Energy Basics

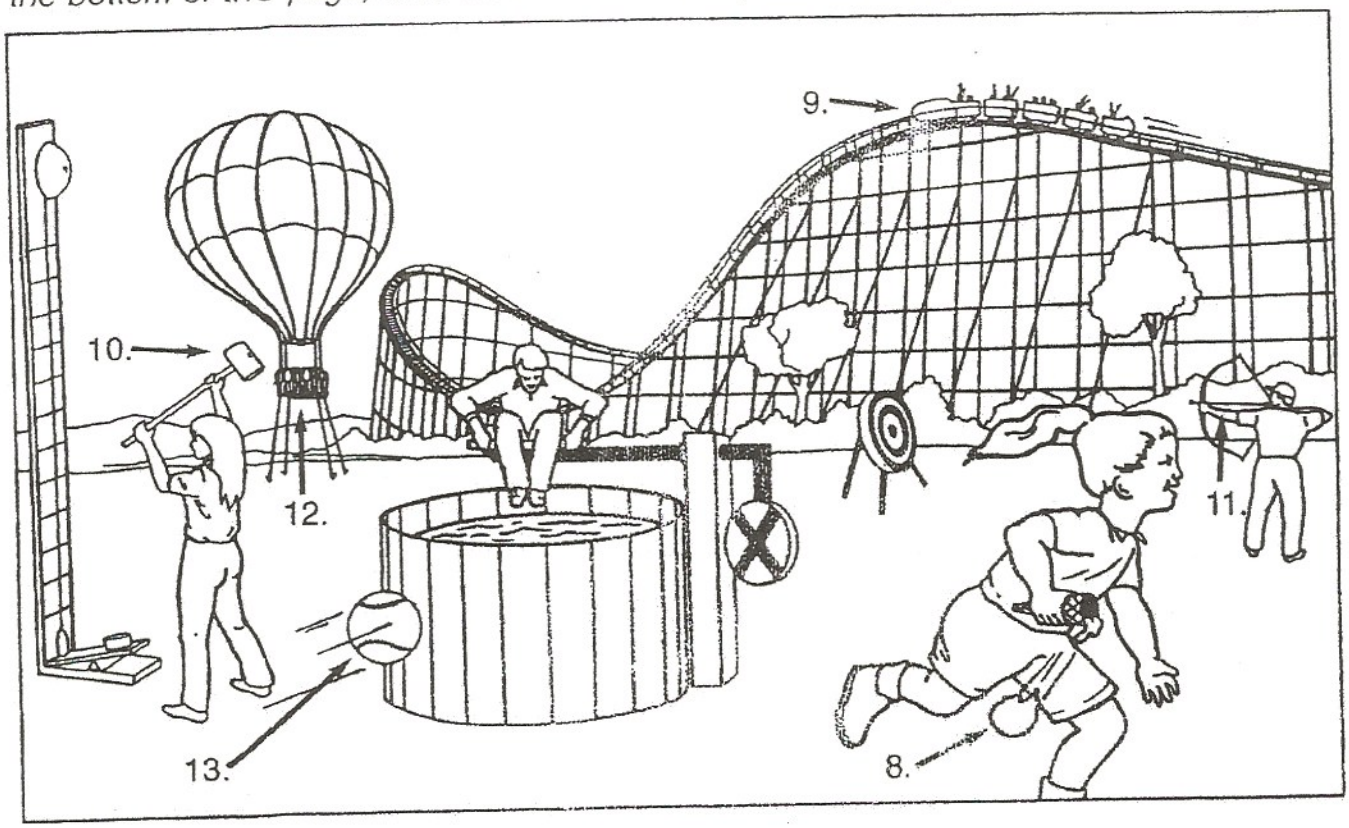
When you hear the word *energy*, you may think of pep or alertness. Scientists, however, define this term differently. In science, **energy** is the ability to do work. Work is the result of a force moving an object from one place to another.

There are two kinds of energy: kinetic energy and potential energy. **Kinetic energy** is energy that makes something move. **Potential energy**, on the other hand, is energy that could cause something to move but doesn't. A skier perched at the top of a snowy hill and a hockey star winding up for the winning slap shot both have potential energy. When potential energy is released, it becomes kinetic energy.

Write P *or* K *to indicate whether each phrase describes potential or kinetic energy.*

1. ____ energy at rest
2. ____ the release of stored energy
3. ____ energy of motion
4. ____ a dam holding back a river's water
5. ____ a mousetrap set and ready to spring
6. ____ a basketball flying toward the basket
7. ____ a sled released at the top of a snowy hill

An amusement park contains many examples of kinetic and potential energy. Look closely at the numbered arrows in the picture below. On the corresponding blanks at the bottom of the page, write whether kinetic or potential energy is shown.

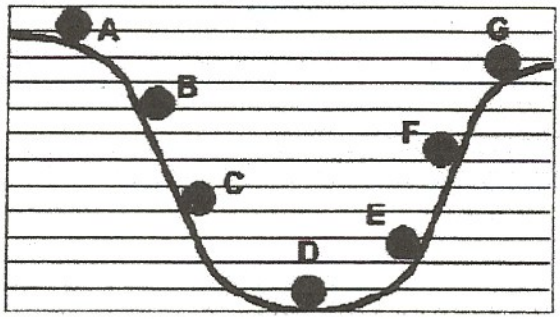


8. _____
9. _____
10. _____
11. _____
12. _____
13. _____

Potential vs Kinetic Energy

Part 1: Use the following image to answer questions 1-12.

This graph shows a ball rolling from A to G.



1. Which letter shows the ball when it has the maximum kinetic energy? _____
2. Which letter shows the ball when it has the maximum potential energy? _____
3. Which letter shows the ball when it has the least kinetic energy? _____
4. Which letter shows the ball when it has the least potential energy? _____
5. Which letter shows the ball when it has just a little more kinetic energy than A? _____
6. Which letter shows the ball when it has just a little less kinetic energy than D? _____
7. Which letter shows the ball when it has just a little more potential energy than C? _____
8. Which letter shows the ball when it has just a little less potential energy than F? _____
9. Which sequence correctly shows an increase in potential energy?
   a. D,E,G,F b. B,F,E,C c. D,E,F,G d. A,G,F,C
10. Which sequence correctly shows an increase in kinetic energy?
    a. D,E,G,F b. A,B,E,D c. C,E,F,G d. A,B,C,D
11. Which sequence correctly shows a decrease in potential energy?
    a. A,D,B,C b. D,E,F,G c. B,F,E,C d. A,G,F,C
12. Which sequence correctly shows a decrease in kinetic energy?
    a. G,F,E,D b. B,F,E,C c. D,E,F,G d. G,F,C,D

Part 2: Determine whether the objects in the problems have kinetic or potential energy?

13. You serve a volleyball with a mass of 2.1kg. The ball leaves your hand with a speed of 30m/s. The ball has _____ energy.
14. A baby carriage is sitting at the top of a hill that is 21m high. The carriage has _____ energy.
15. A car is traveling with a velocity of 40m/s and has a mass of 1120kg. The car has _____ energy.
16. At a swim meet, a first and second place winner stands on a platform at two different heights. Which swimmer has more potential energy? Support your answer. _____
    _____
    _____