

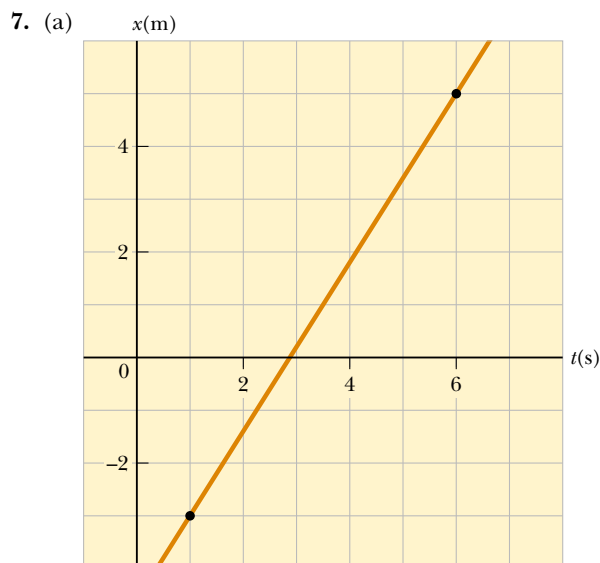
Answers to Odd-Numbered Problems

Chapter 1

1. $2.15 \times 10^4 \text{ kg/m}^3$
3. 184 g
5. (a) 7.10 cm^3 (b) $1.18 \times 10^{-29} \text{ m}^3$ (c) 0.228 nm
(d) 12.7 cm^3 , $2.11 \times 10^{-29} \text{ m}^3$, 0.277 nm
7. (a) $4.00 \text{ u} = 6.64 \times 10^{-24} \text{ g}$ (b) $55.9 \text{ u} = 9.29 \times 10^{-23} \text{ g}$ (c) $207 \text{ u} = 3.44 \times 10^{-22} \text{ g}$
9. (a) $9.83 \times 10^{-16} \text{ g}$ (b) $1.06 \times 10^7 \text{ atoms}$
11. (a) $4.01 \times 10^{25} \text{ molecules}$ (b) $3.65 \times 10^4 \text{ molecules}$
13. no
15. (b) only
17. $0.579t \text{ ft}^3/\text{s} + 1.19 \times 10^{-9}t^2 \text{ ft}^3/\text{s}^2$
19. $1.39 \times 10^3 \text{ m}^2$
21. (a) 0.071 4 gal/s (b) $2.70 \times 10^{-4} \text{ m}^3/\text{s}$ (c) 1.03 h
23. $4.05 \times 10^3 \text{ m}^2$
25. $11.4 \times 10^3 \text{ kg/m}^3$
27. $1.19 \times 10^{57} \text{ atoms}$
29. (a) 190 y (b) $2.32 \times 10^4 \text{ times}$
31. $151 \mu\text{m}$
33. $1.00 \times 10^{10} \text{ lb}$
35. $3.08 \times 10^4 \text{ m}^3$
37. 5.0 m
39. 2.86 cm
41. $\sim 10^6 \text{ balls}$
43. $\sim 10^7 \text{ or } 10^8 \text{ rev}$
45. $\sim 10^7 \text{ or } 10^8 \text{ blades}$
47. $\sim 10^2 \text{ kg}$; $\sim 10^3 \text{ kg}$
49. $\sim 10^2 \text{ tuners}$
51. (a) $(346 \pm 13) \text{ m}^2$ (b) $(66.0 \pm 1.3) \text{ m}$
53. $(1.61 \pm 0.17) \times 10^3 \text{ kg/m}^3$
55. 115.9 m
57. 316 m
59. 4.50 m^2
61. 3.41 m
63. 0.449%
65. (a) 0.529 cm/s (b) 11.5 cm/s
67. $1 \times 10^{10} \text{ gal/yr}$
69. $\sim 10^{11} \text{ stars}$

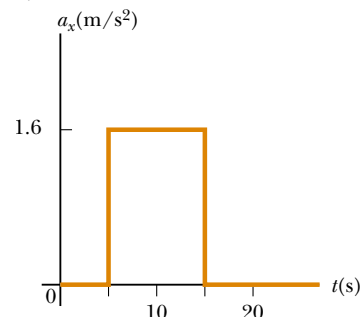
Chapter 2

1. (a) 2.30 m/s (b) 16.1 m/s (c) 11.5 m/s
3. (a) 5 m/s (b) 1.2 m/s (c) -2.5 m/s (d) -3.3 m/s
(e) 0
5. (a) 3.75 m/s (b) 0



(b) 1.60 m/s

9. (a) -2.4 m/s (b) -3.8 m/s (c) 4.0 s
11. (a) 5.0 m/s (b) -2.5 m/s (c) 0 (d) 5.0 m/s
13. $1.34 \times 10^4 \text{ m/s}^2$
15. (a)



(b) 1.6 m/s^2 and 0.80 m/s^2

17. (a) 2.00 m (b) -3.00 m/s (c) -2.00 m/s²
19. (a) 1.3 m/s^2 (b) 2.0 m/s^2 at 3 s (c) at $t = 6 \text{ s}$ and for $t > 10 \text{ s}$ (d) -1.5 m/s^2 at 8 s
21. $2.74 \times 10^5 \text{ m/s}^2$, which is $2.79 \times 10^4 g$
23. (a) 6.61 m/s (b) -0.448 m/s²
25. -16.0 cm/s²
27. (a) 2.56 m (b) -3.00 m/s
29. (a) 8.94 s (b) 89.4 m/s
31. (a) 20.0 s (b) no
33. $x_f - x_i = v_{xf}t - a_x t^2/2$; $v_{xf} = 3.10 \text{ m/s}$