

Name _____

Calculating Potential and Kinetic Energy

Equations:

$$\text{Kinetic energy} = \frac{1}{2} \text{ mass (velocity)}^2 \quad \text{or } \frac{1}{2}mv^2$$

(joules) (kg) (m/s)

$$\text{Gravitational Potential energy} = \text{mass} * \text{height} * \text{gravity}$$

(Joules) (kg) (m) (9.8 m/s²)

1. What is the kinetic energy of a ball with a mass of 5 kg rolling at 10 m/s?
2. What is the kinetic energy of a 4 kg shotput thrown with a velocity of 13 m/s?
3. What is the kinetic energy of a 2000 kg car travelling at 15 m/s?
4. What is the gravitational potential energy of a boy whose mass is 50 kg and who is standing on top of a 1.5 meter high wall?
5. What is the gravitational potential energy of a 250 kg rock on top of a 200 meter cliff?
6. What is the gravitational potential energy of a 10 kg brick sitting at the top of a ramp that is 3 meters above the ground?
7. Describe the changes of energy forms (KE and PE) of an arrow from the time just before its release from the bow until its landing on the ground.

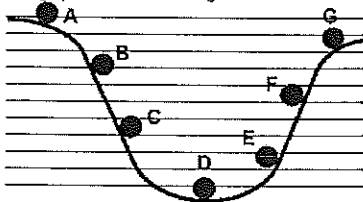
Fill in the blanks.

1. A moving object has _____ energy
2. Energy which is stored is called _____ energy
3. A rock rolling down a hill is losing _____ energy and gaining _____ energy.
4. Springs can _____ energy which can be used later.

Write a K on the line if it has mostly kinetic energy and a P on the line if it is mostly potential energy.

- _____ 1. An ocean wave travelling toward the shore.
- _____ 2. A wind up toy wound up and ready to go.
- _____ 3. A diver standing on the diving board.
- _____ 4. Water flowing over a waterfall.

This graph shows a ball rolling from A to G.



- _____ 5. Which letter represents the location with the greatest potential energy?
- _____ 6. Which letter represents the location with the greatest kinetic energy?
- _____ 7. Which letter has slightly more potential energy than letter C?
- _____ 8. Which sequence shows decreasing kinetic energy?
 - a. A,B,C,D
 - b. B,C,D,E
 - c. A,C,E,F
 - d. D,E,F,G