NAME _____ DATE _____ CLASS _____

HOLT PHYSICS

MODULE 11

Hooke's Law

Fill each blank below with the word or phrase that completes the statement.

1. Objects oscillate back and forth when subjected to a _____ _____.

2. A restoring force is always directed toward a central _____ _____.

3. The net force at the equilibrium position is _____.

4. The _____ of the restoring force is proportional to the _____ from the equilibrium position.

5. _____ _____ describes the relationship between the restoring force and displacement from the _____ _____

6. If the free end of a spring is stretched or compressed, a restoring force acts in the _____ direction.

7. The _____ _____ is a ratio of the restoring force to the displacement, so its units are _____.

8. The spring constant is an indicator of a spring's stiffness. As values for the spring constant increase, the stiffness _____, and more force is needed to stretch or _____ the spring.

9. A certain spring has a force constant equal to one-half the force constant of a second spring. Which spring requires the least force to compress it? Which is stiffer?

_____

_____

_____

NAME _____ DATE _____ CLASS _____

MODULE 11

10. Which will provide a softer bed, a box-spring set containing springs with greater or lesser spring constants?

_____

_____

_____

11. A spring with an equilibrium position at 12.0 cm hangs vertically. When a 7.50 kg mass is attached to the spring, it stretches the spring to 17.0 cm. What would be the length of the spring with a 4.50 kg mass attached to it?

12. If the spring in item 11 were in a scale and that scale were marked every 10 N, what would be the distance between markings?

13. A certain spring has a force constant of 5.0 N/m. Find the mass in grams that must be hung from the spring to stretch it 20 cm. How much more mass is needed to stretch it 20 cm more?