

## Young's Modulus Practice Problems

1. A patient's leg was put into traction, stretching the femur from a length of 0.46 m to 0.461 m. The femur has a diameter of 3.05 cm. With the knowledge that bone has a Young's modulus of  $\sim 1.6 \times 10^{10}$  in tension, what force was used to stretch the femur?

2. Using the following information on stress and strain, plot a graph in Excel to determine the Young's modulus for an unknown material. The radius of the material is 4 cm.

Initial Length (cm)	Final Length (cm)	Change in Length - $\Delta L$ (cm)	Strain ( $\Delta L/L_0$ )	Mass (g)	Force (N)	Stress ( $N/cm^2$ )
25	25.2			100		
25	25.7			200		
25	26.3			300		
25	26.9			400		