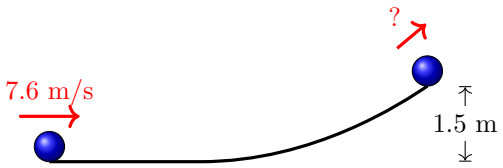
Name: Date: Period:

Energy #3

1. You take a rock with mass 0.45 kg and throw it straight up into the air with an initial velocity of 11.3 m/s. How high does it go? Ignore air resistance.

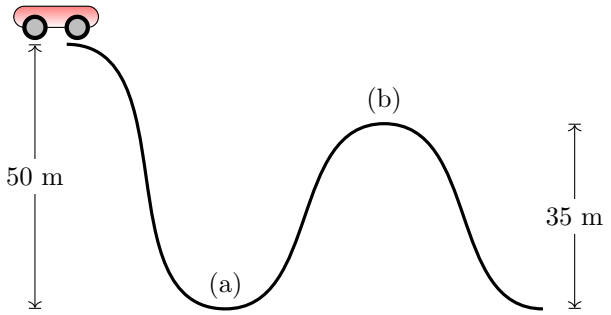
2. You are playing ski-ball. You roll a ball ($m = 0.20\,\text{kg}$) up from the bottom of the ramp with an initial speed of 7.6 m/s. By the time the ball reaches the top of the frictionless ramp (which has a height of 1.5 meters), how fast is the ball travelling?



3. A 0.24-kg hockey puck is sitting at rest on the ice. A player exerts a constant 15.6 N of force over a distance of 0.150 m.
   (a) How much work does the hockey player do on the puck?

   (b) What is the final velocity of the puck?

4. A rollercoaster (m = 1000 kg) starts from rest at the top of a 50 m hill. The tracks are frictionless.
   (a) If the hill goes all the way down to the ground, how fast should it be going at that point?



   (b) Continuing the problem, the rollercoaster continues to the top of the next hill, which is 35 m high. What is its velocity at the top of the next hill?

5. A 1750-kg car is initially at rest on a flat surface. The driver accelerates the car, covering a distance of 87 meters. The net force acting on the car averages out to 4800 Newtons. What is the final velocity of the car?