

1.5 Perform the following unit conversions:

$$(a) 122 \text{ in.}^3 \left| \frac{1 \text{ cm}^3}{0.061024 \text{ in.}^3} \right| \left| \frac{1 \text{ m}}{10^2 \text{ cm}} \right|^3 \left| \frac{1 \text{ L}}{10^{-3} \text{ m}^3} \right| = 2 \text{ L} \leftarrow$$

$$(b) 778.17 \text{ ft} \cdot \text{lbf} \left| \frac{1 \text{ kJ}}{737.56 \text{ ft} \cdot \text{lbf}} \right| = 1.0551 \text{ kJ} \leftarrow$$

$$(c) 100 \text{ hp} \left| \frac{1 \text{ kW}}{1.341 \text{ hp}} \right| = 74.57 \text{ kW} \leftarrow$$

$$(d) 1000 \frac{\text{lb}}{\text{h}} \left| \frac{1 \text{ h}}{3600 \text{ s}} \right| \left| \frac{1 \text{ kg}}{2.2046 \text{ lb}} \right| = 0.126 \frac{\text{kg}}{\text{s}} \leftarrow$$

$$(e) 29.392 \frac{\text{lbf}}{\text{in.}^2} \left| \frac{6894.8 \text{ Pa}}{1 \text{ lbf/in.}^2} \right| \left| \frac{1 \text{ N/m}^2}{1 \text{ Pa}} \right| \left| \frac{1 \text{ bar}}{10^5 \text{ N/m}^2} \right| = 2.027 \text{ bar} \leftarrow$$

$$(f) 2500 \frac{\text{ft}^3}{\text{min}} \left| \frac{0.028317 \text{ m}^3}{1 \text{ ft}^3} \right| \left| \frac{1 \text{ min}}{60 \text{ s}} \right| = 1.18 \frac{\text{m}^3}{\text{s}} \leftarrow$$

$$(g) 75 \frac{\text{mile}}{\text{h}} \left| \frac{1.6093 \text{ km/h}}{1 \text{ mile/h}} \right| = 120.7 \frac{\text{km}}{\text{h}} \leftarrow$$

$$(h) 1 \text{ ton} \left| \frac{2000 \text{ lbf}}{1 \text{ ton}} \right| \left| \frac{4.4482 \text{ N}}{1 \text{ lbf}} \right| = 8896 \text{ N} \leftarrow$$