

Kinetic And Potential Basics

Read the following:

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.

For the examples below write a P or K to represent whether each phrase describes Potential (P) or Kinetic (K) energy.

_____ 1. A car parked in the driveway

_____ 5. A mousetrap set and ready to spring

_____ 2. A firework exploding

_____ 6. A basketball flying toward the basket

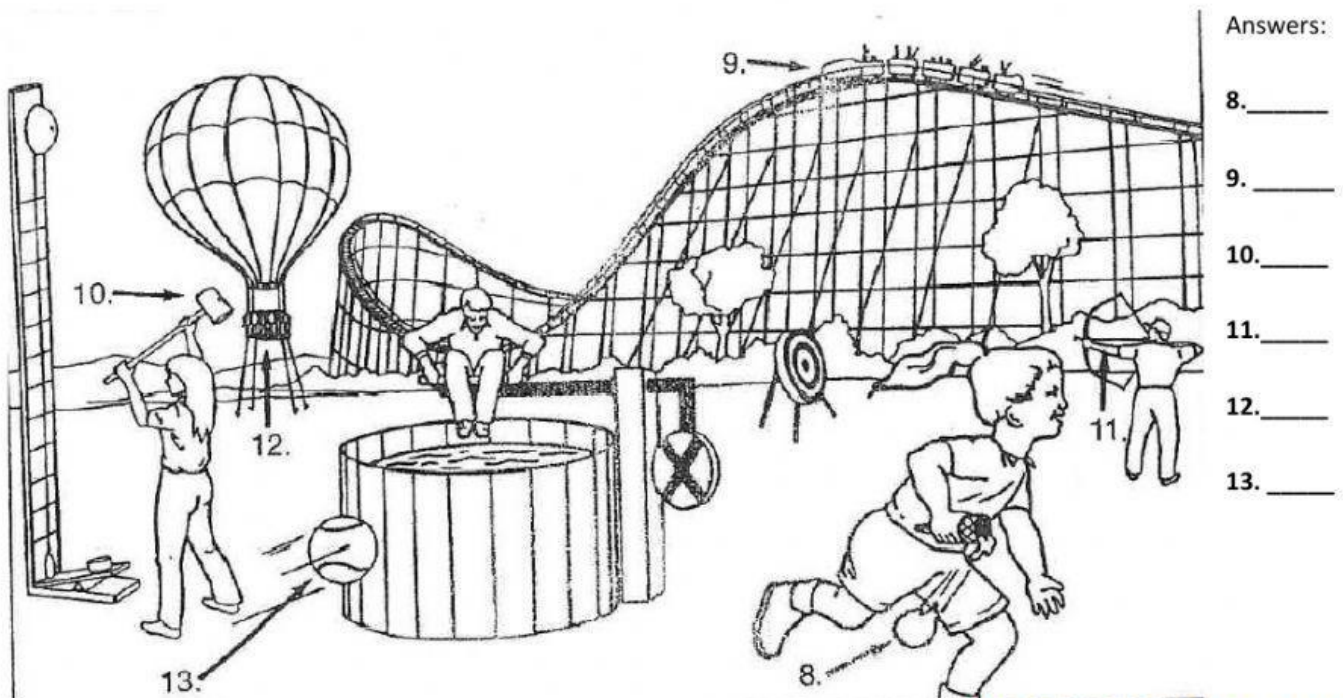
_____ 3. A windmill spinning

_____ 7. A sled released at the top of a snowy hill

_____ 4. A dam holding back a river's water

_____ 8. A burning match

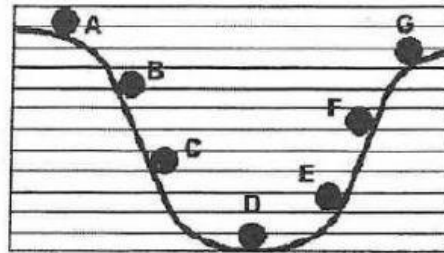
An amusement park contains many examples of kinetic and potential energy. Look at the picture below and at what each of the numbered arrows are pointing towards. On the matching numbered line next to the picture write whether the picture is an example of kinetic or potential energy. You can write K or P.



Analyzing Potential and Kinetic Energy

Part 1: Use the following image to answer questions 1-8.

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 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 | |
| 6. 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 | |
| 7. Which sequence correctly shows a decrease in potential energy? a. A,B,C,D b. D,E,F,G, c. B,F,E,C d. A,G,F,C | |
| 8. 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. Write Kinetic or Potential on the line provided. **HINT: You do NOT have to do any math to figure these out.**

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

