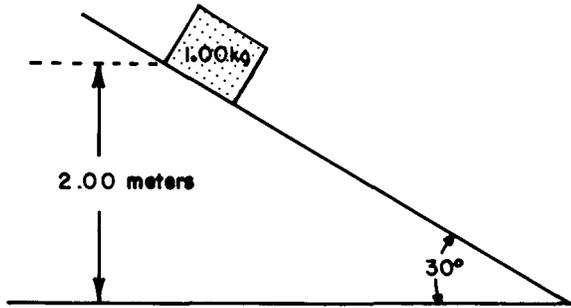


1.

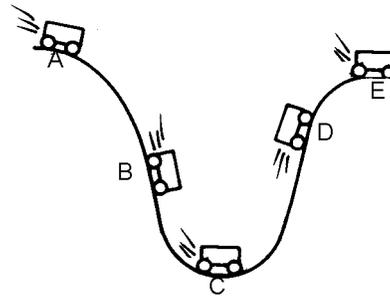


A block of mass 1 kg at rest slides down a frictionless inclined plane as shown in the picture. The plane is sloped at an angle of 30° relative to the ground. When the block slides to the ground, its change in kinetic energy is most nearly

- 1) +10J.
- 2) -10J.
- 3) +15J.
- 4) -15J.
- 5) +20J.

2. Base your answer to the following question on the following information.

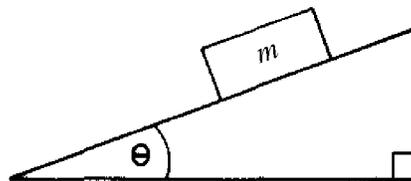
A roller coaster car starts at Point A and travels along a frictionless slope traveling to Point E which is at a slightly lower height.



The car's speed is the fastest at which point?

- 1) A
- 2) B
- 3) C
- 4) D
- 5) E

3. Base your answer to the following question on the diagram below. In the diagram, a box of mass m is sliding down a frictionless ramp of length L with an incline of θ to the horizontal. The mass takes t seconds to slide down the ramp.



The work done by gravity on the object is equal to

- 1) $\frac{mgL}{t}$
- 2) $\frac{mgL\cos\theta}{t}$
- 3) $mgL\cos\theta$
- 4) $mgL\sin\theta$
- 5) Cannot be determined from the information given.

4. In general, if the center of mass of a system is raised to a higher gravitational potential and the system is otherwise unchanged,

- 1) the system becomes more stable
- 2) the system becomes less stable
- 3) the total energy of the system decreases
- 4) the kinetic energy in the system decreases
- 5) the system does work on its environment

Answer Key
Work & Energy with Calculus MC Questions [Mar 28, 2011]

1. 5

2. 3

3. 4

4. 2

Name _____

Class _____

Date _____

1. _____

2. _____

3. _____

4. _____