

Chapter 1 Problem 23 †

Given

$$\text{coverage} = 350 \text{ ft}^2/\text{gal}$$

$$1 \text{ ft} = 0.3048 \text{ m}$$

$$1 \text{ L} = 10^{-3} \text{ m}^3$$

$$1 \text{ gal} = 3.785 \times 10^{-3} \text{ m}^3$$

Solution

Convert to m^2/L .

Apply the following conversions. First convert gallons to m^3 and then m^3 to L. Next convert ft^2 to m^2 .

$$350 \frac{\text{ft}^2}{\text{gal}} \left(\frac{1.000 \text{ gal}}{3.785 \times 10^{-3} \text{ m}^3} \right) \left(\frac{10^{-3} \text{ m}^3}{1.000 \text{ L}} \right) \left(\frac{0.3048 \text{ m}}{1.000 \text{ ft}} \right)^2$$

$$\text{coverage} = 8.59 \text{ m}^2/\text{L}$$

†Problem from Essential University Physics, Wolfson