

**Directions:** Each of the following is a substance/object with a form of energy. Write the correct form of energy. Some of the items have more than one type. (Example: A sliced tomato setting on the kitchen counter can have both gravitational potential energy and chemical potential energy.)

GPE=gravitational potential energy

EPE=elastic potential energy

CPE=chemical potential energy

KE=kinetic energy

\_\_\_\_\_ 1. Chocolate chip cookie

\_\_\_\_\_ 2. Pogo stick on impact

\_\_\_\_\_ 3. Gasoline

\_\_\_\_\_ 4. Bicycle at the top of a hill

\_\_\_\_\_ 5. Stretched rubber band

\_\_\_\_\_ 6. Rubberband let go

\_\_\_\_\_ 7. Falling rock

\_\_\_\_\_ 8. Apple in a tree

\_\_\_\_\_ 9. Coiled spring

\_\_\_\_\_ 10. Flowing stream



\_\_\_\_\_ 11. Science book on a desk

\_\_\_\_\_ 12. Wind-up toy

\_\_\_\_\_ 13. Glass of milk

\_\_\_\_\_ 14. Standing on top of a diving board

\_\_\_\_\_ 15. A baseball pitcher winding up to pitch the ball

\_\_\_\_\_ 16. Baseball flying towards the plate

\_\_\_\_\_ 17. Airplane flying

\_\_\_\_\_ 18. Sandwich

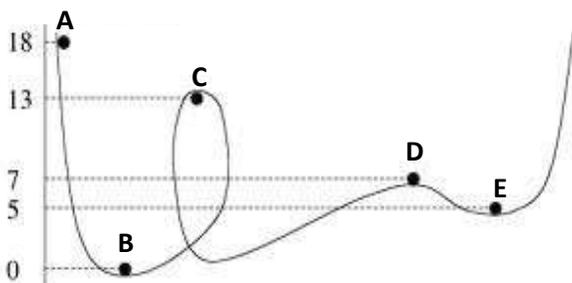
\_\_\_\_\_ 19. Hammer held high ready to strike a nail

\_\_\_\_\_ 20. Soccer ball headed into the goal

**Directions:** Circle the word that correctly completes the statement.

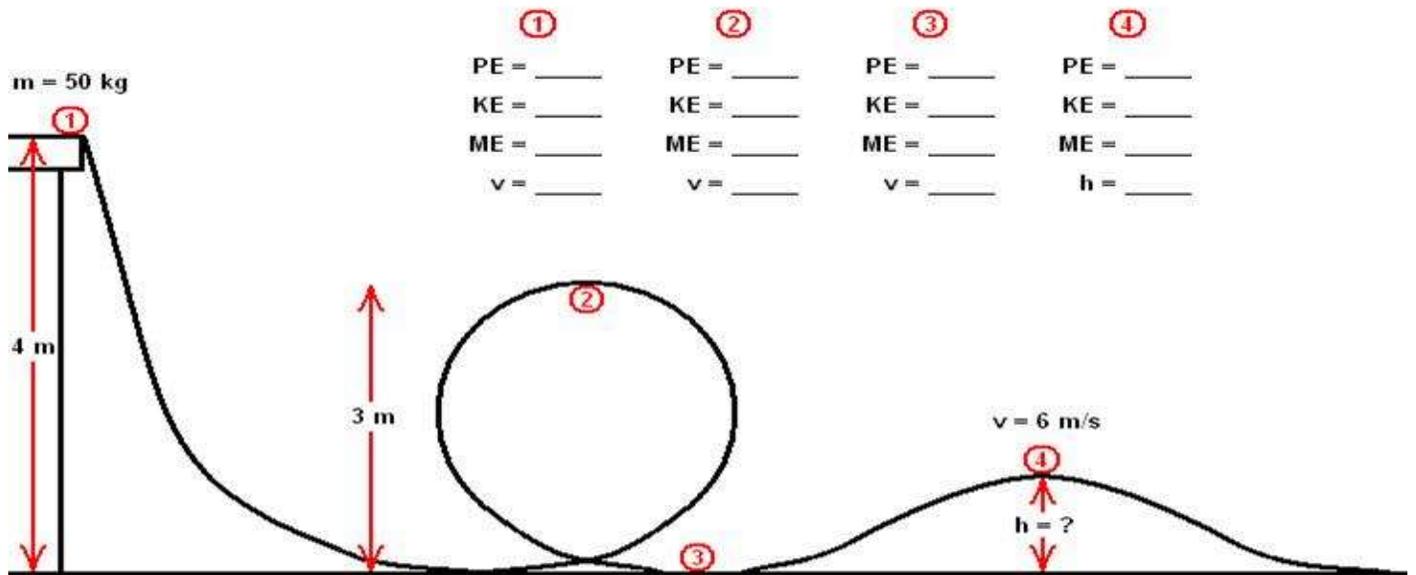
21. Two baseballs have the same mass. The ball that is closer to the ground has (*more, less, same*) gravitational potential energy than the other ball.
22. Two trucks have the same velocity but different mass. The truck with the greater mass has (*more, less, same*) kinetic energy than the other truck.
23. (*Newton, Kilowatt, Joule*) is a unit of measure of all forms of energy.
24. When an object falls, some of its (*potential, kinetic*) energy changes to (*potential, kinetic*) energy.
25. The energy of food and other fuels is (*chemical, elastic, gravitational*) potential energy.

**Directions:** Refer to the diagram below to answer questions 26-29.



26. Which letter shows the ball when it has the maximum kinetic energy? \_\_\_\_\_
27. Which letter shows the ball when it has the maximum potential energy? \_\_\_\_\_
28. Which letter shows the ball when it has the least potential energy? \_\_\_\_\_
30. What type of potential energy does the ball have? \_\_\_\_\_

**Directions:** Calculate the missing variables below.



**Directions:** Solve the following energy problems. Show all work, label, and round to the hundredths.

1. Calculate the kinetic energy for a 140 g baseball that is thrown with a velocity of 26 m/s. (First step...convert grams to kg.)
2. Calculate the kinetic energy for a 1250 kg car moving at 4 m/s.
3. A car is using 60 800 J of energy and is traveling at a rate of 10 m/s. What is its mass?
4. If an object with a mass of 250 kg is using 45 J of energy, what is its velocity?
5. A woman with a mass of 75 kg is standing on the edge of a cliff. She has a potential energy of 3675 kJ. How high is she? (First step...convert kJ to Joules.)
6. A 1050 N rock is on the edge of a cliff that is 20.4 meters high.
  - a. What is the potential energy of the rock?
  - b. If the rock falls, what is its kinetic energy just as it is hitting the ground?
  - c. What velocity is the rock traveling just as it is hitting the ground?

**Directions:** Each of the following situations is an example of energy changing from one form to another. Identify the energy transformations. Example: A drawn bow releases an arrow that hits an apple off of the head of the unwilling volunteer. Answer: EPE → KE → GPE → KE (drawn bow → flying arrow → apple on head → apple flying)

7. A walnut falls to the ground from a branch on a walnut tree.
8. The gasoline in a car is burned when the car drives down the street.
9. A baseball is thrown in the air.

