Chapter 1

Problems & Exercises

1.

(a) 27.8 m/s

(b) 62.1 mph

3.

$\frac{1.0 \text{ m}}{s} = \frac{1.0 \text{ m}}{s} \times \frac{3600 \text{ s}}{1 \text{ hr}} \times \frac{1 \ km}{1000 \text{ m}}$

= 3.6 km/h.

5.

length: 377 ft; 4.53×10^3 in. width: 280 ft; 3.3×10^3 in.

7.

8.847 km

9.

(a) 1.3×10^{-9} m

(b) 40 km/My

11.

2 kg

13.

(a) 85.5 to 94.5 km/h

(b) 53.1 to 58.7 mi/h

15.

(a) 7.6×10^7 beats

(b) 7.57×10^7 beats

(c) 7.57×10^7 beats

17.

(a) 3

(b) 3

(c) 3

19.

(a) 2.2%

(b) 59 to 61 km/h

21.

80 ± 3 beats/min

23.

2.8 h

25.

11 ± 1 cm^3

27.

12.06 ± 0.04 m^2

29.

Sample answer: 2×10^9 heartbeats

31.

Sample answer: 2×10^{31} if an average human lifetime is taken to be about 70 years.

33.

Sample answer: 50 atoms

35.

Sample answers:

(a) 10^{12} cells/hummingbird

(b) 10^{16} cells/human