Mastery Assignment for Simple Harmonic Motion

Answer these questions on a separate sheet of paper.

1. What are the two formulas for springs and for pendulums?

2. Draw AND label a spring and pendulum with all the variables above labeled on them

3. As a kid, I had a rope swing in the back yard. My friend and I would swing across a creek using this rope. How long was the rope if I, 75.0 kg, took 4.900 s to swing across it?

4. If I started with an amplitude that was double the original, then how would my time to reach the other side compare to the original motion, 3?

5. How would the speed of my swing through the equilibrium compare in the previous two questions (3 & 4).

6. If I was to swing across while holding my 35.0 kg golden retriever, "Honey," in one arm, then how would the time across compare to the original motion in Question 3?

7. A spring is resting on the ground. When an 8.00 pound bowling ball is placed on the bowling spring the spring compresses 2.54 cm. If this spring is oscillated with an amplitude of 2.00 cm with the same bowling ball attached to it, then how much time will it take to move from the highest point of the oscillation to the lowest point? What is the frequency of the oscillating spring?