1-18

An astronaut weighs 150 lb on the surface of the earth. Determine (a) the mass of the astronaut in slugs, and (b) his weight in pounds on the moon, where the gravitational acceleration is 5.30 ft/s². What is his mass on the moon?

Solution.

(a) $m = \dfrac{150\ lb}{32.2\ \frac{ft}{s^2}} = 4.66$ slugs

(b) $F = ma = 4.66$ slugs $\left(5.30\ \dfrac{ft}{s^2} \right) = 24.7$ lb

(c) $m = 4.66$ slugs is unchanged on the moon