Quiz 6

Name: _____

Answer each of the following questions. Show all work for full credit.

(1) How much work is done by the gravitational force when a 260-kg pile driver falls 2.80 m?

(2) Estimate the work you do to mow a lawn 10 m by 20 m with a 50-cm wide mower. Assume you push with a force of about 15 N.

(3) An arrow with a mass of 85 grams is launched from a bow. The bowstring applies an average force of 105 N to the arrow over a distance of 75 cm. Determine the speed of the arrow as it leaves the bow.

(4) How much work is required to stop an electron moving at a speed of 1.40×10^{6} m/s?

(Given: mass of electron m = 9.11×10^{-31} kg)

(5) The right figure shows two blocks connected by a cord (of negligible mass) that passes over a frictionless pulley (also of negligible mass). The blocks have mass m_A and m_B, respectively, with $m_B < m_A$. The two blocks are initially at rest.

If the block mA falls over a height L, assuming the length of the rope is long enough, what is the work done on m_B by the gravitational force?