

## Problem 25

The following times are given in seconds. Use metric prefixes to rewrite them so the numerical value is greater than one but less than 1000. For example,  $7.9 \times 10^{-2}$  s could be written as either 7.9 cs or 79 ms. (a)  $9.57 \times 10^5$  s; (b) 0.045 s; (c)  $5.5 \times 10^{-7}$  s; (d)  $3.16 \times 10^7$  s.

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### Solution

The prefixes and their meanings are listed in Figure 1.2 on page 17.

$$9.57 \times 10^5 \cancel{\text{s}} \times \frac{1 \text{ ks}}{1000 \cancel{\text{s}}} = 9.57 \times 10^2 \text{ ks} = 957 \text{ ks}$$

$$0.045 \cancel{\text{s}} \times \frac{1000 \text{ ms}}{1 \cancel{\text{s}}} = 45 \text{ ms}$$

$$5.5 \times 10^{-7} \cancel{\text{s}} \times \frac{10^9 \text{ ns}}{1 \cancel{\text{s}}} = 5.5 \times 10^2 \text{ ns} = 550 \text{ ns}$$

$$3.16 \times 10^7 \cancel{\text{s}} \times \frac{1 \text{ Ms}}{10^6 \cancel{\text{s}}} = 3.16 \times 10^1 \text{ Ms} = 31.6 \text{ Ms}$$