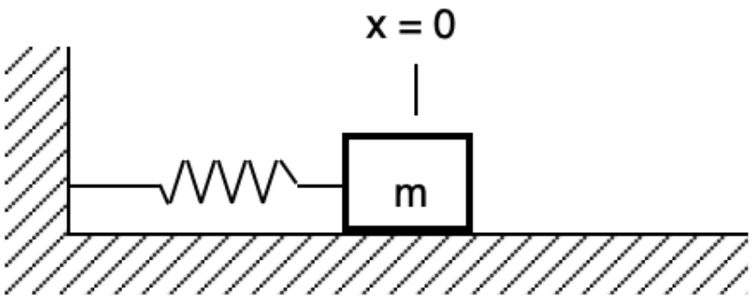
Name_____ Date_____ Period_____

Unit 6

Work, Power, Energy Practice Test

Form P



1. A mass of 200. g is attached to a horizontal spring on a frictionless surface. The spring constant is 16.0 N/m. It is at rest at x = 0.
    a. If constant force of 0.800 N is used to pull the mass to the right, how far will the spring stretch?

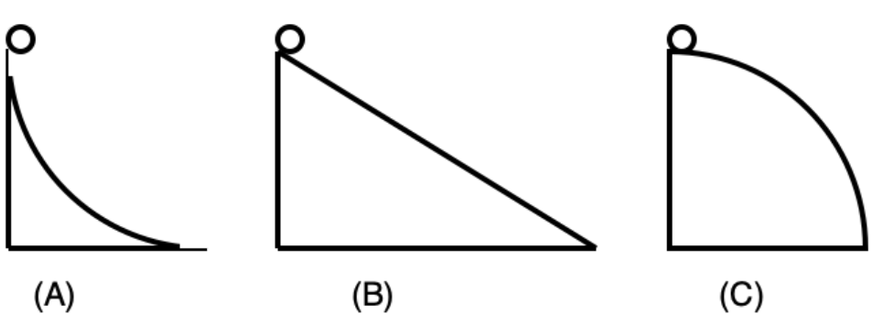
    b. How much work will be done in stretching the spring?

    c. How much elastic potential energy will now be stored in the spring?

    d. If the mass is released, at what location will it have its greatest speed?

    e. What will be the greatest speed of the mass after it is released?

2. Which ball shown below will have the greatest speed when it reaches the bottom of its ramp? Explain your choice. All of them start from the same height and friction is negligible.



3. A mass of 3.00 kg is placed at the top of the frictionless ramp 2.00 m high. The ramp makes an angle of $\theta_1 = 30°$ to the horizontal.
    a. How fast will it be traveling at the bottom of the ramp?

    b. How much work was done by gravity pulling the mass down the ramp?

    c. The mass now slides along a frictionless horizontal surface and then up a second frictionless ramp which makes an angle of $\theta_2 = 15°$ to the horizontal. How far up the second ramp will the mass travel?

4. A ball with a weight of 16.0 N travels without friction down a 5.00 m high ramp, along a level but rough surface 100 m long, and then just barely rises to the top of another smooth ramp 3.00 m high. What is the coefficient of friction when the ball is on the level surface?

5. Good ol' Charlie is using a force of 350 N to push a box weighing 700 N across a level but rough surface at a constant speed of 0.60 m/s for a distance of 4.00 m.
    a. How much work did Charlie do?

    b. How much power is required from Charlie?