

20080312-1004

# Young's Modulus

Named for English physicist Thomas Young

Symbol used is  $Y$  (Units are  $N/m^2$ )

$$Y = \frac{\text{STRESS}}{\text{STRAIN}} = \frac{F/A}{\Delta L/L} = \frac{FL}{A\Delta L}$$

$$Y = \frac{FL}{A\Delta L}$$

$$A = \frac{FL}{Y\Delta L}$$

$$\Delta L = \frac{FL}{YA}$$

$$F = \frac{YA\Delta L}{L}$$

$$L = \frac{YA\Delta L}{F}$$

$Y$  = Young's Modulus

$A$  = cross sectional area

$F$  = applied force

$L$  = overall initial length

$\Delta L$  = change in length