

Exercise 85

Solve these problems about lumber dimensions.

- (a) To describe to a European how houses are constructed in the US, the dimensions of “two-by-four” lumber must be converted into metric units. The thickness \times width \times length dimensions are 1.50 in. \times 3.50 in. \times 8.00 ft in the US. What are the dimensions in cm \times cm \times m?
- (b) This lumber can be used as vertical studs, which are typically placed 16.0 in. apart. What is that distance in centimeters?

Solution

Part (a)

Use conversion factors to obtain the desired units.

$$\left(1.50 \cancel{\text{ in.}} \times \frac{2.54 \text{ cm}}{1 \cancel{\text{ in.}}}\right) \times \left(3.50 \cancel{\text{ in.}} \times \frac{2.54 \text{ cm}}{1 \cancel{\text{ in.}}}\right) \times \left(8.00 \cancel{\text{ ft}} \times \frac{1 \text{ m}}{3.28 \cancel{\text{ ft}}}\right) \approx 3.81 \text{ cm} \times 8.89 \text{ cm} \times 2.44 \text{ m}$$

Part (b)

Use conversion factors to obtain the desired units.

$$16.0 \cancel{\text{ in.}} \times \frac{2.54 \text{ cm}}{1 \cancel{\text{ in.}}} \approx 40.6 \text{ cm}$$