SOL 4.2 Motion, Kinetic Energy, Friction
Released Test Questions (2002-2012)
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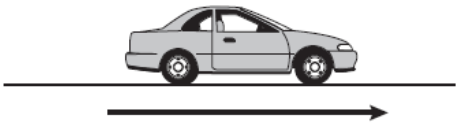
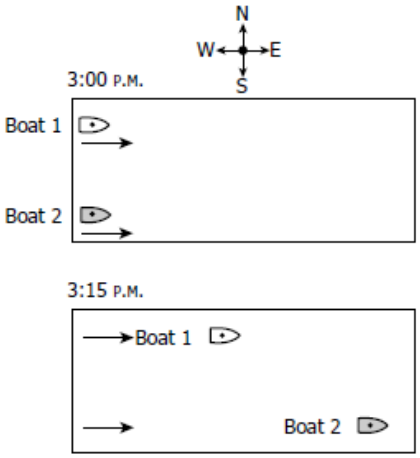
# Motion



1. To describe this car's motion, a student should use its —
(2007 test – question 9)
   a. direction and speed
   b. mass and volume
   c. speed and color
   d. volume and direction

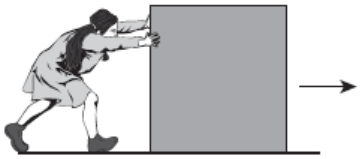
2. An object is traveling north at a speed of 12 kilometers per hour. Which characteristic of the object is being described?
(2011 test – question 9)
   a. Matter
   b. Motion
   c. Volume
   d. Temperature

**Diagram of Photographs**




3. Two moving boats are photographed from above at 3:00 p.m. and 3:15 p.m. Which statement correctly compares their motion?
(2010 test – question 22)
   a. They are traveling in the same direction at equal speeds.
   b. They are traveling in opposite directions at equal speeds.
   c. They are traveling in the same direction, and boat 2 has a greater speed.
   d. They are traveling in opposite directions, and boat 2 has a slower speed.

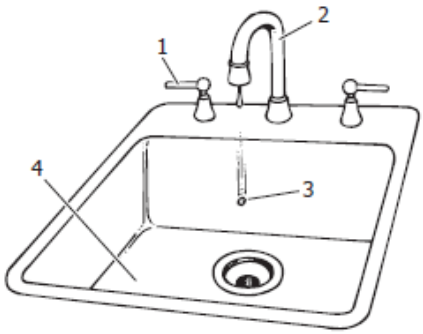
4. A person pushes a box as shown. What is the push most likely to change?
(2008 test – question 3)
   a. The size of the box
   b. The mass of the box
   c. The color of the box
   d. The position of the box



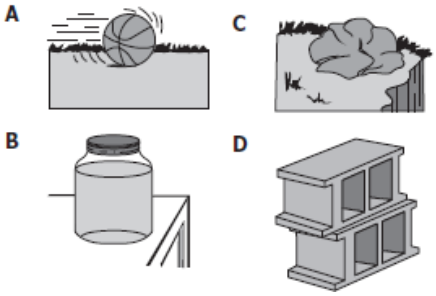
# Kinetic – Potential Energy

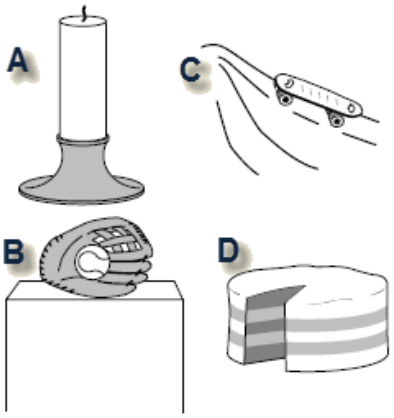
5. What kind of energy do all moving objects have?
(2009 test – question 12)
   a. Light energy
   b. Solar energy
   c. Kinetic energy
   d. Renewable energy

6. Which labeled part in this picture has evidence of kinetic energy?
(2008 test – question 39)
   a. 1
   b. 2
   c. 3
   d. 4




7. Which of these has kinetic energy? (a)
(2007 test – question 27)

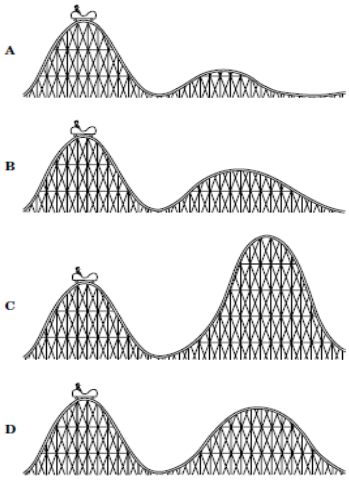



8. Which of these best shows kinetic energy? ( c )
(2004 test – question 22)

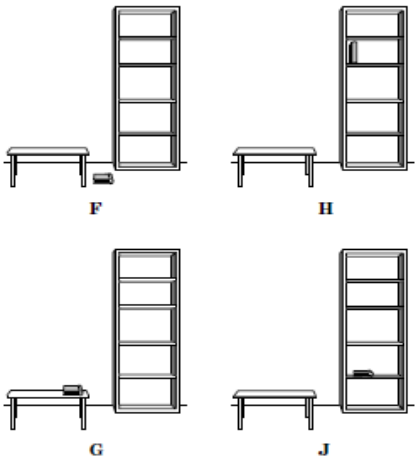
9. A student throws a ball. Which of these best describes the moving ball?
(2008 test – question 20)
   a. The ball has light energy.
   b. The ball has kinetic energy.
   c. The ball is transferring sound energy to the air.
   d. The ball is transferring light energy to the air.

10. Which roller coaster will not have enough kinetic energy at the bottom of the first hill to carry the car over the second hill? ( c )
(2001 test – question 3)

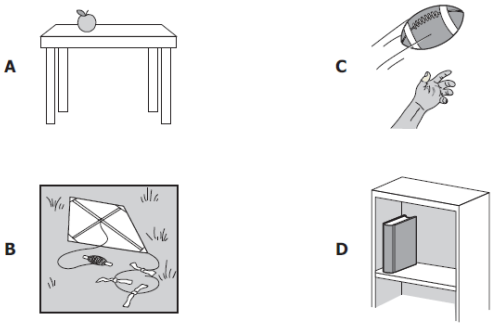



11. When a coin is dropped, it falls to the ground. As the coin falls, it loses potential energy and gains what kind of energy?
(2002 test – question 34)
   a. Kinetic
   b. Chemical
   c. Electrical
   d. Solar

12. Which picture shows the book with the most potential energy? ( c )
(2001 test – question 32 )

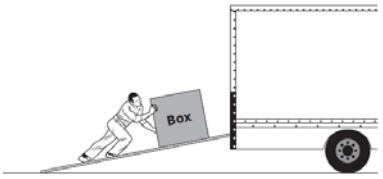



13. Which picture shows an object that has kinetic energy? ( c )
(2011 test – question 13)



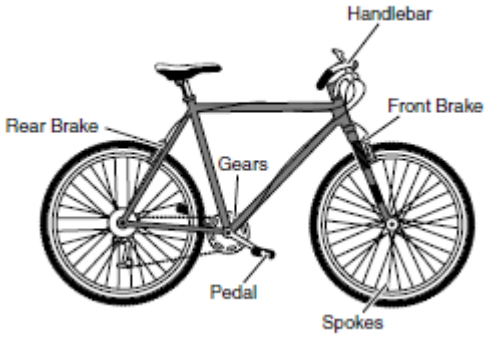

# FRICTION

14. The box would be easier to move if the surface of the ramp was smoother because there would be less —
(2011 test – question 37)
   a. mass in the box
   b. friction opposing the box
   c. gravity pulling on the box
   d. distance to push the box




15. A student rolls a ball on the ground. Which of these causes the ball to slow down and then stop?
(2009 test – question 27)
   a. The motion of the ball
   b. The speed of the ball
   c. Friction from the ground
   d. A magnetic field

16. A bicyclist rides on a flat road and then stops pedaling but does not apply the brakes. The bicycle stops because of —
(2008 test – question 25)
   a. balance
   b. friction
   c. attraction
   d. magnetism




17. Useful friction is created by the —
(2005 test – question 12)
   a. gears
   b. curved handlebars
   c. spokes
   d. brakes