1. Given: Convert the following to three significant digits:

a. 50 lb-ft to Nm
b. 350 lb/ft^3 to kN/m^3
c. 100 ft/hr to mm/s

Solution:

a)
$$\frac{50\ \text{lb-ft}}{1\ \text{lb}} \left| \frac{4.448\ \text{N}}{3.28\ \text{ft}} \right| \frac{1\ \text{m}}{}$$

$$= 67.8\ \text{Nm} \leftarrow a$$

b)
$$\frac{350\ \text{lb}}{1\ \text{ft}^3} \left| \frac{4.448\ \text{N}}{1\ \text{lb}} \right| \frac{1\ \text{kN}}{1000\ \text{N}} \left| \frac{35.31\ \text{ft}^3}{1\ \text{m}^3} \right.$$

$$= 55\ \text{kN/m}^3 \leftarrow b$$

c)
$$\frac{100\ \text{ft}}{1\ \text{hr}} \left| \frac{1\ \text{hr}}{3600\ \text{s}} \right| \frac{12\ \text{in}}{1\ \text{ft}} \left| \frac{2.54\ \text{cm}}{1\ \text{in}} \right| \frac{10\ \text{mm}}{1\ \text{cm}}$$

$$= 8.47\ \text{mm/s} \leftarrow c$$

2. Given: $\rho = 6.25\ \text{slug/ft}^3$

Find: ρ in SI units

Solution:

$$\frac{6.25\ slug}{1\ ft^3}\left|\frac{14.5939\ kg}{1\ slug}\right|\frac{1\ Mg}{1000\ kg}\left|\frac{35.3147\ ft^3}{1\ m^3}\right.$$

$$= 3.22\ Mg/m^3 \leftarrow P$$

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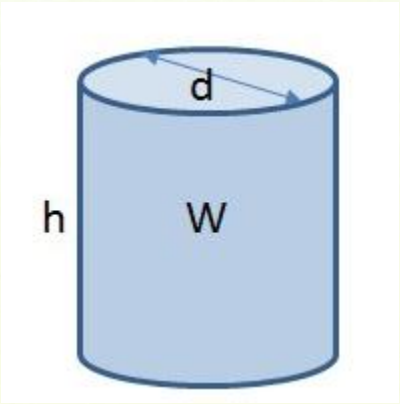
8. Given: h = 2.5 m
d = 400 mm
Þ = 2.3 Mg/m³



Find: W in lbs

Solution:

$$V = \pi r^2 h$$

$$\frac{400\ mm}{2} = 200\ mm = r$$

$$\frac{200\ mm}{1000\ mm}\left|\frac{1\ m}{}\right. = .2\ m$$

$$3.14(.2)^2(2.5) = .314\ m^3 \qquad \frac{2.3\ Mg}{1\ m^3}(.314\ m^3) = W$$

$$W = \frac{.7225\ Mg}{1\ Mg}\left|\frac{1000\ kg}{1\ kg}\right|\frac{2.2\ lbs}{} = 1590\ lbs \leftarrow W$$