles per hour.
  - d. A 150 pound man running at 18 miles per hour.
  
5. Wiley Coyote was chasing The Roadrunner and ran off a cliff. Where does he have equal amounts of potential and kinetic energy?
  - a. When he holds up the sign saying "Yikes!" before he falls.
  - b. Right after he starts to fall.
  - c. Halfway to the ground as he falls.
  - d. Just before he hits the ground at the bottom.

**S8P2c. Compare and contrast the different forms of energy and their characteristics.**

6. Which of the following describes the energy of moving parts?
  - a. Chemical energy.
  - b. Mechanical energy.
  - c. Nuclear energy.
  - d. Electromagnetic Energy.
  
7. Which of the following best represents chemical energy?
  - a. Fireworks!
  - b. The nuclear power plant where Homer Simpson works.
  - c. A compact fluorescent light bulb.
  - d. Asimo, the Honda Robot.
  
8. A source of electromagnetic energy is
  - a. A pound of prime Wisconsin Cheddar cheese.
  - b. A light emitting diode otherwise called an LED light.
  - c. A refrigerator magnet advertising dog grooming services.
  - d. A group of 200 guys slamming into one another in a mosh pit.
  
9. Thermal energy is best represented by
  - a. A flannel shirt because flannel is awesome.
  - b. Two atoms being smashed together to make one bigger atom.
  - c. The energy stored in the bonds between two atoms.
  - d. The energy of particles in the different states of matter.
  
10. The energy you get due to an object's attraction to another object is called
  - a. Electrical energy
  - b. Magnetic energy
  - c. Thermal energy
  - d. Gravitational energy

11. The energy stored in the bonds between two atoms is
- Nuclear energy
  - Chemical energy
  - Thermal energy
  - Electromagnetic energy
12. Light waves are representative of this form of energy:
- Sound energy
  - Electromagnetic energy
  - Mechanical energy
  - Thermal energy
13. This kind of nuclear energy is obtained by combining 2 smaller atoms into one large atom.
- Fusion
  - Fission
  - Fructis
  - Fussy onion
14. All stars, including The Sun, use this kind of nuclear energy:
- Fusion
  - Fission
  - Factual
  - Fraggle
15. The energy generated when a speaker vibrates the air is this type of energy:
- Electromagnetic
  - Electrical
  - Thermal
  - Sound

**S8P2a. Explain energy transformation in terms of the Law of Conservation of Energy.**

16. Which of the following *BEST* explains the energy transformations in a radio speaker?
- Electrical to mechanical to sound
  - Electrical to chemical to thermal
  - Sound to mechanical to thermal
  - Mechanical to electrical to sound
17. A rolling ball eventually comes to a stop. Where did the energy in the ball go?
- It was destroyed.
  - It was converted to thermal energy through friction.
  - It was transferred to the grass.
  - It disappeared like magic.
18. What type of energy conversion happens when you draw a picture on the floor?
- Chemical to thermal to electrical.
  - Thermal to mechanical to chemical.
  - Mechanical to chemical to thermal.
  - Chemical to mechanical to thermal.
19. What energy transformation occurs in a burning match?
- Chemical to thermal & electromagnetic.
  - Thermal to chemical & smell.
  - Electromagnetic to thermal & magnetic.
  - Chemical to electrical & nuclear
20. Which of the following is produced by a nuclear bomb?
- Electromagnetic, thermal, nuclear.
  - Elastic, gravitational, sound.
  - Gravitational, mechanical, electrical.
  - Sound, electromagnetic, smell.

## Answers and Explanations

1. Potential energy is energy of position (usually above the Earth) or “stored” energy. Answer B is the best answer as the man on top of a ladder is higher than any of the other choices.
2. The least kinetic energy (energy of motion) means the most potential energy (“Stored” energy). Ice cream is a solid and the particles within a solid have the least amount of motion so the correct answer is A.
3. Potential Energy is the energy of position. The higher you are the more potential energy you have. The highest part of a loop is at the top of the loop so the correct answer is A.
4. The least potential energy equals the most kinetic energy. If the mass is the same, then you have to look at the velocity of the object. The faster an object, the more the kinetic energy. The correct answer is D.
5. For an object to have equal amounts of kinetic and potential energy it must be halfway between its starting and ending points. The correct answer is C. The most potential is at the highest point. The most kinetic is at the point where the object is moving fastest (in this case, just before the Mr. Coyote hits the ground.)
6. This is a recall question. The energy of moving parts (or motion) is called mechanical energy.
7. The correct answer is A. Fireworks are made of chemicals. As the bonds in the chemicals are broken, they release the energy stored within the bonds.
8. Electromagnetic energy is also referred to as light energy. That means the LED, choice B, is the correct answer.
9. Thermal energy is the energy we usually refer to as heat. The amount of thermal energy a substance has determines its state of matter.
10. This one is a tad tricky. Students often see “attraction and think magnetic but magnetic energy has both an attraction and repulsion.

Gravity has nothing but the attraction part so the correct answer here is D.

11. The energy stored in bonds between atoms is Chemical energy, choice B.
12. Choice B is the correct answer. Electromagnetic energy is sometimes referred to as light energy.
13. Fusion is the correct answer, choice A. This is a recall question from notes given in class.
14. Again, recall question from notes in class – choice A is the correct answer. All stars, including our sun, produce energy through nuclear fusion.
15. Sound is the mechanical vibration of air molecules. The speaker vibrating air makes sound. The correct answer is D.
16. The correct answer is A. The radio sends an electrical current to a electromagnet on the speaker, the speaker has a permanent magnet attached and this causes the speaker to move which is mechanical energy. The mechanical energy of the speaker moving causes the air molecules near the speaker to vibrate which causes a sort of chain reaction. This is called sound.
17. The energy of any given system will lose energy through friction. In this case, the ball will have some friction with the ground and some with the air molecules. Eventually enough of its energy of motion is transformed through friction into thermal energy. Choice B is the correct answer.
18. The correct answer is D. You (and every other person) have chemical energy stored within your cells. That energy is transformed into mechanical energy of your body parts moving (in this case your hand with the pencil). The pencil comes into contact with the floor and through friction leaves a little “lead” behind. That friction also produces thermal energy.

19. A match is made of wood (and some phosphorous on the head). Wood is chemical energy. As it burns you get thermal energy (what we usually call heat) and light (also known as electromagnetic energy). The correct answer is A.
20. A nuclear reaction, whether fission or fusion, produces a wide range of energy. There is nuclear energy, thermal energy, electromagnetic energy, sound energy, and even mechanical energy as it pushes the “shockwave” of air molecules around. The correct answer is A.