

**Problem 1-12**

Evaluate each of the following to three significant figures and express each answer in SI units using an appropriate prefix: (a)  $(684 \mu\text{m})/(43 \text{ ms})$ , (b)  $(28 \text{ ms})(0.0458 \text{ Mm})/(348 \text{ mg})$ , (c)  $(2.68 \text{ mm})(426 \text{ Mg})$ .

**Solution****Part (a)**

$$\frac{684 \cancel{\mu\text{m}}}{43 \cancel{\text{ms}}} \times \frac{1 \text{ m}}{10^6 \cancel{\mu\text{m}}} \times \frac{1000 \cancel{\text{ms}}}{1 \text{ s}} \approx 0.0159 \frac{\text{m}}{\text{s}} = 15.9 \frac{\text{mm}}{\text{s}}$$

**Part (b)**

$$\frac{(28 \cancel{\text{ms}})(0.0458 \cancel{\text{Mm}})}{348 \cancel{\text{mg}}} \times \frac{1 \text{ s}}{1000 \cancel{\text{ms}}} \times \frac{10^6 \text{ m}}{1 \cancel{\text{Mm}}} \times \frac{1000 \cancel{\text{mg}}}{1 \text{ g}} \times \frac{1000 \text{ g}}{1 \text{ kg}} \approx 3.69 \times 10^6 \frac{\text{s} \cdot \text{m}}{\text{kg}}$$

**Part (c)**

$$(2.68 \cancel{\text{mm}})(426 \cancel{\text{Mg}}) \times \frac{1 \text{ m}}{1000 \cancel{\text{mm}}} \times \frac{10^6 \cancel{\text{g}}}{1 \cancel{\text{Mg}}} \times \frac{1 \text{ kg}}{1000 \cancel{\text{g}}} \approx 1.14 \times 10^3 \text{ m} \cdot \text{kg}$$