

Operation: Infinite Potential Mission 1 Pre-Test

Please answer all questions.

1. Energy of motion is

- A. kinetic.
- B. potential.
- C. gravity.
- D. mass.

2. The type of electromagnetic energy from the sun that can be felt as heat on the skin is called

- A. radio waves.
- B. gamma rays.
- C. infrared radiation.
- D. ultraviolet rays.

3. Describe and explain the Law of Conservation of Mass and the Law of Conservation of Energy.

4. Explain what kind of damage UVB rays from the sun can cause and how it can be prevented.

5. A machine that requires less time to do the same amount of work as its predecessor is introduced to the market. What can you infer about its power?

6. Differentiate light waves from sound waves and explain how light can travel through the vacuum of space while sound waves cannot.

7. Which of the following examples is not an example of kinetic energy?

- A. Motion of subatomic particles
- B. Flow of electrical charge
- C. The attraction of two magnets' like poles
- D. Revolution of planets around the sun

8. Which statement about gravity is incorrect?

- A. Newton described gravity as a force of attraction.
- B. Scientists can describe gravity, measure it, and calculate its strength.
- C. Einstein said that gravity distorts the path of moving objects.
- D. Scientists are all in agreement on how gravity works.

9. A satellite picks up a sudden increase in x-ray radiation. What is this evidence of?

- A. Volcanic eruptions
- B. Solar flares
- C. Northern lights
- D. Power outages

10. A scientist suspends a radio in a sealed chamber. She turns the radio on by remote control and can hear music coming from the chamber. As she pumps air out of the chamber, the music gets quieter and quieter. Why does this happen?

- A. The chamber is interfering with the radio signals.
- B. Sound waves require a medium, such as air, to travel in.
- C. The air pump sucks energy away from the radio.
- D. The electricity going to the radio is decreased.

11. Choose the material that would be best to cover a window in a movie theater.

- A. Opaque fabric
- B. Transparent glass
- C. Translucent film
- D. Reflective metal

12. The particles that CMEs accelerate have very little mass. Which statement best explains why their kinetic energy can be significant?

- A. Their velocity is extremely high.
- B. Their nuclear potential energy is extremely high.
- C. Their electrical charge is extremely high.
- D. Their thermal energy is extremely high.

13. Suppose you use a magnet to hang a note on the refrigerator. What type of energy are you making use of?

- A. Gravitational
- B. Kinetic
- C. Electrical
- D. Potential

14. What type of energy does a sling shot take advantage of?

- A. Gravitational potential energy
- B. Chemical potential energy
- C. Elastic potential energy
- D. Electrostatic potential energy

15. Which application best shows the penetrating energy of high-energy photons?

- A. Refraction of light into a rainbow
- B. Magnification by a convex lens
- C. Diagnostic medical imaging
- D. Radio station broadcasting

16. Jamal faces a smooth, opaque surface. Some of the light rays are reflected back to his eyes in a parallel pattern. What does Jamal see?

- A. Objects on the other side
- B. A blurred image on the other side
- C. A blank surface
- D. His reflection

17. Evaluate the statement, "Without energy, nothing would change."

18. Evaluate the importance of knowing when a coronal mass ejection has occurred on the sun.

19. Assess the value of the ozone layer in the stratosphere with regard to radiation emitted by the sun.

20. Devise a demonstration to show younger students a transformation of kinetic to potential energy and potential to kinetic energy.

21. Relate Earth's magnetic field to its atmosphere in terms of protecting the planet.

A. Earth's magnetic field protects us from high-velocity charged particles in the solar wind; the atmosphere protects us from harmful EM radiation.

B. Earth's magnetic field protects us from high-velocity charged particles in the solar wind; the atmosphere protects us from CMEs.

C. Earth's atmosphere protects us from high-velocity charged particles in the solar wind; the magnetic field protects us from harmful EM radiation.

D. Earth's magnetic field protects us from CMEs; the atmosphere protects us from harmful EM radiation.

22. Reconstruct the following steps in the correct order: a. An explosive reaction occurs. b. Gasoline molecules react with oxygen. c. Kinetic energy is produced and the car moves. d. Energy is transferred and transformed. e. Chemical potential energy is stored in gasoline. f. Chemical energy is released.

- A. e, f, a, b, d, c
- B. e, d, b, a, f, c
- C. e, b, a, f, d, c
- D. e, a, f, b, d, c