Now add the cost of the parts to the cost of labor.

$$\begin{array}{rl} {\scriptstyle 1\ 1} & \\ \$\,8\,9.0\,0 & \text{Cost of labor} \\ +\$\,2\,7\,3.4\,9 & \text{Cost of parts} \\ \hline \$\quad 3\,6\,2.4\,9 & \text{Total charge for job} \end{array}$$

The total charge for the job would be $362.49.

Step 4: CHECK: The cost of labor per hour is approximately $40. This means that $2\frac{1}{2}$ hours of labor will cost approximately $100. Considering that the parts alone cost $273.49, the answer of $362.49 seems reasonable.

Now work margin exercise 10.

Margin Exercise Answers

1. a. $\frac{12}{25}$ **b.** $\frac{19}{20}$ **2. a.** $\frac{763}{1000}$ **b.** $\frac{4}{125}$ **3.** $15\frac{4}{5}$ **4.** 0.4 **5.** 1.65 **6.** 0.13333...

7. 0.230769230769... **8.** 17.03 **9.** $\frac{9}{16}$ is larger than 0.52 by 0.0425 **10.** $11.97

3.6 Exercises

Concept Check

Fill-in-the-Blank. Complete each sentence using information found in this section.

1. To change a decimal number to a fraction, use the digits of the decimal number as the _____ and a power of 10 as the _____.
2. To change a decimal number to a fraction, find the power of 10 that names the position of the rightmost digit as the _____.
3. Nonterminating decimal numbers can be categorized as either _____ or _____ decimal numbers.
4. To change a fraction to a decimal number, divide the _____ by the _____.
5. In decimal form, $\frac{3}{5}$ is a _____ decimal number.
6. When computing problems with both fractions and decimal numbers, sometimes all numbers need to be in _____ form to preserve accuracy.

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

7. When a decimal number is changed to a fraction, the denominator will be the power of 10 that names the rightmost digit of the decimal number.
8. When a decimal number is changed to a fraction, the numerator can be determined by using the whole number that is formed by all the digits of the decimal number.
9. Fractions can always be converted to decimal form without losing accuracy.
10. In decimal form, $\frac{1}{3}$ is repeating and nonterminating.

Practice

Change each decimal number to a fraction. Do not reduce.

1. 0.9
2. 0.3
3. 0.526
4. 0.625
5. 5.1
6. 2.9
7. 8.15
8. 6.35

Change each decimal number to a fraction or mixed number in lowest terms. See Examples 1 through 3.

9. 0.2
10. 0.8
11. 0.18
12. 0.36
13. 0.225
14. 0.455
15. 6.25
16. 2.75

Change each fraction to a decimal number. If the decimal number is nonterminating, write it using a bar over the repeating pattern of digits. See Examples 4 through 7.

17. $\frac{1}{20}$
18. $\frac{1}{25}$
19. $\frac{5}{8}$
20. $\frac{3}{8}$
21. $\frac{2}{3}$
22. $\frac{1}{6}$
23. $\frac{5}{18}$
24. $\frac{5}{12}$

Change each fraction to a decimal number rounded to the nearest hundredth. See Example 6.

25. $\frac{20}{3}$
26. $\frac{40}{9}$
27. $\frac{16}{33}$
28. $\frac{15}{22}$
29. $\frac{1}{32}$
30. $\frac{1}{14}$
31. $\frac{30}{21}$
32. $\frac{16}{13}$

Simplify each expression by writing all of the numbers in decimal form and performing the indicated operations. Round to the nearest hundredth, if necessary. See Example 8.

33. $\frac{1}{4}+0.25+\frac{1}{5}$
34. $\frac{3}{4}+\frac{1}{10}+3.55$
35. $6+2\frac{37}{100}+3\frac{11}{50}$
36. $2\frac{53}{100}+5\frac{1}{10}+7$
37. $1\frac{1}{4}-0.125$
38. $2\frac{4}{5}-1.75$
39. $3.1-2\frac{1}{10}$
40. $36.2-23\frac{1}{5}$
41. $\left(5\frac{1}{10}\right)^2(0.25)$
42. $\left(2\frac{1}{10}\right)^2(1.5)^2$
43. $\left(1\frac{3}{4}\right)\left(2\frac{1}{2}\right)(5.35)$
44. $\left(1\frac{4}{5}\right)\left(3\frac{1}{4}\right)(2.65)$
45. $72.186\div\frac{3}{5}$
46. $9.17\div\frac{1}{4}$
47. $5\frac{54}{100}\div 2.1$
48. $3\frac{26}{100}\div 1.5$
49. $\frac{1}{7}+0.355+\frac{2}{3}$
50. $\frac{1}{3}+\frac{3}{10}+3.452$
51. $\frac{7}{9}+\frac{3}{5}+0.418$
52. $0.5+8\frac{1}{6}+2\frac{11}{50}$

For each pair of numbers, determine which number is larger. Then, determine the difference between the two numbers. (If the difference is a nonterminating number, write it using a bar over the repeating pattern of digits.) See Example 9.

53. $0.28, \frac{3}{11}$

54. $\frac{1}{3}, 0.3$

55. $\frac{22}{7}, 3.3$

56. $\frac{4}{9}, 0.5$

57. $3.5, 3\frac{2}{3}$

58. $5\frac{3}{4}, 5.5$

Arrange each set of numbers in order from smallest to largest.

59. $0.76, \frac{3}{4}, \frac{7}{10}$

60. $0.63, \frac{5}{8}, 0.64$

61. $\frac{5}{16}, 0.3126, 0.314$

62. $0.083, \frac{41}{500}, \frac{2}{25}$

Applications

Change any decimal number (that is not a whole number) to a fraction or mixed number.

63. By 2020 census estimates, there were 93.8 people per square mile in the United States.

64. A gallon of milk weighs 8.6 lb.

65. The median age for men at the beginning of their first marriage is 30.3 years. The median age for women at the beginning of their first marriage is 28.4 years.

66. The maximum speed of a giant tortoise on land is about 0.17 mph.

67. There are about 21.5 students per teacher in a public school.

68. The surface gravity on Mars is about 0.38 times the gravity on Earth. The atmospheric pressure on Mars is about 0.01 times the atmospheric pressure on Earth.

Change any fraction or mixed number (that is not a whole number) to a decimal number. Round each number to the nearest hundredth.

69. In 2022, it was estimated that the average American adult spent $\frac{7}{12}$ of the time spent on their phone on social media.

70. In a recent year about $\frac{8}{57}$ of the advertising budget in the automotive industry was spent on newspaper ads.

71. In 2016, the average price of unleaded gasoline in California was $2\frac{9}{10}$ times the price it was in 1970.

72. The expected winner of a student senate presidential election received $\frac{21}{46}$ of the votes.

Solve.

73. A rectangle has a length of 6.4 inches and a width that is $\frac{2}{5}$ times the length. Find the perimeter of the rectangle.

74. A coffee cup holds $14\frac{1}{3}$ ounces of coffee. If each ounce of a certain brewed coffee contains 8.5 mg of caffeine, how much caffeine is in one of these cups of coffee (round to the nearest tenth of a mg)?

75. During five days this week, Mark ran 3.2 miles, $2\frac{3}{4}$ miles, 5.1 miles, $7\frac{1}{3}$ miles, and 1.8 miles. Find the total distance that Mark ran this week, to the nearest tenth of a mile.

76. Sarah and Iygen are working on a physics lab together. They each take measurements of three different timed experiments. Sarah has an analog stop watch and clocks experimental times of $5\frac{1}{8}$, $4\frac{3}{4}$, and $5\frac{1}{2}$ seconds. Iygen has a digital stop watch and clocks experimental times of 5.2, 4.6, and 5.3 seconds. Use all 6 times to determine the average time for all of the experiments, to the nearest tenth.

77. Summerville High School has 3375 students, $\frac{2}{3}$ of whom drive to school. Of the students who drive to school, 0.24 of them have an after-school job. Exactly $\frac{1}{9}$ of the students who drive to school and have a job are taking AP English. How many students who drive to school and have a job are taking AP English?

78. A preschool provides peanut butter sandwiches for each of its 45 children once per week. If each child receives $\frac{8}{5}$ ounces of peanut butter on a sandwich, and peanut butter costs \$3.16 per pound (16 ounces), how much does the preschool spend per week on peanut butter?

79. A loaf of bread weighs 21.6 ounces. Mauricio cut off a third of the loaf to save for later and then cut the remaining portion into 16 equal slices. What was the weight of each slice of the 16 slices he cut?

80. A husband and wife join three single friends for dinner at a Mexican restaurant. Because they shared some appetizers and many entrees are the same price, the five of them decided to simply split the bill five ways. The husband and wife will pay for theirs together. If the total bill was \$62.75, determine how much the husband and wife owe towards the total bill.

81. Janet and Marion are performing an experiment. They each examine 50 slides of viruses for signs of activity. After the examination, Janet reported that $\frac{1}{5}$ of her slides were active and Marion found that 0.3 of her slides were active. How many total slides showed signs of active viruses?

82. A pound of roasted cashews costs \$13.50 and a pound of roasted peanuts costs \$5.25. How much will it cost to purchase $2\frac{1}{2}$ pounds of cashews and $1\frac{1}{3}$ pounds of peanuts?

Writing & Thinking

83. Describe the process used to change a terminating decimal number to a fraction.

84. Do you find it is easier to convert decimal numbers into fractions or fractions into decimal numbers? Explain why.

85. List 2 different ways to solve this problem: $\frac{1}{2} + 3.67 - \frac{1}{8}$. State which method you prefer and why.