Potential and Kinetic energy

1. A cart is loaded with a brick and pulled at constant speed along an inclined plane to the height of a seat-top. If the mass of the loaded cart is 3.0 kg and the height of the seat top is 0.45 meters, then what is the potential energy of the loaded cart at the height of the seat-top?

2. If a force of 14.7 N is used to drag the loaded cart (from previous question) along the incline for a distance of 0.90 meters, then how much work is done on the loaded cart?

3. Determine the kinetic energy of a 625-kg roller coaster car that is moving with a speed of 18.3 m/s.

4. If the roller coaster car in the above problem were moving with twice the speed, then what would be its new kinetic energy?

5. Missy Diwater, the former platform diver for the Ringling Brother's Circus, had a kinetic energy of 12 000 J just prior to hitting the bucket of water. If Missy's mass is 40 kg, then what is her speed?

6. A 900-kg compact car moving at 60 mi/hr has approximately 320 000 Joules of kinetic energy. Estimate its new kinetic energy if it is moving at 30 mi/hr. (HINT: use the kinetic energy equation as a "[guide to thinking](http://www.physicsclassroom.com/Class/energy/U5l1c.cfm#guide).")

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