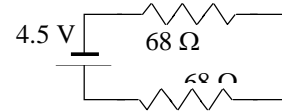


Here are a series of questions taken from the Cutnell & Johnson test bank. These are offered for practice purposes only. I will not grade your results and I do not want you to spend too much time on these. You should be able to do all of them, but some are quite difficult. I will be happy to discuss any difficulties you have with these problems, however.

--J.G.

- 37. A 4.5-V battery is connected to two resistors connected in series as shown in the drawing. Determine the total power dissipated in the resistors.
- (a) 0.033 W (d) 0.60 W
 (b) 0.090 W (e) 4.7 W
 (c) 0.15 W

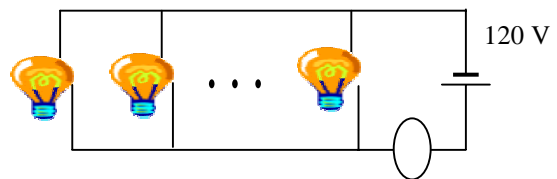


- 38. Two 15-Ω and three 25-Ω light bulbs and a 24 V battery are connected in a series circuit. What is the current that passes through each bulb?
- (a) 0.23 A
 (b) 0.51 A
 (c) 0.96 A
 (d) 1.6 A
 (e) The current will be 1.6 A in the 15-Ω bulbs and 0.96 A in the 25-Ω bulbs.

Section 20.7 Parallel Wiring

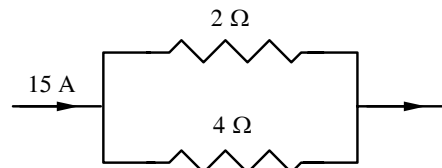
- 39. Complete the following statement: A simple series circuit contains a resistance R and an ideal battery. If a second resistor is connected in parallel with R ,
- (a) the voltage across R will decrease.
 (b) the current through R will decrease.
 (c) the total current through the battery will increase.
 (d) the rate of energy dissipation in R will increase.
 (e) the equivalent resistance of the circuit will increase.

- 40. Some light bulbs are connected in parallel to a 120 V source as shown in the figure. Each bulb dissipates an average power of 60 W. The circuit has a fuse F that burns out when the current in the circuit exceeds 9 A. Determine the largest number of bulbs, which can be used in this circuit without burning out the fuse.
- (a) 9 (c) 25
 (b) 17 (d) 34



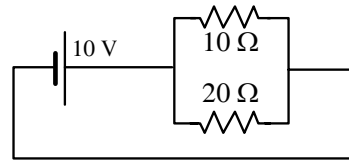
(e) 36

- 41. Two resistors are arranged in a circuit that carries a total current of 15 A as shown in the figure. Which one of the entries in the following table is correct?



	Current through 2-Ω resistor	Voltage across 4-Ω resistor
(a)	5 A	10 V
(b)	5 A	20 V
(c)	10 A	20 V
(d)	15 A	15 V
(e)	10 A	10 V

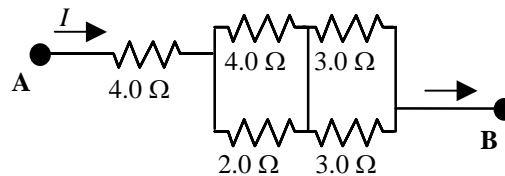
42. What is the total power dissipated in the two resistors in the circuit shown?
- (a) 10 W
 (b) 15 W
 (c) 33 W
 (d) 67 W
 (e) 670 W



43. Three resistors, 6.0-Ω, 9.0-Ω, 15-Ω, are connected in parallel in a circuit. What is the equivalent resistance of this combination of resistors?
- (a) 30 Ω
 (b) 10 Ω
 (c) 3.8 Ω
 (d) 2.9 Ω
 (e) 0.34 Ω

Section 20.8 Circuits Wired Partially in Series and Partially in Parallel

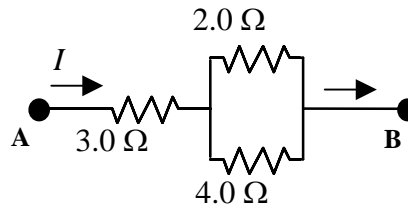
44. Five resistors are connected as shown. What is the equivalent resistance between points A and B?
- (a) 6.8 Ω
 (b) 9.2 Ω
 (c) 3.4 Ω
 (d) 2.1 Ω
 (e) 16 Ω



45. Jason's circuit has a 24-Ω resistor that is connected in series to two 12-Ω resistors that are connected in parallel. JoAnna's circuit has three identical resistors wired in parallel. If the equivalent resistance of Jason's circuit is the same as that of JoAnna's circuit, determine the value of JoAnna's resistors.
- (a) 90 Ω
 (b) 48 Ω
 (c) 30 Ω
 (d) 24 Ω
 (e) 12 Ω

Questions 46 through 48 pertain to the statement and diagram below:

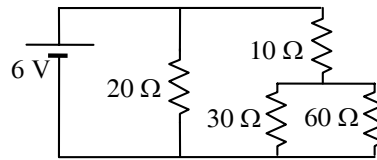
Three resistors are connected as shown in the figure. The potential difference between points A and B is 26 V.



46. What is the equivalent resistance between the points A and B?
- (a) 3.8 Ω
 (b) 4.3 Ω
 (c) 5.1 Ω
 (d) 6.8 Ω
 (e) 9.0 Ω
47. How much current flows through the 3-Ω resistor?
- (a) 2.0 A
 (b) 4.0 A
 (c) 6.0 A
 (d) 8.7 A
 (e) 10.0 A
48. How much current flows through the 2-Ω resistor?
- (a) 2.0 A
 (b) 4.0 A
 (c) 6.0 A
 (d) 8.7 A
 (e) 10.0 A

Questions 49 through 51 pertain to the statement and diagram below:

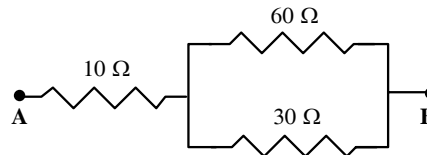
Four resistors and a 6-V battery are arranged as shown in the circuit diagram.



49. Determine the equivalent resistance for this circuit.
- (a) $50\ \Omega$ (b) $120\ \Omega$ (c) $29\ \Omega$ (d) $5\ \Omega$ (e) $12\ \Omega$
50. The smallest current passes through which resistor(s)?
- (a) the $10\text{-}\Omega$ resistor (b) the $20\text{-}\Omega$ resistor (c) the $30\text{-}\Omega$ resistor (d) the $60\text{-}\Omega$ resistor (e) It is the same and the smallest in the $30\text{-}\Omega$ and $60\text{-}\Omega$ resistors.
51. The largest potential difference is across which resistor(s)?
- (a) the $10\text{-}\Omega$ resistor (b) the $20\text{-}\Omega$ resistor (c) the $30\text{-}\Omega$ resistor (d) the $60\text{-}\Omega$ resistor (e) It is the same and the largest for the $30\text{-}\Omega$ and $60\text{-}\Omega$ resistors.

Questions 52 through 55 pertain to the statement and diagram below:

Three resistors are placed in a circuit as shown. The potential difference between points A and B is 30 V.



52. What is the equivalent resistance between the points A and B?
- (a) $10\ \Omega$ (b) $20\ \Omega$ (c) $30\ \Omega$ (d) $50\ \Omega$ (e) $100\ \Omega$
53. What is the potential drop across the $10\text{-}\Omega$ resistor?
- (a) $10\ \text{V}$ (b) $20\ \text{V}$ (c) $30\ \text{V}$ (d) $60\ \text{V}$ (e) $100\ \text{V}$
54. What is the potential drop across the $30\text{-}\Omega$ resistor?
- (a) $10\ \text{V}$ (b) $20\ \text{V}$ (c) $30\ \text{V}$ (d) $60\ \text{V}$ (e) $100\ \text{V}$
55. What is the current through the $30\text{-}\Omega$ resistor?
- (a) $0.3\ \text{A}$ (b) $0.5\ \text{A}$ (c) $0.7\ \text{A}$ (d) $1\ \text{A}$ (e) $2\ \text{A}$

- 71. What amount of energy is dissipated in the $2.7\text{-}\Omega$ resistor in 9.0 seconds?
- (a) 15 J (c) 29 J (e) 52 J
(b) 24 J (d) 36 J