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PHYS 1110 Worksheet: Simple Harmonic Motion

1. Predict the motion of a mass acted on only by a Hooke's law spring.
   A. Express your prediction as a position-time graph.

   B. Explain why you believe that the mass will move in the manner you predicted.

2. A weight hanging from a spring oscillates up and down.
   A. What is *velocity* (min, max, > 0, < 0, 0) of the oscillating mass
      At the top?
      At the equilibrium point?
      At the bottom?
   B. What is *acceleration* (min, max, > 0, < 0, 0) of the oscillating mass
      At the top?
      At the equilibrium point?
      At the bottom?
   C. What is the object's *position* when it is not accelerating?
   D. What is the object's *velocity* when it is not accelerating?
   E. What is the object's *position* when it is not moving?
   F. What is the object's *acceleration* when it is not moving?
   G. What is the object's *kinetic energy* when it is not accelerating?
   H. What is the object's *potential energy* when it is not accelerating?
3. Show that the mechanical energy E of an oscillating Hooke's law spring is never negative.