

1.4 Perform the following unit conversions:

$$(a) 1 \text{ L} \left| \frac{0.0353 \text{ ft}^3}{1 \text{ L}} \right| \left| \frac{12 \text{ in.}}{1 \text{ ft}} \right|^3 = 61 \text{ in.}^3 \leftarrow$$

$$(b) 650 \text{ J} \left| \frac{1 \text{ kJ}}{10^3 \text{ J}} \right| \left| \frac{1 \text{ Btu}}{1.0551 \text{ kJ}} \right| = 0.616 \text{ Btu} \leftarrow$$

$$(c) 0.135 \text{ kW} \left| \frac{3413 \text{ Btu/h}}{1 \text{ kW}} \right| \left| \frac{1 \text{ h}}{3600 \text{ s}} \right| \left| \frac{778.17 \text{ ft} \cdot \text{lbf}}{1 \text{ Btu}} \right| = 99.596 \frac{\text{ft} \cdot \text{lbf}}{\text{s}} \leftarrow$$

$$(d) 378 \frac{\text{g}}{\text{s}} \left| \frac{1 \text{ kg}}{10^3 \text{ g}} \right| \left| \frac{1 \text{ lb}}{0.4536 \text{ kg}} \right| \left| \frac{60 \text{ s}}{1 \text{ min}} \right| = 50 \frac{\text{lb}}{\text{min}} \leftarrow$$

$$(e) 304 \text{ kPa} \left| \frac{1 \text{ lbf/in.}^2}{6894.8 \text{ Pa}} \right| \left| \frac{10^3 \text{ Pa}}{1 \text{ kPa}} \right| = 44.09 \frac{\text{lbf}}{\text{in.}^2} \leftarrow$$

$$(f) 55 \frac{\text{m}^3}{\text{h}} \left| \frac{3.2808 \text{ ft}}{1 \text{ m}} \right|^3 \left| \frac{1 \text{ h}}{3600 \text{ s}} \right| = 0.54 \frac{\text{ft}^3}{\text{s}} \leftarrow$$

$$(g) 50 \frac{\text{km}}{\text{h}} \left| \frac{10^3 \text{ m}}{1 \text{ km}} \right| \left| \frac{3.2808 \text{ ft}}{1 \text{ m}} \right| \left| \frac{1 \text{ h}}{3600 \text{ s}} \right| = 45.57 \frac{\text{ft}}{\text{s}} \leftarrow$$

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