

## Questions from end of chapter 1

- In the number 8042:
  - What digit occupies the hundreds position?
  - What digit occupies the ones position?
  - What weight does the 8 have?
  - How many tens are there?
- In the number 67,403:
  - What digit occupies the thousands position?
  - What digit occupies the tens position?
  - What weight does the 7 have?
  - How many hundreds are there?
- In the number 894,307:
  - What digit occupies the hundreds position?
  - What digit occupies the ten-thousands position?
  - What weight does the 8 have?
  - How many thousands are there?
- The display readout on a piece of test equipment shows the number 497 and the display multiplier knob is set to  $\times 100$ . What value does the 9 represent?
- In the number 2074:
  - What digit occupies the hundreds position?
  - What digit occupies the ones position?
  - What weight does the 4 have?
  - How many tens are there?
- In the number 75,403:
  - What digit occupies the thousands position?
  - What digit occupies the tens position?
  - What weight does the 5 have?
  - How many hundreds are there?
- In the number 190,348:
  - What digit occupies the hundreds position?
  - What digit occupies the ten-thousands position?
  - What weight does the 4 have?
  - How many thousands are there?
- The display readout on a piece of test equipment shows the number 2561 and the display multiplier knob is set to  $\times 100$ . What value does the 5 represent?

### END OF CHAPTER PROBLEMS 1-2

- Convert the following fractions to decimal numbers:
  - $\frac{3}{10}$
  - $\frac{16}{1000}$
  - $\frac{278}{100,000}$
  - $\frac{1763}{10,000}$
  - $\frac{435}{1000}$
  - $\frac{2060}{10,000}$
- Write the following numbers as decimal fractions:
  - 0.007
  - 0.0432
  - 0.174
  - 0.000065
  - 0.00016
  - 0.01234
- Write each of the following first as a decimal fraction and then as a decimal number:
  - 17 thousandths
  - 4 hundredths
  - 460 ten-thousandths
  - 27 millionths
  - 1780 hundred-thousandths
  - 65 thousandths
- In the number 0.001642, in which place does the
  - 1 appear?
  - 2 appear?
  - 6 appear?
- In the number 0.508743, in which place does the
  - 7 appear?
  - 3 appear?
  - 0 appear?
- Write the names of the following:
  - 0.006
  - 0.147
  - 0.00092
- The display readout on a piece of test equipment shows the number 27 and the display multiplier knob is set to HUNDREDTHS. You must record the reading in a test report log as a decimal number. What number would you record?
- You need to reset a machine in the shop. The machine must be set to remove 43 thousandths of an inch from a work piece and you must record the new setting in the machine log book as a fractional number. What number do you enter?
- Convert the following fractions to decimal numbers:
  - $\frac{36}{1000}$
  - $\frac{9}{10,000}$
  - $\frac{289}{1000}$
  - $\frac{83}{100,000}$
  - $\frac{27}{100}$
  - $\frac{980}{10,000}$
- Write the following numbers as decimal fractions:
  - 0.00273
  - 0.0906
  - 0.00005
  - 0.067
  - 0.417
  - 0.000813
- Write each of the following first as a decimal fraction and then as a decimal number:
  - 6 tenths
  - 83 hundred-thousandths
  - 48 thousandths
  - 230 millionths
  - 73 hundredths
  - 895 ten-thousandths
- In the number 0.000867, in which place does the
  - 7 appear?
  - 6 appear?
  - 8 appear?
- In the number 0.40257, in which place does the
  - 4 appear?
  - 0 appear?
  - 5 appear?
- Write the names of the following:
  - 0.175
  - 0.00065
  - 0.00463
- The display readout on a piece of test equipment shows the number 304 and the display multiplier knob is set to TEN-THOUSANDTHS. You must record the reading in a test report log as a decimal number. What number would you record?
- You need to reset a machine in the shop. The machine must be set to remove 273 hundred-thousandths of an inch from a work piece and you must record the new setting in the machine log book as a fractional number. What number do you enter?



## END OF CHAPTER PROBLEMS 1-3

- Convert each of the following decimal numbers to mixed numbers:  
 (a) 7.14 (b) 50.02 (c) 710.143  
 (d) 9.099 (e) 73.653 (f) 207.7834  
 (g) 28.00736 (h) 8.0706
- Convert each of the mixed numbers to decimal numbers:  
 (a)  $5\frac{68}{100}$  (b)  $25\frac{7}{1000}$   
 (c)  $7\frac{165}{10,000}$  (d)  $70\frac{4}{10}$   
 (e)  $473\frac{25}{1000}$  (f)  $80\frac{743}{100,000}$   
 (g)  $2475\frac{35}{1,000,000}$  (h)  $307\frac{8}{100,000}$
- Express the following numbers as decimal numbers, and mixed numbers:  
 (a) Ninety-three and seven-tenths  
 (b) Thirty and four-hundredths  
 (c) Eleven and one ten-thousandth  
 (d) Nine hundred five and fifty-two thousandths  
 (e) Seventy-eight and thirty-four thousandths
- Express the following numbers as decimal numbers, and mixed numbers:  
 (a) Two hundred seventy-three and twenty-five hundred-thousandths  
 (b) Seven hundred four and seven hundred four millionths  
 (c) Two thousand forty-four and five hundred four ten-thousandths  
 (d) Ten thousand one hundred one and eighty-nine hundred-thousandths  
 (e) Ninety and four hundred sixty-six ten-thousandths  
 (f) Two hundred seven and one hundred ten-millionths
- You are instructed to take two current measurements with an ammeter and record the sum of the two measurements as a decimal number in a test log. The first measurement is 4 and the second measurement is 79 thousandths. What number would you record?
- Convert each of the following decimal numbers to mixed numbers:  
 (a) 3.07 (b) 38.4 (c) 17.002  
 (d) 170.506 (e) 48.6043 (f) 20.003  
 (g) 706.2007 (h) 7.40300
- Convert each of the following mixed numbers to decimal numbers:  
 (a)  $4\frac{27}{1000}$  (b)  $275\frac{7}{100}$   
 (c)  $73\frac{4}{10}$  (d)  $780\frac{400}{1000}$   
 (e)  $7\frac{73}{100,000}$  (f)  $107\frac{703}{1,000,000}$   
 (g)  $76\frac{14}{100}$  (h)  $45\frac{406}{10,000}$
- Express the following numbers as decimal numbers and mixed numbers:  
 (a) Fourteen and seventeen hundredths  
 (b) Seventy and twenty-five thousandths  
 (c) Six and seven tenths  
 (d) Forty-six and four thousandths  
 (e) Four hundred eight and three hundredths
- Express the following numbers as decimal numbers and mixed numbers:  
 (a) Three hundred seven and eight hundred four hundred-thousandths  
 (b) Four and thirty ten-thousandths  
 (c) Four hundred fifty-two and seventy-two millionths  
 (d) Ninety-four and seventy-three ten-thousandths  
 (e) Eight and three thousand four hundred nine millionths  
 (f) Seven hundred two and fourteen ten-thousandths
- You are instructed to take two current measurements with an ammeter and record the sum of the two measurements as a decimal number in a test log. The first measurement is 6 and 3 tenths and the second measurement is 53 hundredths. What number would you record?

## END OF CHAPTER PROBLEMS 1-4

Round the following numbers to the nearest ten:

- |        |         |
|--------|---------|
| 1. 17  | 2. 28   |
| 3. 45  | 4. 12   |
| 5. 64  | 6. 86   |
| 7. 127 | 8. 465  |
| 9. 874 | 10. 713 |

Round the following numbers to the nearest ten and hundred:

- |          |          |
|----------|----------|
| 11. 273  | 12. 904  |
| 13. 356  | 14. 277  |
| 15. 1377 | 16. 7046 |
| 17. 1407 | 18. 1406 |
| 19. 8706 | 20. 7855 |

Round the following numbers to the nearest ten, hundred, and thousand:

21. 4817
23. 85,468
25. 78,673
27. 27,847
29. 35,486
31. 68,448
33. 73,654
35. Round 465,432 to the nearest ten-thousand.
37. You are asked to sort resistors by measuring them with an ohmmeter, rounding the measured value to the nearest hundred, and then placing them in bins marked in increments of 100 ohms. The first resistor measures 2485 ohms. Into what bin would you place this resistor?
22. 9616
24. 44,066
26. 28,445
28. 30,073
30. 98,789
32. 26,755
34. 18,506
36. Round 498,475 to the nearest ten-thousand.
38. You are asked to sort resistors by measuring them with an ohmmeter, rounding the measured value to the nearest hundred, and then placing them in bins marked in increments of 100 ohms. The first resistor measures 17,862 ohms. Into what bin would you place this resistor?

### END OF CHAPTER PROBLEMS 1-5

Round the following numbers to the nearest hundredth, tenth, one, and ten:

1. 163.782
3. 9.464
5. 88.888
7. 749.493
9. 39.278
11. 63.7478
13. 478.6706
15. 47.474
17. 16.545
19. Your lead technician asks you to measure the voltage output of a power supply and record its value rounded to the nearest tenth volt. The voltmeter indicates that the output voltage is 73.82 volts. What value would you record?
21. In working on your taxes, your instructions are to round all numbers to the nearest ten. The numbers are 5355, 10,248, and 15,544. What are the rounded numbers?
2. 243.647
4. 8.746
6. 44.545
8. 915.605
10. 83.655
12. 12.4507
14. 307.3525
16. 27.047
18. 33.554
20. Your lead technician asks you to measure the voltage output of a power supply and record its value rounded to the nearest hundredth volt. The voltmeter indicates that the output voltage is 82.726 volts. What value would record?
22. Round the number 65.162 to the nearest tenth and the nearest ten.

### END OF CHAPTER PROBLEMS 1-6

1. How many significant digits are in the following numbers?
  - (a) 70,940 (b) 0.04320
  - (c) 300.0 (d) 9007
  - (e) 0.000275 (f) 0.05090
3. In the number 8042:
  - (a) What is the MSD?
  - (b) What is the LSD?
5. In the number 67,403:
  - (a) What is the MSD?
  - (b) What is the LSD?
7. In the number 894,307:
  - (a) What is the MSD?
  - (b) What is the LSD?
2. How many significant digits are in the following numbers?
  - (a) 0.05043 (b) 670.0
  - (c) 0.000740 (d) 50,304
  - (e) 7040 (f) 0.007040
4. In the number 2074:
  - (a) What is the MSD?
  - (b) What is the LSD?
6. In the number 75,403:
  - (a) What is the MSD?
  - (b) What is the LSD?
8. In the number 190,348:
  - (a) What is the MSD?
  - (b) What is the LSD?



9. You are testing the output of a pseudo-random number generator. You must record just the most significant digit and the least significant digit. The first output is 29505. What numbers do you record?

10. You are testing the output of a pseudo-random number generator. You must record just the most significant digit and the least significant digit. The first output is 9014563. What numbers do you record?

### END OF CHAPTER PROBLEMS 1-7

Perform the indicated operations:

1.  $12 - (+4) + (-3)$
3.  $16 + 4 + (-6)$
5.  $-20 - (-4) - (-10)$
7.  $30 + (-3) + 7$
9.  $-10 - (+4) + (-14)$
11.  $7 - (-7) - (+7)$
13.  $-5 - (-3) - (+12)$
15.  $14 + (-3) - (-7)$
17.  $9 - (-4) - (-8)$
19. Add the following numbers: 27, -14, 6, and -9.
21. When troubleshooting a circuit you calculate the following node currents: 6 amps, -4 amps, -2 amps, and 3 amps. What is the sum of the calculated node currents?

2.  $-3 - (+6) - (-2)$
4.  $-12 - (-6) - (+8)$
6.  $-20 - (-8) - (+12)$
8.  $40 + (-17) + 13$
10.  $-16 - (+9) + (-18)$
12.  $14 + (-5) - (+7)$
14.  $-8 - (-10) - (+16)$
16.  $30 + (-11) - (-8)$
18.  $7 - (-14) - (-12)$
20. Add the following numbers: 45, -14, -22, and 17.
22. When troubleshooting a circuit you calculate the following node currents: 2 amps, 5 amps, -6 amps, and -8 amp. What is the sum of the calculated node currents?

### END OF CHAPTER PROBLEMS 1-8

Perform the indicated operations:

1.  $14 \times (-3)$
3.  $-9 \times (-6)$
5.  $-12 \times 7$
7.  $-45 \times (-5)$
9.  $-310 \times (-3)$
11.  $28 \div (-4)$
13.  $-144 \div 6$
15.  $-72 \div (-6)$
17.  $512 \div (-16)$
19. What is the product of 27 and 14?
21. What is the quotient when 840 is divided by 20?
23. Find the product of 63 and 12 to the nearest ten.
25. When troubleshooting an electronics circuit, you must calculate the voltage ( $E$ ) by using the equation  $E = IR$ . You measure the current ( $I$ ) to be -8 amps. The resistance ( $R$ ) is 15 ohms. What is the calculated voltage?
2.  $-15 \times 6$
4.  $25 \times (-4)$
6.  $-12 \times (-12)$
8.  $180 \times (-4)$
10.  $-19 \times 40$
12.  $135 \div (-5)$
14.  $-512 \div 64$
16.  $-441 \div (-21)$
18.  $-136 \div (-8)$
20. What is the product of 44 and 33?
22. What is the quotient when 450 is divided by 15?
24. Find the product of 92 and 18 to the nearest ten.
26. When troubleshooting an electronics circuit, you must calculate the voltage ( $E$ ) by using the equation  $E = IR$ . You measure the current ( $I$ ) to be -15 amps. The resistance is 120 ohms. What is the calculated voltage?

### END OF CHAPTER PROBLEMS 1-9

Perform the indicated operations:

1.  $(-7) \times 3 + 4$
3.  $6 \times (-3) - 6 \times (-3)$
5.  $6 + 3 \times 5 - 4$
7.  $6 \times 4 - 6 \div 2$
9.  $(-7) - (-4) \times 6 + 1$
11.  $-2 - (-2) \times 4 - 5 \times (-4)$
13.  $16 \div (-4) - 7 \times 3 + 4$
15.  $-4 \times (-5) - 3 + 15 \div (-3)$
2.  $-6 - (-4) + 3 \times 4 - 4$
4.  $14 - (-9) + 15 \div 3$
6.  $21 + 6 \times 3 - 21 \div 7$
8.  $-5 + 8 \times (-4) - 3$
10.  $-18 \div 3 + 6 \times 6$
12.  $-4 - (-8) \times 3 + 10 \div (-5)$
14.  $-10 \times (-3) - 6 \times (-10) \div (-5) - 5$
16.  $17 - 5 \times 4 - 24 \div 6$

17.  $(-35) \div 5 + 4 + 3 \times 6$
19.  $7 \times (-3) - 4 \times (-5) + 6 \times (-3)$
21. When troubleshooting a circuit you must calculate the voltage by using the equation  $E = I_1 \times R_1 + I_2 \times R_2$ . You measure the currents and find that  $I_1 = 6$  amps and  $I_2 = 8$  amps. You know that  $R_1 = 10$  ohms and  $R_2 = 12$  ohms. What is the calculated voltage  $E$ ?

18.  $48 \div (-6) - 6 \times (-7) - 3$
20.  $-3 \times (-9) - 4 + 27 \div (-3)$
22. When troubleshooting a circuit you must calculate the voltage by using the equation  $E = I_1 \times R_1 + I_2 \times R_2$ . You measure the currents and find that  $I_1 = 2.7$  amps and  $I_2 = 7.5$  amps. You know that  $R_1 = 16$  ohms and  $R_2 = 6$  ohms. What is the calculated voltage  $E$ ?

## END OF CHAPTER PROBLEMS 1-10

Perform the indicated operations:

1.  $-4 - (-2) + 6(6 - 3)$
3.  $7(-3) - [4(-7)]$
5.  $(5 + 4)(-6 + 2)$
7.  $5 - 2 - 3[4(3 + 4)] - 2$
9.  $4[24 \div (-8 + 4)] + 7 \times 4$
11.  $15 - 4[(-3 + 6)(9 - 12)]$
13.  $5[6 - (-4) + (3 - 7)(2 - 6)]$
15.  $4[-6 - (-3)(4)] + 7 \times 3$
17.  $[9 + (3 \times -7)][18 - (2 \times 3)]$
19.  $14 - [(-3) \times 4] + [3(4 - 5)(7 - 3) + 6]$
21. When troubleshooting a circuit you must calculate the voltage by using the equation  $E = 10[(5 + 7)/6] + 15[(10 + 6)/32]$ . What is the calculated voltage  $E$ ?
2.  $-9 - (-4) + 6(7 - 9)$
4.  $5(-6) + [-3(-5)]$
6.  $(-8 + 12)(7 - 3)$
8.  $-6 - 4 - [8(-3 + 1)] - 7$
10.  $8[33 \div (-9 + 6)] + 6 \times 3$
12.  $12 - 7[(4 - 7)(-9 - 3)]$
14.  $3[8 - (-8) + (2 - 7)(4 - 8)]$
16.  $(4 - 6)(-3 \times 4) - [-9(2 - 4)]$
18.  $[24 - (6 \times 5)][14 - (8 \times 4)]$
20.  $[-8 - (-4 \times 7)][-15 - (14 \div -2)]$
22. When troubleshooting a circuit you must calculate the voltage by using the equation  $E = 16[(15 + 7)/44] + 12[(11 + 13)/12]$ . What is the calculated voltage  $E$ ?



## Solutions for end of chapter 1 questions

### CHAPTER 1

#### PRACTICE PROBLEMS 1-1

- (a) 9 ten-thousands or 90,000
- (a) 0 (b) 1 (c) 6 (d) 8
- $823 \times 1000 = 823,000$ . The three has a value of 3000.

#### END OF CHAPTER PROBLEMS 1-1

- (a) 0 (b) 2 (c) 8000 (d) 4
- (a) 7 (b) 0 (c) 7000 (d) 4
- (a) 3 (b) 9 (c) 800,000 (d) 4
- 9000

#### PRACTICE PROBLEMS 1-2

- (a) 0.04 (b) 0.023 (c) 0.00203
- (a)  $\frac{7}{10} = 0.7$  (b)  $\frac{37}{100} = 0.37$   
(c)  $\frac{7}{10,000} = 0.0007$   
(d)  $\frac{417}{100,000} = 0.00417$   
(e)  $\frac{6}{1,000,000} = 0.000006$
- (a) 3 hundredths  
(b) 5 ten-thousandths  
(c) 73 hundred-thousandths
- $\frac{29}{100,000}$  inch
- (a)  $\frac{5}{100}$  (b)  $\frac{73}{100,000}$  (c)  $\frac{9}{100,000}$
- The 2 appears in the thousandths position.  
The 6 appears in the hundred-thousandths position.
- $\frac{18}{1000} = 0.018$ . Record 0.018.

#### END OF CHAPTER PROBLEMS 1-2

- (a) 0.3 (b) 0.016 (c) 0.00278 (d) 0.1763 (e) 0.435 (f) 0.2060
- (a)  $\frac{7}{1000}$  (b)  $\frac{432}{10,000}$  (c)  $\frac{174}{1000}$  (d)  $\frac{65}{1,000,000}$  (e)  $\frac{16}{100,000}$  (f)  $\frac{1234}{100,000}$
- (a)  $\frac{17}{1000} = 0.017$  (b)  $\frac{4}{100} = 0.04$  (c)  $\frac{460}{10,000} = 0.0460$   
(d)  $\frac{27}{1,000,000} = 0.000027$  (e)  $\frac{1780}{100,000} = 0.01780$  (f)  $\frac{65}{1000} = 0.065$

7. (a) Thousandths (b) Millionths (c) Ten-thousandths  
 9. (a) Ten-thousandths (b) Millionths (c) Hundredths  
 11. (a) Six-thousandths (b) One hundred forty-seven thousandths  
 (c) Ninety-two hundred-thousandths (d) Seven-millionths  
 (e) Four hundred thirteen ten-thousandths (f) One hundred one ten-thousandths  
 13. 0.27  
 15.  $\frac{43}{1000}$

### PRACTICE PROBLEMS 1-3

1. (a)  $24\frac{7}{1000}$  (b)  $706\frac{24}{1000}$  (c)  $4\frac{17}{100,000}$  (d)  $7\frac{400}{1000}$  (e)  $370\frac{6}{1000}$  (f)  $47\frac{113}{1000}$   
 2. (a) 1076.07 (b) 8.0023 (c) 76.014 (d) 35.00270 (e) 713.007 (f) 8.0087  
 3. (a)  $56.78 = 56\frac{78}{100}$  (b)  $15.035 = 15\frac{35}{1000}$  (c)  $106.0008 = 106\frac{8}{10,000}$   
 (d)  $704.00214 = 704\frac{214}{100,000}$  (e)  $4075.0014 = 4075\frac{214}{10,000}$  (f)  $80.043 = 80\frac{43}{1000}$   
 4.  $3 + 0.27 = 3.27$ . You would record 3.27.

### END OF CHAPTER PROBLEMS 1-3

1. (a)  $7\frac{14}{100}$  (b)  $50\frac{2}{100}$  (c)  $710\frac{143}{1000}$  (d)  $9\frac{99}{1000}$  (e)  $73\frac{653}{1000}$  (f)  $207\frac{7834}{10,000}$   
 (g)  $28\frac{736}{100,000}$  (h)  $8\frac{706}{10,000}$   
 3. (a) 5.68 (b) 25.007 (c) 7.0165 (d) 70.4 (e) 473.025 (f) 80.00743 (g) 2475.000035 (h) 307.00008  
 5. (a)  $93.7 = 93\frac{7}{10}$  (b)  $30.04 = 30\frac{4}{100}$  (c)  $11.0001 = 11\frac{1}{10,000}$  (d)  $905.052 = 905\frac{52}{1000}$   
 (e)  $78.034 = 78\frac{34}{1000}$   
 7. (a)  $273.00025 = 273\frac{25}{100,000}$  (b)  $704.000704 = 704\frac{704}{1,000,000}$  (c)  $2044.0504 = 2044\frac{504}{10,000}$   
 (d)  $10,101.00089 = 10,101\frac{89}{100,000}$  (e)  $90.0466 = 90\frac{466}{10,000}$  (f)  $207.0000100 = 207\frac{100}{10,000,000}$   
 9. 4.079

### PRACTICE PROBLEMS 1-4

	Tens	Hundreds	Thousands
1.	2710	2700	3000
2.	6530	6500	7000
3.	43,260	43,300	43,000
4.	76,550	76,500	77,000
5.	82,800	82,800	83,000
6.	26,760	26,800	27,000
7.	78,230	78,200	78,000
8.	19,000	19,000	19,000

9. Place in the bin marked 8300 ohms.

In problem 8, when we round to the nearest ten, we round up because the units digit is 9. Remember that we round by adding 1 to the digit to the left (the tens position). Adding 1 to 9 in the tens position produces a 0 and a carry into the hundreds position. A carry into the hundreds position results in 0 and a carry into the thousands position, resulting in the answer 19,000.

# END OF CHAPTER PROBLEMS 1-4

1. 20      3. 50      5. 60      7. 130      9. 870

	<i>Tens</i>	<i>Hundreds</i>
11.	270	300
13.	360	400
15.	1380	1400
17.	1410	1400
19.	8710	8700

	<i>Tens</i>	<i>Hundreds</i>	<i>Thousands</i>
21.	4820	4800	5000
23.	85,470	85,500	85,000
25.	78,670	78,700	79,000
27.	27,850	27,800	28,000
29.	35,490	35,500	35,000
31.	68,450	68,400	68,000
33.	73,650	73,700	74,000
35.	470,000		
37.	2500		

## PRACTICE PROBLEMS 1-5

	<i>Hundredth</i>	<i>Tenth</i>	<i>One</i>	<i>Ten</i>
1.	73.65	73.6	74	70
2.	26.40	26.4	26	30
3.	17.04	17.0	17	20
4.	30.69	30.7	31	30
5.	50.47	50.5	50	50
6.	48.05	48.0	48	50
7.	33.78	33.8	34	30
8.	68.15	68.1	68	70
9.	28.3 volts			
10.	1020, 6270, and 8760			
11.	47.1 to the nearest tenth. 50 to the nearest ten.			

## END OF CHAPTER PROBLEMS 1-5

	<i>Hundredths</i>	<i>Tenths</i>	<i>Ones</i>	<i>Tens</i>
1.	163.78	163.8	164	160
3.	9.46	9.5	9	10
5.	88.89	88.9	89	90
7.	749.49	749.5	749	750
9.	39.28	39.3	39	40
11.	63.75	63.7	64	60
13.	478.67	478.7	479	480
15.	47.47	47.5	47	50
17.	16.55	16.5	17	20
19.	73.8			

## PRACTICE PROBLEMS 1-6

1. (a) 4      (b) 3      (c) 5      (d) 5      (e) 3  
 2. (a) 4      (b) 2      (c) 7  
 3. 7 and 3



# END OF CHAPTER PROBLEMS 1-6

1. (a) 5 (b) 4 (c) 4 (d) 4 (e) 3 (f) 4
5. (a) 6 (b) 3
9. 2 and 5

3. (a) 8 (b) 2
7. (a) 8 (b) 7

## SELF-TEST 1-1 THROUGH 1-6

1. (a) 2 (b) 8 (c) 0 (d) 7 (e) 300 (f) 8
3. (a)  $\frac{3}{10} = 0.3$  (b)  $\frac{85}{100} = 0.85$  (c)  $\frac{18}{10,000} = 0.0018$
5. (a)  $7\frac{46}{100}$  (b)  $18\frac{6}{1000}$
7. (a)  $3.07 = 3\frac{7}{100}$  (b)  $28.063 = 28\frac{63}{1000}$

2. (a) 0.41 (b) 0.009 (c) 0.01783

4. (a) Thirty-three hundredths  
(b) Four-thousandths

6. (a) 76.14 (b) 6.023

8.	Ten	Hundred	Thousand
(a)	4770	4800	5000
(b)	9710	9700	10,000
(c)	15,790	15,800	16,000
(d)	37,050	37,000	37,000

9.	Tenth	Hundredth	Thousandth
(a)	0.1	0.07	0.075
(b)	0.5	0.46	0.461
(c)	0.4	0.41	0.406
(d)	0.4	0.37	0.375

10.	Ten	Unit	Tenth	Hundredth
(a)	20	17	17.5	17.49
(b)	20	23	23.5	23.46
(c)	40	37	36.5	36.55
(d)	20	21	20.7	20.71

## PRACTICE PROBLEMS 1-7

1. 2
4. 12
7. 18
10. 16
2. -20
5. -4
8. -5
11. -3

3. 12
6. -19
9. 7
12.  $5 - 3 - 4 + 2 = 0$  amp

## END OF CHAPTER PROBLEMS 1-7

1. 5
7. 34
13. -14
19. 10
3. 14
9. -28
15. 18
21. 3

5. -6
11. 7
17. 21

## PRACTICE PROBLEMS 1-8

1. -85
4. -168
7. -43
10. 12
13. 220
2. 224
5. -7
8. -7
11. 438
14.  $E = IR = -3 \text{ amps} \times 8 \text{ ohms} = -24 \text{ volts}$
3. -108
6. -7
9. 11
12. 26

## END OF CHAPTER PROBLEMS 1-8

1. -42
7. 225
13. -24
19. 378
25. -120 V
3. 54
9. 930
15. 12
21. 42

5. -84
11. -7
17. -32
23. 760

## PRACTICE PROBLEMS 1-9

1. 26
4. -40
7. 19
9.  $E = I_1 \times R_1 + I_2 \times R_2 = 3 \times 8 + 7 \times 4 = 24 + 28 = 52 \text{ V}$
2. -9
5. 3
8. 8

3. 10
6. -22

# END OF CHAPTER PROBLEMS 1-9

1. -17
7. 21
13. -21
19. -19

3. 0
9. 18
15. 12
21. 21.156

5. 17
11. 26
17. 15

## PRACTICE PROBLEMS 1-10

1. -6
4. 21
7. -26
10. 202

2. 0
5. -20
8. 102

$$11. E = 18(12/24) + 22(21/42) = 18(0.5) + 22(0.5) = 9 + 11 = 20$$

3. 12
6. -8
9. 104

## END OF CHAPTER PROBLEMS 1-10

1. 16
7. -83
13. 130
19. 20

3. 7
9. 4
15. 45
21. 27.5

5. -36
11. 51
17. -144

## SELF-TEST 1-7 THROUGH 1-10

1. 5
4. 36
7. 16
10. -27
13. 10

2. -18
5. -12
8. -9
11. 13
14. 37

3. -48
6. -17
9. -57
12. 22
15. 986