Problem 1-3

Represent each of the following combinations of units in the correct SI form: (a) Mg/ms, (b) N/mm, and (c) mN/(kg $\cdot$ μs).

Solution

Part (a)

$$\frac{1\ \cancel{\text{Mg}}}{1\ \cancel{\text{ms}}} \times \frac{10^6\ \cancel{\text{g}}}{1\ \cancel{\text{Mg}}} \times \frac{1\ \text{kg}}{1000\ \cancel{\text{g}}} \times \frac{1000\ \cancel{\text{ms}}}{1\ \text{s}} = 10^6\ \frac{\text{kg}}{\text{s}}$$

Part (b)

$$\frac{1\ \text{N}}{1\ \cancel{\text{mm}}} \times \frac{1000\ \cancel{\text{mm}}}{1\ \text{m}} = 1000\ \frac{\text{N}}{\text{m}}$$

Part (c)

$$\frac{1\ \cancel{\text{mN}}}{1\ \text{kg} \cdot \cancel{\mu\text{s}}} \times \frac{1\ \text{N}}{1000\ \cancel{\text{mN}}} \times \frac{10^6\ \cancel{\mu\text{s}}}{1\ \text{s}} = 1000\ \frac{\text{N}}{\text{kg} \cdot \text{s}}$$