Physics 11   Worksheet on Hooke's Law

Name: _____   **Date:** _____

Remember, Hooke's Law states that $F_{elastic} = k\Delta L$

where $F_{elastic}$ is the elastic force

   k is the spring constant or force constant measured in N/m, and

   ΔL is the **change** in the length of the spring or elastic body.

1. A spring of force constant 45 N/m is used to pull a block along a level surface at constant speed. The spring is observed to stretch 12.0 cm while supplying this force. How much force is applied?

   (3 marks)

2. A 35 N force is used to stretch a rubber band which has a force constant (spring constant) of 450 N/m. What is the expansion of the spring in **centimeters**?   (3 marks)

3. If a 8.0 kg mass is hung on the end of a spring, it is stretched 0.78 meters as a result. What is the force constant of the spring (in N/m)?

(3 marks)

4. A certain string is loaded by hanging an unknown mass on it. What is the value of this unknown mass (in kg) if it causes the spring to stretch 24 cm and the spring constant

5. During an experiment, a spring was stretched by applying a variety of forces until it broke, and its total length was recorded, as in the table below:

Using this information and a graph, determine:

a) the spring constant

b) the elastic limit

Force (N)	Total Length (cm)
5	3
10	6
20	12
30	18
35	20
42	23
50	25
55	26
70	28
80	29

(6 marks)