

Assessment

Work and Energy**Section Quiz: Conservation of Energy**

Write the letter of the correct answer in the space provided.

- _____ 1. Which of the following is true of the conservation of energy in a closed system?
- Kinetic energy is always conserved.
 - Potential energy is always conserved.
 - Mechanical energy is always conserved.
 - Total energy is always conserved.
- _____ 2. The mechanical energy of a system of objects is
- the sum of kinetic energy and gravitational potential energy.
 - the sum of kinetic energy and elastic potential energy.
 - the sum of kinetic energy and all relevant forms of potential energy.
 - the sum of all forms of energy.
- _____ 3. Mechanical energy is *not* conserved when
- gravitational potential energy is converted to kinetic energy.
 - kinetic energy is converted to gravitational potential energy.
 - kinetic energy is converted to elastic potential energy.
 - friction is not negligible.
- _____ 4. In which of the following situations is mechanical energy most likely to be conserved?
- A football flies through the air.
 - A feather falls from the sky.
 - A skateboard rolls into the grass.
 - A hockey player digs his skates into the ice.
- _____ 5. If mechanical energy is conserved in a system, the energy at any point in time can be in the form of
- kinetic energy.
 - gravitational potential energy.
 - elastic potential energy.
 - all of the above
- _____ 6. Which of the following is *not* a form of mechanical energy?
- kinetic energy
 - chemical potential energy
 - gravitational potential energy
 - elastic potential energy

Work and Energy *continued*

- _____ 7. Which of the following is evidence that frictional forces are present in a system?
- a. Interactions in the system cause an increase in temperature.
 - b. Interactions in the system produce sound.
 - c. Mechanical energy is not conserved.
 - d. all of the above
- _____ 8. An egg suspended above the ground has 2.0 J of gravitational potential energy. The egg is then dropped and falls to the ground. What is the kinetic energy of the egg just as it reaches the ground?
- a. -2.0 J
 - b. 0 J
 - c. 2.0 J
 - d. 4.0 J
9. A tennis ball is thrown up into the air starting from a height of 1.5 m. The ball reaches a peak height, then falls down to the ground. Assuming air resistance is negligible, describe the energy transfers that take place during the flight of the ball. Is mechanical energy conserved in this situation?

10. The tennis ball in question 9 above has a mass of 5.7×10^{-2} kg and has an initial speed of 2.0 m/s. Calculate the speed of the ball when it hits the ground. Ignore air resistance.