

Problem 1-8

Represent each of the following combinations of units in the correct SI form using an appropriate prefix: (a) Mg/mm, (b) mN/ μ s, (c) μ m \cdot Mg.

Solution

Part (a)

$$\frac{1 \cancel{\text{Mg}}}{1 \cancel{\text{mm}}} \times \frac{10^6 \cancel{\text{g}}}{1 \cancel{\text{Mg}}} \times \frac{1 \text{ kg}}{1000 \cancel{\text{g}}} \times \frac{1000 \cancel{\text{mm}}}{1 \text{ m}} = 10^6 \frac{\text{kg}}{\text{m}} = 1 \frac{\text{Gg}}{\text{m}}$$

Part (b)

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

Part (c)

$$1 \cancel{\mu\text{m}} \cdot \cancel{\text{Mg}} \times \frac{1 \text{ m}}{10^6 \cancel{\mu\text{m}}} \times \frac{10^6 \cancel{\text{g}}}{1 \cancel{\text{Mg}}} \times \frac{1 \text{ kg}}{1000 \cancel{\text{g}}} = 0.001 \text{ m} \cdot \text{kg}$$