Chapter 28 Even Answers

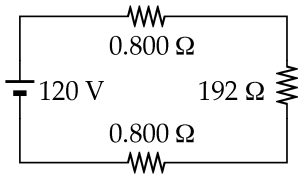
2. (a) 1.79 A (b) 10.4 V

4. (a) 12.4 V (b) 9.65 V

6. (a) 17.1 Ω

(b) 1.99 A for 4.00 Ω and 9.00 Ω, 1.17 A for 7.00 Ω, 0.818 A for 10.0 Ω

8. 73.8 W,



10. 29.5 V

12. 7 series combinations: 2.00 Ω, 3.00 Ω, 4.00 Ω, 5.00 Ω, 6.00 Ω, 7.00 Ω, and 9.00 Ω
4 parallel combinations: 0.923 Ω, 1.20 Ω, 1.33 Ω, 1.71 Ω
6 mixed combinations: 1.56 Ω, 2.00 Ω, 2.22 Ω, 3.71 Ω, 4.33 Ω, and 5.20 Ω

14. 1.41 Ω

16. 470 Ω, 220 Ω

18. 0.714 A, 1.29 A, 12.6 V

22. (a) 0.385 mA, 3.08 mA, 2.69 mA (b) *c* is higher by 69.2 V

24. 1.00 A upward in 200 Ω, 4.00 A upward in 70.0 Ω, 3.00 A upward in 80.0 Ω, 8.00 A downward in 20.0 Ω, 200 V across 200 Ω.

28. 800 W, 450 W, 25.0 W, 25.0 W

30. (a) –61.6 mA (b) 0.235 μC (c) 1.96 A

32. (a) 1.50 s (b) 1.00 s (c) $\left(200 + 100e^{-t/1.00\ \text{s}}\right)\mu\text{A}$

34. (a) 12.0 s (b) $I(t) = (3.00\ \mu\text{A})e^{-t/12.0\ \text{s}}$, $q(t) = (36.0\ \mu\text{C})\left[1 - e^{-t/12.0\ \text{s}}\right]$

36. $R = \dfrac{t}{C \ln 2}$

38. 0.113 Ω

40. 49.9 kΩ

42. 400 Ω

46. (a) 30.000 mA, 5.4000 V (b) 30.167 mA, 5.3816 V (c) 29.898 mA, 5.3966 V

48. (a) 0.101 W (b) 10.1 W

50. (a) ~10^{-14} A (b) $\sim\frac{1}{2}V_h + 10^{-10}$ V and $\frac{1}{2}V_h - 10^{-10}$ V
where V_h is the potential of the "hot" wire.

52. (a) 3.84 Ω and 0.375 Ω (b) Impossible, no load resistance can extract 21.2 W from this battery.

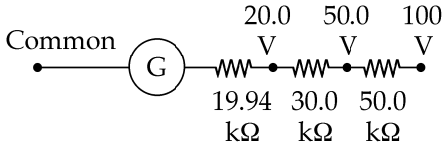
54. 587 kΩ

56. $\dfrac{P_s + \sqrt{P_s^2 - 4P_sP_p}}{2I^2}$ and $\dfrac{P_s - \sqrt{P_s^2 - 4P_sP_p}}{2I^2}$

58. (a) 4.40 Ω (b) 32.0 W, 9.60 W, 70.4 W (c) 48.0 W

62. $(R_A + 2R_B)C \ln 2$

64. Place the galvanometer in series with three resistances as shown:



66. 145 Ω, 0.756 mA

68. (a) $\ln\left(\dfrac{\mathcal{E}}{\Delta V}\right) = 0.0118t + 0.0882$ (b) 84.7 s, 8.47 μF

70. (a) $R_x = R_2 - \frac{1}{4}R_1$ (b) The antenna is inadequately grounded; $R_x = 2.75\ \Omega$

72. $q_1 = (240\ \mu\text{C})\left(1 - e^{-1000t/6}\right)$, $q_2 = (360\ \mu\text{C})\left(1 - e^{-1000t/6}\right)$