Name _____ **A** Date _____

Regents Physics Energy WS #7R

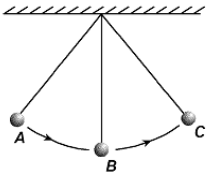
Period _____ Mrs. Nadworny

Pendulums and Springs

Directions: Read online textbook pages 437 – 444. Solve the following problems using the GUESS method and proper significant figures. Be sure to show ALL work.

Use the following information to answer questions 1 and 2.

The diagram below shows three positions, A, B and C, in the swing of a pendulum, released from rest at point A. [Neglect friction.]



1. As the pendulum swings from position B to position C, what happens to the total mechanical energy?

(A) It decreases (B) It increases (C) It remains the same

2. Which statement is true about this swinging pendulum?

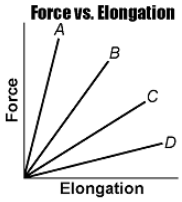
(A) The potential energy at A equal the kinetic energy at C.

(B) The potential energy at A equal the kinetic energy at B.

(C) The speed at A equals the speed at B.

(D) The potential energy at B equals the potential energy at C.

3. The graph below represents the relationship between the force applied to a spring and spring elongation for four different springs.



Which spring has the greatest spring constant?

(A) A (B) B (C) C (D) D

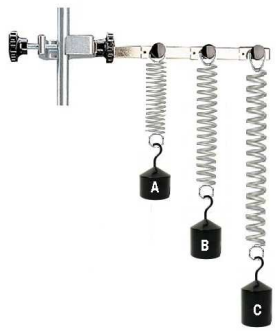
4. A spring with a spring constant of 360. N/m is stretched 0.18 meters. How much energy is stored in the spring?

Continued on next page

5. It takes a force of 24.7 N to hold a spring stretch a distance of 0.419 m. What is the elastic potential energy of the spring in this position? [Hint: Multiple-step problem!]

6. The largest meteorite of lunar origin reportedly has a mass of 0.0195 kilograms. If the meteorite produces a compression of 2.24×10^{-3} m when placed on a spring scale, what is the spring constant of the spring?

7. A mass is attached to a spring as shown. It is pulled down and released so that it bobs up and down. Position A is the mass' highest point. Position C is the mass' lowest point. Position B is the mass' equilibrium position.



   a. Where does the mass have the most gravitational potential energy?

   b. Where does the spring have the most elastic potential energy?

   c. Where is the mass traveling the fastest?

   d. Where does the mass have the most kinetic energy?

Answers in size order: 5.17, 5.8, 85.3 or 85.4