

**1/7** Determine the weight in newtons of a woman whose weight in pounds is 130. Also, find her mass in slugs and in kilograms. Determine your own weight in newtons.

$$\text{Ans. } W = 578 \text{ N}$$

$$m = 4.04 \text{ slugs, } m = 58.9 \text{ kg}$$

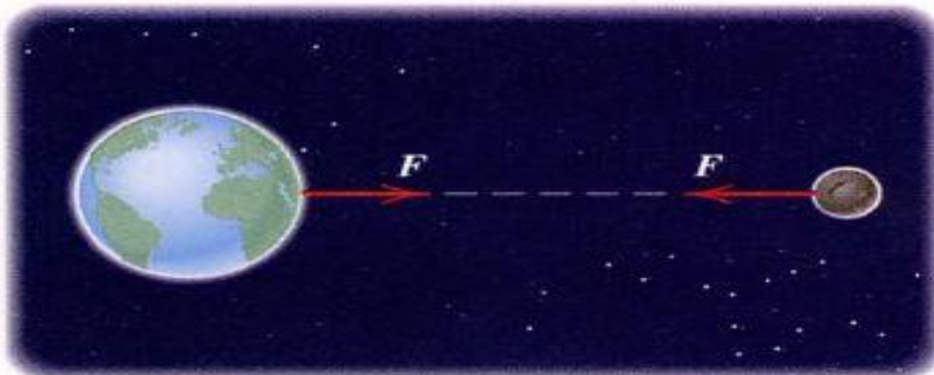
$$\underline{1/7} \quad W = (130 \text{ lb}) \left( \frac{4.4482 \text{ N}}{1 \text{ lb}} \right) = \underline{578 \text{ N}}$$

$$m = \frac{W}{g} = \frac{130}{32.2} = \underline{4.04 \text{ slugs}}$$

$$m = \frac{W}{g} = \frac{578}{9.81} = \underline{58.9 \text{ kg}}$$

**1/9** Compute the magnitude  $F$  of the force which the earth exerts on the moon. Perform the calculation first in newtons and then convert your result to pounds. Refer to Table D/2 for necessary physical quantities.

$$\text{Ans. } F = 1.984(10^{20}) \text{ N, } F = 4.46(10^{19}) \text{ lb}$$



1/9

$$F = \frac{G m_e m_m}{d^2} = \frac{6.673(10^{-11})(5.976 \cdot 10^{24})^2(1)(0.0123)}{(384\,398 \cdot 10^3)^2}$$

$$= \underline{1.984(10^{20}) \text{ N}}$$

$$F = 1.984(10^{20}) \text{ N} \left( \frac{1 \text{ lb}}{4.4482 \text{ N}} \right) = \underline{4.46(10^{19}) \text{ lb}}$$