

Stress, Strain, and Hooke's Law

Material	Young's Modulus, E (Pa)
Steel	200×10^9
Cast Iron	100×10^9
Concrete	20.0×10^9

$$F = m * a$$

$$\sigma = \frac{F}{A}$$

$$\varepsilon = \frac{\Delta l}{l_0}$$

$$\sigma = E * \varepsilon$$

1. A 3340 N ball is supported vertically by a 1.90 cm diameter steel cable. Assuming the cable has a length of 10.3 m, determine the stress and the strain in the cable.
2. Consider an iron rod with a cross-sectional area of 3.81 cm^2 that has a force of 66,700 N applied to it. Find the stress in the rod.