1. A 3 kg object slides 90 meters down a frictionless inclined plane dropping 45 meters. It then slides along a horizontal surface with a coefficient of kinetic friction of 1.0 until it stops. How far from the base of the inclined plane does it stop?

   1) 400 m

   2) 450 m

   3) 500 m

   4) 525 m

   5) 4,500 m

2. A horizontal force F is used to push a 3.0 kg block, initially at rest, across a floor, with a constant acceleration of 2.0 m/s^2. If the frictional force between the block and the floor is 4 Newtons, how much work is done by force F on the block to move it 15 meters?
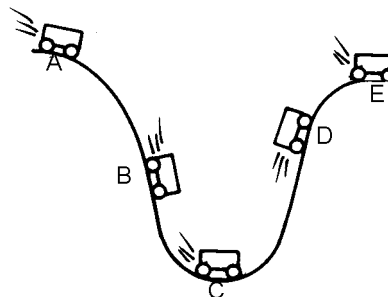
   1) 60 J

   2) 90 J

   3) 120 J

   4) 150 J

   5) 210 J

3. A 4.0 N force is used to accelerate a 2.0 kilogram block from rest to a velocity of 6.0 m/s. If the force was applied over a distance of 15 meters, the coefficient of kinetic friction between the block and the surface is most nearly

   1) 0.03

   2) 0.04

   3) 0.06

   4) 0.08

   5) 0.12

Base your answers to questions **4** and **5** 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.

4. If it can be assumed that the car has the same speed at points A and E, which of the following can be a valid explanation about the roller coaster car?

   1) The Gravitational Potential Energy is lower at Point E than at Point A.

   2) The Gravitational Potential Energy is higher at Point E than at Point A.

   3) Friction exists between the wheels of the roller coaster car and the track.

   4) The roller coaster car loses Kinetic Energy between A and C.

   5) The roller coaster car gains Kinetic Energy between A and C.

5. If it can be assumed that the car has the same speed at points A and E, which of the following statements is true?

   1) The net work done in this system is 0 J.

   2) The net work done in this system is positive.

   3) The net work done in this system is negative.

   4) The net work done in this system is 0 for the roller coaster, but positive for the slope.

   5) The net work done in this system is positive for the roller coaster, but 0 for the slope.

6. An object is dropped off a cliff of height h and is subjected to an average force of air resistance of F. If the object has a mass of m, the kinetic energy it gains during the fall will be equal to

1) mgh

2) $mgh + F$

3) $mgh - F$

4) $mgh + Fh$

5) $mgh - Fh$

7. How much energy is required to push a 50 kg mass 15 m across a surface with a coefficient of friction of 0.3 at a constant velocity?

1) 43.3 J

2) 650 J

3) 2250 J

4) 6350 J

5) 9750 J

1.   5

2.   4

3.   4

4.   3

5.   2

6.   5

7.   3

Name _____   Class _____   Date _____

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____