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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 of mass $m = 0.200$ kg hangs from a spring with spring constant $k = 7.20$ N/m. It is set into oscillation with amplitude $A = 0.150$ m.

   A. What is the angular frequency ω of its oscillation?

   B. What is the frequency f of its oscillation?

   C. What is the period T of its oscillation?

   D. What is the spring's greatest extension x_{max} in its oscillation?

   E. What is the greatest force exerted on the mass?

   F. What is the mass's greatest acceleration?

   G. What is the spring's greatest potential energy?

   H. What is the mass's greatest kinetic energy?

   I. What is the mass's greatest speed?