Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Physics 11

**Worksheet 7.2**

**Gravitational Potential Energy**

1. A 25 N object is held 2.1 m above the ground. What is the potential energy with respect to the ground?
2. A 2.75 kg box is at the top of a frictionless incline as shown. What is the potential energy with respect to the bottom of the incline?

10 m

7 m

1. The bob of a pendulum has a mass of 2 kg and hangs 0.5 m above the floor at its equilibrium position. The bob is then pulled sideways so that it is 0.75 m above the floor.
   1. What is its potential energy with respect to the equilibrium position?
   2. What is its potential energy with respect to the floor?
2. A 2000 kg crate is pushed to the top of an incline (starting at the bottom) as shown. The force applied along the incline (i.e. parallel to it) is 12000 N.

6 m

10 m

* 1. What is the potential energy (with respect to the bottom of the incline) of the object when it is at the top of the incline?
  2. How much work is done on the object by the applied force?
  3. How much work is done on the object by gravity?
  4. How much work is done on the object by the normal force?

Answers: 1) 52.5 J 2) 188.65 J 3a) 4.9 J 3b) 14.7 J 4a) 117,600 J 4b) 139,942.8 J

4c) -117,600 J 4d) 0 (if you’re not sure why, ask Mr. Q)