

KINETIC AND POTENTIAL ENERGY WORKSHEET #2

Name: _____

Determine whether the objects in the following problems have kinetic or potential energy. Then choose the correct formula to use: **KE = $\frac{1}{2} m v^2$** OR **PE = mgh**

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

2. A baby carriage is sitting at the top of a hill that is 21 m high. The carriage with the baby weighs 12 Kg. The carriage has _____ energy. Calculate it.

3. A car is traveling with a velocity of 40 m/s and has a mass of 1120 kg. The car has _____ energy. Calculate it.

4. A cinder block is sitting on a platform 20 m high. It weighs 79 kg. The block has _____ energy. Calculate it.

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

6. A roller coaster is at the top of a 72 m hill and weighs 134kg. The coaster (at this moment) has _____ energy. Calculate it.

7. What is the kinetic energy of a 3-kilogram ball that is rolling at 2 meters per second?

8. The potential energy of an apple is 6.00 joules. The apple is 3.00-meters high. What is the mass of the apple?

9. Two objects were lifted by a machine. One object had a mass of 2 kilograms, and was lifted at a speed of 2 m/sec. The other had a mass of 4 kilograms and was lifted at a rate of 3 m/sec.

a. Which object had more kinetic energy while it was being lifted?

b. Which object had more potential energy when it was lifted to a distance of 10 meters? Show your calculation.

10. You are on roller blades on top of a small hill. Your potential energy is equal to 1,000.0 joules. The last time you checked your mass was 60.0 kilograms.

a. What is the height?

b. If you start skating down this hill, your potential energy will be converted to kinetic energy. At the bottom of the hill, your kinetic energy will be equal to your potential energy at the top. What will be your speed at the bottom of the hill?

11. Answer the following:

a. What is the kinetic energy of a 1-kilogram ball is thrown into the air with an initial velocity of 30 m/sec?

b. How high into the air did the ball travel? **KE=PE

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

13. What is the kinetic energy of a 2,000-kilogram boat moving at 5 m/sec?

14. What is the velocity of a 500-kilogram elevator that has 4,000 joules of energy?

15. What is the mass of an object that creates 33,750 joules of energy by traveling at 30 m/sec?

1. 945J

2. 2469.6J

3. 896000J

4. 15484J

5. 83790J

6. 94550J

7. 6J

8. 0.204kg

9. 4J, 18J – object 2

9b. 196J, 392J – object 2

10a. 1.7m

10b. 5.77m/s

11a. 450J

11b. 45.91m

12. 0J

13. 25000J

14. 4m/s

15. 75kg