CHAPTER 1

Practice A, p. 15

1. 5×10^{-5} m

3. **a.** 1×10^{-8} m
b. 1×10^{-5} mm
c. 1×10^{-2} μm

5. 1.440×10^{3} kg

1 Review, pp. 27–31

11. **a.** 2×10^{2} mm
b. 7.8×10^{3} s
c. 1.6×10^{7} μg
d. 7.5×10^{4} cm
e. 6.75×10^{-4} g
f. 4.62×10^{-2} cm
g. 9.7 m/s

13. 1.08×10^{9} km

19. **a.** 3
b. 4
c. 3
d. 2

21. 228.8 cm

23. b, c

29. 4×10^{8} breaths

31. 5.4×10^{8} s

33. 2×10^{3} balls

35. 7×10^{2} tuners

37. **a.** 22 cm; 38 cm^2
b. 29.2 cm; 67.9 cm^2

39. 9.818×10^{-2} m

41. The ark (6×10^{4} m^3) was about 100 times as large as a typical house (6×10^{2} m^3).

43. 1.0×10^{3} kg

45. **a.** 0.618 g/cm^3
b. 4.57×10^{16} m^2

CHAPTER 2

Practice A, p. 44

1. 2.0 km to the east

3. 680 m to the north

5. 0.43 h

Practice B, p. 49

1. 2.2 s

3. 5.4 s

5. **a.** 1.4 m/s
b. 3.1 m/s

Practice C, p. 53

1. 21 m

3. 9.1 s

Practice D, p. 55

1. 9.8 m/s; 29 m

3. −7.5 m/s; 19 m

Practice E, p. 58

1. +2.51 m/s

3. **a.** 16 m/s
b. 7.0 s

5. +2.3 m/s^2

Practice F, p. 64

1. **a.** −42 m/s
b. 11 s

3. **a.** 8.0 m/s
b. 1.63 s

2 Review, pp. 68–73

1. 5.0 m; +5.0 m

3. t_1: negative; t_2: positive; t_3: positive; t_4: negative; t_5: zero

7. 10.1 km to the east

9. **a.** +70.0 m
b. +140.0 m
c. +14 m/s
d. +28 m/s

11. 0.2 km west of the flagpole

17. 0.0 m/s^2; +1.36 m/s^2; +0.680 m/s^2

19. 110 m

21. **a.** −15 m/s
b. −38 m

23. 17.5 m

25. 0.99 m/s

31. 3.94 s

33. 1.51 h

35. **a.** 2.00 min
b. 1.00 min
c. 2.00 min

37. 931 m

39. −26 m/s; 31 m

41. 1.6 s

43. 5 s; 85 s; +60 m/s

45. -1.5×10^{3} m/s^2

47. **a.** 3.40 s
b. −9.2 m/s
c. −31.4 m/s; −33 m/s

49. **a.** 4.6 s after stock car starts
b. 38 m
c. +17 m/s (stock car), +21 m/s (race car)

51. 4.44 m/s

CHAPTER 3

Practice A, p. 89

1. **a.** 23 km
b. 17 km to the east

3. 15.7 m at 22° to the side of downfield

Practice B, p. 92

1. 95 km/h

3. 21 m/s, 5.7 m/s

Practice C, p. 94

1. 49 m at 7.3° to the right of downfield

3. 13.0 m at 57° north of east

Practice D, p. 99

1. 0.66 m/s

3. 7.6 m/s

Practice E, p. 101

1. yes, $\Delta y = -2.3$ m

3. 2.0 s; 4.8 m