

Mathematics 172

Quiz 1

Name: Key

You must show your work to get full credit.

Liters and cubic feet are related by

$$1 \text{ L} = 0.0353 \text{ ft}^3, \quad 1 \text{ ft}^3 = 28.32 \text{ L}.$$

1. A tank of oil is leaking at a rate of $r = 0.24 \text{ L/sec}$. Write r in terms of ft^3/min .

$$\begin{aligned} r &= 0.24 \frac{\text{L}}{\text{sec}} \\ &= 0.24 \frac{0.0353 \text{ ft}^3}{\frac{\text{min}}{60}} \\ &= (0.24)(0.0353)(60) \frac{\text{ft}^3}{\text{min}} \\ &= 0.508 \text{ ft}^3/\text{min} \end{aligned}$$

$$r = \underline{0.508 \text{ ft}^3/\text{min}}$$

2. The acceleration due to gravity on the Earth is $g = 9.8 \text{ m/sec}^2$. Give g in the units cm/min^2 .

$$\begin{aligned} g &= 9.8 \frac{\text{m}}{\text{sec}^2} = 9.8 \frac{100 \text{ cm}}{\left(\frac{\text{min}}{60}\right)^2} \\ &= 9.8(100)(60)^2 \text{ cm/min}^2 \\ &= 3,528,000 \text{ cm/min}^2 \end{aligned}$$

$$g = \underline{3,538,000 \text{ cm/min}^2}$$