

Problem 1-14

Evaluate each of the following to three significant figures and express each answer in SI units using an appropriate prefix: (a) $(212 \text{ mN})^2$, (b) $(52\,800 \text{ ms})^2$, and (c) $[548(10^6)]^{1/2} \text{ ms}$.

Solution

Part (a)

$$(212 \text{ mN})^2 = 212^2 \text{ mN}^2 = 44\,944 \text{ mN}^2 \times \left(\frac{1 \text{ N}}{1000 \text{ mN}}\right)^2 \approx 0.0449 \text{ N}^2$$

Part (b)

$$(52\,800 \text{ ms})^2 = 52\,800^2 \text{ ms}^2 \times \left(\frac{1 \text{ s}}{1000 \text{ ms}}\right)^2 \approx 2.79 \times 10^3 \text{ s}^2$$

Part (c)

$$[548(10^6)]^{1/2} \text{ ms} = (548)^{1/2}(10^6)^{1/2} \text{ ms} = (548)^{1/2}10^3 \text{ ms} \times \frac{1 \text{ s}}{1000 \text{ ms}} = (548)^{1/2} \text{ s} \approx 23.4 \text{ s}$$