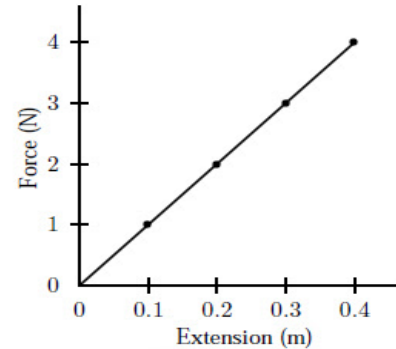


Senior Engineering Lesson #6
Practice Questions Stress and Strain

1. What is the applied force on a spring when it is stretched 20cm and the spring constant is 3.2 N/m?
2. What is the spring constant for the graph?



3. A 2.5 kg mass stretches a spring 10 cm. How far will the spring stretch when it supports 5.0 kg?
4. A nylon tennis string on a racket is under a tension of 250N. If its diameter is 1.00mm, by how much is it lengthened from its untensioned length of 30.0cm? What is the stress and strain on the string?
5. A 1.50m steel piano wire has a diameter of 0.10cm. How great is the tension in the wire if it stretches 0.30cm when tightened? What is the stress and strain on the steel wire.

6. A marble column of cross-sectional area 2.0 m^2 supports a mass of 25000 kg . What is the stress within the column? What is the strain?

7. By how much is the column in the previous problem shortened if it is 12 m high?

8. A vertical steel girder with a cross-sectional area of 0.15 m^2 has a sign mass (mass 2000 kg) hanging from its end. What is the stress within the girder? What is the strain on the girder? If the girder is 9.50 m long, how much is it lengthened? (ignore the mass of the girder)

9. One litre of alcohol (1000 cm^3) in a flexible container is carried to the bottom of the sea, where the pressure is $2.6 \times 10^6 \text{ n/m}^2$. What will be its volume there?