

Roller Coaster

Name: _____

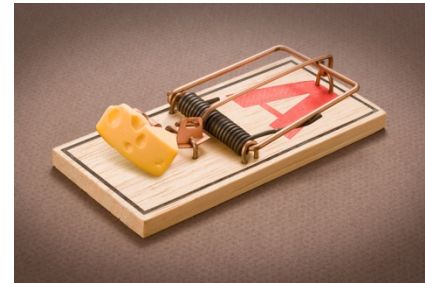
Grade 6 – Design Task Assessment

Date: _____

Directions: For each of the questions below, choose the BEST answer.

1. What energy transformation occurs when this mousetrap works?

- A. Gravitational potential to kinetic.
- B. Elastic potential to kinetic.
- C. Chemical potential to kinetic.
- D. Biological potential to kinetic.

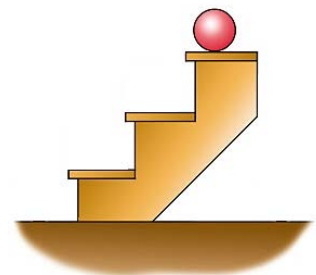


2. Kinetic energy can be described as _____

- A. Combined energy
- B. Stored energy
- C. Energy in motion
- D. Chemical transformation

3. A ball sitting at the top of the stairs is an example of _____.

- A. Kinetic energy
- B. Thermal energy
- C. Chemical energy
- D. Potential energy

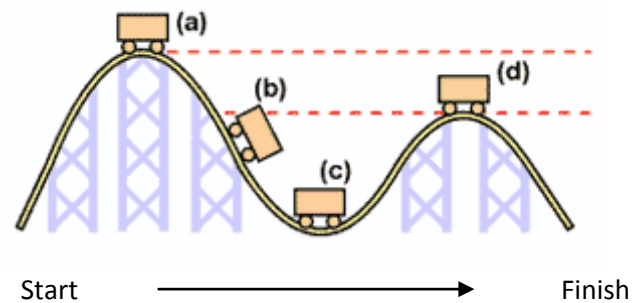


4. Potential energy can be described as _____.

- A. Combined energy
- B. Stored energy
- C. Energy in motion
- D. Chemical transformation

5. At which point along the track will the car have the fastest speed?

- A. Fastest (a)
- B. Fastest (b)
- C. Fastest (c)
- D. Fastest (d)



6. Which of the following best describes potential energy?

- A. A soccer ball lying on a flat lawn.
- B. A basketball sitting on the edge of a shelf.
- C. A person riding a bicycle on a flat surface.
- D. Marbles sitting in a jar.

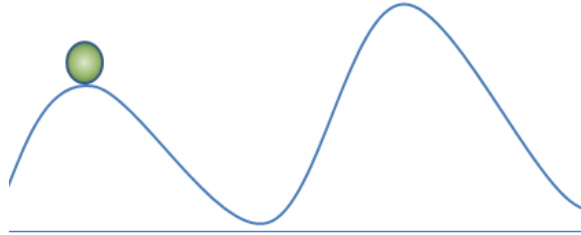
7. Which is correct about potential and kinetic energy in a roller coaster ride?



- A. As the car moves, the sum of the two energies decreases.
- B. When the car is released, the potential energy transforms into kinetic energy.
- C. The more potential energy the car has, the more kinetic energy it has.
- D. At the top of the loop, the car has a huge amount of kinetic energy, but little potential energy.

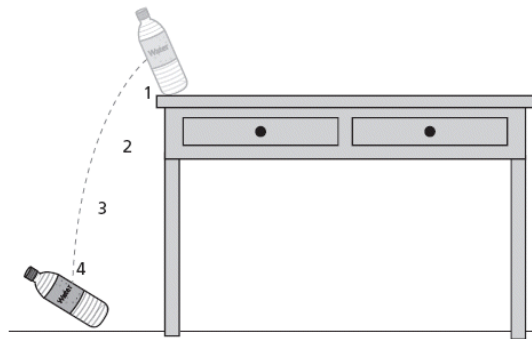
8. The marble in its current position has low potential energy and will not make it over the second hill. How can you adjust the track to allow the marble to have greater potential energy and complete the path?

- A. Make the first hill higher.
- B. Make the second hill higher.
- C. Roll the marble faster.
- D. Roll the marble slower.



9. At what position does the bottle have the highest amount of kinetic energy?

- A. 1
- B. 2
- C. 3
- D. 4

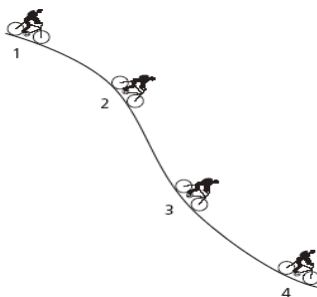


10. Which of the following is the best example of kinetic energy?

- A. A soccer ball lying on a flat lawn.
- B. A basketball sitting on the edge of a shelf.
- C. A person riding a bicycle on a flat surface.
- D. Marbles sitting in a jar.

11. At which point do the person and the bicycle have the most potential energy?

- A. 1
- B. 2
- C. 3
- D. 4



Use the following information to answer questions 12 and 13.

Fun Amusement Park has hired Ace Engineering to design a roller coaster that can carry 20 riders and safely travel a track which has 6 hills and 2 loops. Ace Engineering designed and built a prototype roller coaster that can carry 20 riders and safely travel over 7 hills and 1 loop.

12. Based on the information above, which of the following is a problem of the prototype's design?

- A. The length of the ride is too long.
- B. The roller coaster will need to be able to carry more people.
- C. The solution does not meet the client's request.
- D. There is no problem with the prototype's design.

13. Who is the client?

- A. Fun Amusement Park.
- B. Roller coaster riders
- C. Ace Engineering
- D. All the park visitors

14. Which of the following statements best describes a characteristic of the design process?

- A. Design teams should begin documenting the design process after making a prototype.
- B. Feedback about a solution can be used to help improve a design.
- C. Every design problem has only one solution.
- D. Teams should brainstorm solutions first and then identify the problem to be solved.