Potential and Kinetic Energy Worksheet

Kinetic Energy (KE) = ½ mass times velocity squared

$KE = ½ mv^2$

Potential Energy (PE) = mass times the acceleration due to gravity times height

$PE = mgh = N*h$ $(g= 9.8\ m/s^2)$

1 Newton (N) = $1kg*1m/s^2$ or $1kgm/s^2$

1. You serve a volley ball with a mass of 2.1kg. The ball leaves your hand at 30m/s. The ball has _____ energy. Calculate it.

2. There is a bell at the top of a tower that is 45m high. The bell weighs 190N. The bell has _____ energy. Calculate it.

3. The potential energy of an apple is 6.0 joules. The apple is 3m high. What is the mass of the apple?

4. What is the velocity of a 500kg elevator that has 4000J of energy?

5. What is the mass of an object that creates 33,750J of energy by traveling at 30m/s?

6. Missy Diwater, the former platform diver for the Ringling Brothers' Circus had a kinetic energy of 15,000J just prior to hitting the bucket of water. If Missy's mass is 50kg, the what was her velocity?

7. A 75kg refrigerator is located on the 70^{th} floor of a skyscraper (300m above ground). What is the potential energy of the refrigerator?

8. At what height is an object that has a mass of 50kg, if its gravitational potential energy is 9800J?

9. A 10kg mass is lifted to a height of 2m. What is its potential energy at this position?

10. Calculate the kinetic energy of a truck that has a mass of 2900kg and is moving at 55m/s.

11. A bullet has a mass of 0.0042kg. The muzzle velocity of the bullet coming out of the barrel of the rifle is 993m/s. What is the KE of the bullet as it exits the gun barrel?

12. What is the potential energy of a 3kg ball that is on the ground?

13. A roller coaster is at the top of a 72m hill and weighs 966N. At the top of the hill the coaster car has _____ energy. Calculate it.

14. What is the kinetic energy of a 3kg ball that is rolling 2m/s?

15. A baby carriage is rolling down a hill at 18m/s. If the carriage has 90J of kinetic energy, what is the mass of the carriage?