1. . Two masses, m and M, are connected to a pulley system attached to a table, as in the diagram.  What is the minimum value for the coefficient of static friction between mass M and the table if the pulley system does not move? (A) m/M (B) M/m (C) g (m/M) (D) g (M/m) (E) g(M – m)

2. . A mover pushes a box up an inclined plane, as shown in the figure.  Which of the following shows the direction of the normal force exerted by the plane on the box? (A)  (B)  (C)  (D)  (E) 

3. . Consider a block sliding down a frictionless inclined plane with acceleration a. If we double the mass of the block, what is its acceleration? (A) a/4 (B) a/2 (C) a (D) 2a (E) 4a

4. . A 1 kg mass on a frictionless inclined plane is connected by a pulley to a hanging 0.5 kg mass, as in the diagram.  At what angle will the system be in equilibrium? cos 30Âº = sin 60Âº = , cos 60Âº = sin 30Âº = 1/2, cos 45Âº = sin 45Âº = . (A) 0Âº (B) –30Âº (C) 30Âº (D) 45Âº (E) 60Âº

5. .An object of mass m rests on a plane inclined at an angle of . What is the maximum value for the coefficient of static friction at which the object will slide down the incline? (A) (B) (C) (D) (E)

6. . A mass on a frictionless surface is attached to a spring. The spring is compressed from its equilibrium position, B, to point A, a distance x from B. Point C is also a distance x from B, but in the opposite direction. When the mass is released and allowed to oscillated freely, at what point or points is its velocity maximized?  (A) A (B) B (C) C (D) Both A and C (E) Both A and B

7. . An object of mass 3 kg is attached to a spring of spring constant 50 N/m. How far is the equilibrium position of this spring system from the point where the spring exerts no force on the object? (A) 0.15 m (B) 0.3 m (C) 0.5 m (D) 0.6 m (E) 1.5 m

8. . Refer to a pendulum in its upward swing. That is, the velocity vector for the pendulum is pointing in the direction of E.  What is the direction of the force of gravity on the pendulum bob? (A) A (B) B (C) C (D) D (E) E

9. . Refer to a pendulum in its upward swing. That is, the velocity vector for the pendulum is pointing in the direction of E. What is the direction of the net force acting on the pendulum? (A) A (B) B (C) C (D) D (E) E

10. . Refer to a pendulum in its upward swing. That is, the velocity vector for the pendulum is pointing in the direction of E. If the pendulum string is suddenly cut, what is the direction of the velocity vector of the pendulum bob the moment it is released? (A) A (B) B (C) C (D) D (E) E