Physics 1A– 10 AM class
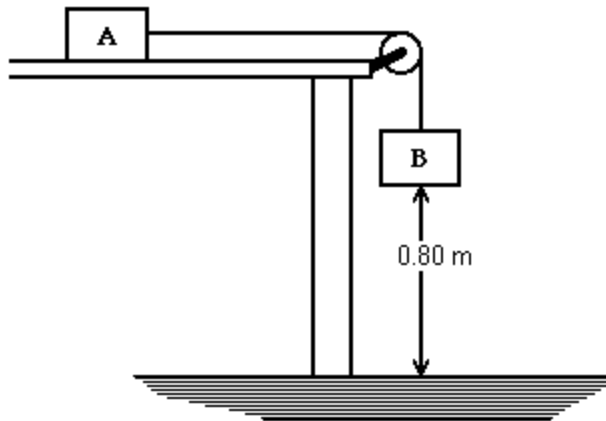# Quiz # 3   Nov. 16, 2007
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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Figure 1

1) In Figure 1, two wooden blocks of 0.30 kg mass each are connected by a string which passes over a pulley. One block slides on a horizontal table, while the other hangs suspended by the string, as shown in the sketch. At t = 0, the suspended block is 0.80 m over the floor, and the blocks are released from rest. After 2.5 s, the suspended block reaches the floor. What is the coefficient of kinetic friction between the table and the sliding block?

   A) 0.52   B) 0.65   C) 0.35   D) 0.95   E) 0.84

Figure 2
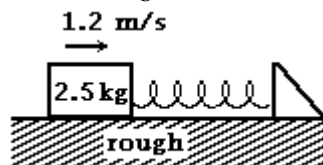
1.2 m/s

A 2.5 kg, sliding on a rough surface, has a speed of 1.2 m/s when it makes contact with a spring. The block comes to a momentary halt when the compression of the spring is 5.0 cm. The work done by the friction, from the instant the block makes contact with the spring until is comes to a momentary halt, is –0.50 J.

2) In Figure 2, the force constant of the spring is closest to:

   A) 1040 N/m   B) 940 N/m   C) 890 N/m   D) 990 N/m   E) 840 N/m

3) A 100–N block, on a 30^0 incline, is being held motionless by friction. The coefficient of static friction between the block and the plane is 0.60. The force due to friction is:

   A) 0 N   B) 14 N   C) 30 N   D) 50 N   E) 54 N

4) A 15.0–kg crate, initially at rest, slides down a ramp 2.0 m long and inclined at an angle of $20°$ with the horizontal. If there is no friction between ramp surface and crate, what is the kinetic energy of the crate at the bottom of the ramp? (g = 9.8 m/s^2)

   A) 221 J   B) 688 J   C) 52 J   D) 100 J   E) 162 J

5) An amount of work equal to 1.5 J is required to compress the spring in a springgun. What is the "launch speed" of a 15–g marble?

   A) 14 m/s   B) 16 m/s   C) 18 m/s   D) 21 m/s   E) 25 m/s

6) A horizontal force of 200 N is applied to a 55–kg cart across a 10–m level surface. If the cart accelerates at 2.0 m/s^2, then what is the work done by the force of friction as it acts to retard the motion of the cart?

   A) –1,100 J   B) –900 J   C) –800 J   D) –700 J   E) – 500 J

7) A pole vaulter clears 6.00 m. With what speed does he strike the mat in the landing area?

   A) 2.7 m/s   B) 5.4 m/s   C) 7.2 m/s   D) 10.8 m/s   E) 21.6 m/s

8) I drop a 60–g golf ball from 2.0 m high. It rebounds to 1.5 m. How much energy is lost?

   A) 0.29 J   B) 0.50 J   C) 0.72 J   D) 0.88 J   E) 1.00 J

MULTIPLE CHOICE. **Choose the one alternative that best completes the statement or answers the question.**

1) D
2) A
3) D
4) D
5) A
6) B
7) D
8) A