# Physics Energy Problems

1. A book is thrown off of a 20 m tall cliff with a speed of 12 m/s. Find the speed with which it hits the ground.

2. A 0.3 kg pair of scissors is dropped of a 4 m tall ladder and strikes the ground point first. They imbed themselves 4 cm into the ground. Find the force of the ground on the scissors.

3. A box, mass 6 kg, is moving at 8 m/s when it experiences a frictional force of 5 N for 10 m. Find the speed of the box after encountering the frictional force.

4. A 10 kg box is on a surface with μ = 0.4. It is moving at a speed of 8 m/s.
   a. Find the frictional force.
   b. Find the KE of the box before friction.
   c. Find the distance the box slides in coming to rest.

5. The system is at rest.
   a. Find the PE of the system.
   b. Find the speed of the system after the 1 kg box fell 2 m.
   c. Now assume the system was already moving to the right at 4 m/s. Find the speed after it has fallen 2 m.
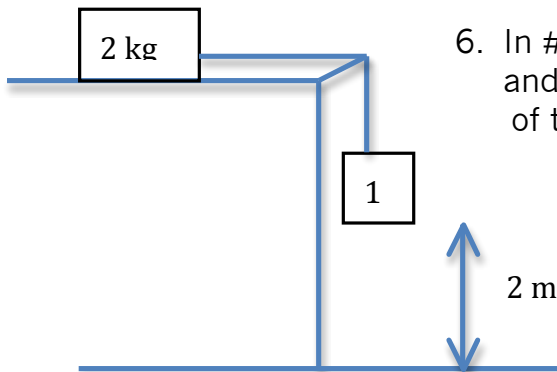
6. In #5 there is friction between the 2 kg block and the surface with μ = 0.2. Find the speed of the system after the 1 kg box fell 2 m.