A mass of 0.50 kg connected to a light spring of force constant 24 N/m oscillates on a horizontal frictionless surface with an amplitude of 4.0 cm. What is the speed of the mass when the displacement is equal to 2.0 cm?

A. 72 cm/s  
B. 12 cm/s  
C. 36 cm/s  
D. 24 cm/s  
E. 48 cm/s

A small mass on the end of an ideal spring is pulled vertically downward from its equilibrium position a distance of 5.0 cm and released from rest. The mass then oscillates in SHM with a period of 8.0 s. Find the maximum speed of the mass.

A. 2.0 cm/s  
B. 10.0 cm/s  
C. 4.5 cm/s  
D. 2.8 cm/s  
E. 3.9 cm/s

Consider an ideal mass-spring system executing a simple harmonic motion along the x-axis. Which of the following statements is CORRECT in this case?

A. The potential energy is maximum at the equilibrium position.  
B. The period of oscillation is independent of the mass.  
C. The kinetic energy is maximum at the position of maximum displacement from the equilibrium.  
D. The acceleration of the system is a constant of motion.  
E. The total energy of the system is a constant of motion.