Extra Practice Problems for Chapter 8

1. You lift a 3.14-kg mass straight up at a constant velocity. Once it reaches a height of 2.00 m, how much work have you done on the mass?

2. A 422-g object has a potential energy of 11.7 J. What is its height?

3. A 734-g object has a kinetic energy of 142 J. What is its speed?

4. A block slides down a ramp from rest. If the block started out with a height of 95 cm, what is its speed at the bottom of the ramp? Ignore friction.

5. A rollercoaster starts at rest on a 22-m hill. After a while on the track, it is at a height of 11 m. Ignoring friction, what is its speed?

6. A bicyclist is at the top of a 4.22-m hill and is traveling at 2.55 m/s. He stops pedaling and coasts to the bottom of the hill. Ignoring friction, what is his speed at the bottom?

7. A 557-kg rollercoaster starts at rest on a 22-m hill. At the bottom of the hill, it is traveling at 18.6 m/s. How much work did friction do on the rollercoaster?

8. A 17.0-kg block is given a shove that does 134 J of work on the block. If it slides across a horizontal floor and comes to rest in 3.1 m, what is the coefficient of kinetic friction between the block and the floor?

9. A 2.22-kg block starts from rest at the top of a ramp that is 75.0 cm high. It slides down the ramp and then across a level floor, stopping in 1.75 s. How much power did friction use to stop the block?

10. A crane lifts a 5,671-kg load straight up at constant velocity, using 2,518 Watts of power. If the crane took 3.17 minutes to do the job, how high did it lift the load?