1. A mass of 0.25 kg is hung vertically from an ideal spring, stretching it a distance of 0.05 m. The values of the spring constant for this spring is most nearly

   A) 5 N/m

   B) 20 N/m

   C) 50 N/m

   D) 200 N/m

   E) 2000 N/m

2. After a block of mass m is attached to a spring, the spring is compressed to a distance x_0 from its equilibrium position. The spring is released, when it reaches the equilibrium position it detaches. What is the speed of the block when it is released?
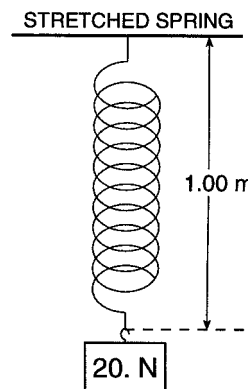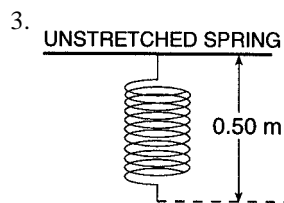
   A) $\sqrt{gx_0}$

   B) $\frac{k}{mg}x_0$

   C) $\frac{k}{m}x_0$

   D) $x_0\sqrt{\frac{k}{m}}$

   E) $x_0\sqrt{\frac{m}{k}}$

3.
UNSTRETCHED SPRING   STRETCHED SPRING

0.50 m

1.00 m

20. N

What is the spring constant of the spring shown in the picture above?

   A) 40 N/m

   B) 20 N/m

   C) 10 N/m

   D) 0.5 N/m

   E) 0.025 N/m

4. A spring with a spring constant 4000 N/m is hung from a ceiling with a mass of 10.0 kg attached to its end. In this configuration, the spring has a length l_1. The mass is detached, and the spring comes to rest with a length l_2. The difference $l_1 - l_2$ is most nearly

   A) 0.025 cm

   B) 0.25 cm

   C) 2.5 cm

   D) 25 cm

   E) 250 cm

5. A spring with length 1.2 m is hung from the ceiling and is at rest. A mass of 0.5 kg is hung from the spring, and the spring comes to rest with a length of 1.4 m. The spring constant of the spring is most nearly

A) 2.5 N/m

B) 3.6 N/m

C) 25 N/m

D) 36 N/m

E) 250 N/m

6. When a block with a mass of 4 kg is hung from a spring, the spring stretches 12 cm. If a mass of 3 kg is then added to the spring, the spring will stretch an additional

A) 9 cm

B) 12 cm

C) 15 cm

D) 18 cm

E) 21 cm

7. A ideal spring with natural length 10 cm and spring constant 100 N/m is kept at its natural length as a 2 kg mass is hung from it. When the spring is released, how far will the mass fall before its velocity becomes 0?

A) 10 cm

B) 20 cm

C) 40 cm

D) 80 cm

E) 100 cm

Answer Key
Oscillating Pendulums MC Questions [Mar 28, 2011]

1.   C

2.   D

3.   A

4.   D

5.   C

6.   A

7.   C

Name _____   Class _____   Date _____

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____