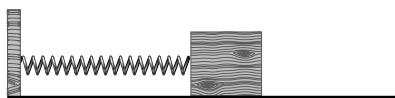




Standardized Test Prep

MULTIPLE CHOICE

Base your answers to questions 1–6 on the information below.



A mass is attached to a spring and moves with simple harmonic motion on a frictionless horizontal surface, as shown above.

1. In what direction does the restoring force act?
 - A. to the left
 - B. to the right
 - C. to the left or to the right depending on whether the spring is stretched or compressed
 - D. perpendicular to the motion of the mass
2. If the mass is displaced -0.35 m from its equilibrium position, the restoring force is 7.0 N. What is the spring constant?
 - F. -5.0×10^{-2} N/m
 - G. -2.0×10^1 N/m
 - H. 5.0×10^{-2} N/m
 - J. 2.0×10^1 N/m
3. In what form is the energy in the system when the mass passes through the equilibrium position?
 - A. elastic potential energy
 - B. gravitational potential energy
 - C. kinetic energy
 - D. a combination of two or more of the above
4. In what form is the energy in the system when the mass is at maximum displacement?
 - F. elastic potential energy
 - G. gravitational potential energy
 - H. kinetic energy
 - J. a combination of two or more of the above

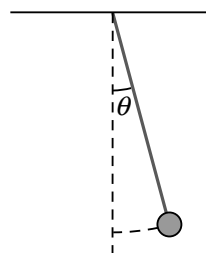
5. Which of the following does *not* affect the period of the mass-spring system?

- A. mass
- B. spring constant
- C. amplitude of vibration
- D. All of the above affect the period.

6. If the mass is 48 kg and the spring constant is 12 N/m, what is the period of the oscillation?

- F. 8π s
- H. π s
- G. 4π s
- J. $\frac{\pi}{2}$ s

Base your answers to questions 7–10 on the information below.



A pendulum bob hangs from a string and moves with simple harmonic motion, as shown above.

7. What is the restoring force in the pendulum?
 - A. the total weight of the bob
 - B. the component of the bob's weight tangent to the motion of the bob
 - C. the component of the bob's weight perpendicular to the motion of the bob
 - D. the elastic force of the stretched string
8. Which of the following does *not* affect the period of the pendulum?
 - F. the length of the string
 - G. the mass of the pendulum bob
 - H. the free-fall acceleration at the pendulum's location
 - J. All of the above affect the period.