Completion Example Answers

4. 100%; 3.60, 360%

Margin Example Answers

1. 81.25% **2.** 54% **3.** 150% **4.** 280% **5.** 27.3% **6.** 93.3% **7.** $\frac{4}{5}$ **8.** $2\frac{7}{20}$

4.4 Exercises

Concept Check

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

1. The easiest fractions to convert to a percent are those that have a denominator of 100 or those with denominators that are a factor of _____.

2. If a fraction does not have a denominator that is a factor of 100, it can still be changed to a percent by finding its equivalent _____ number form.

3. If a fraction has been converted to a decimal number, it then can to be changed to a percent by moving the decimal point _____ places to the _____.

4. To change a percent to a fraction, begin by removing the percent sign and writing the percent as a numerator over _____.

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.)

5. Fractions that have denominators other than 100 cannot be changed to a percent.

6. The fraction $\frac{1}{5}$ is equivalent to $\frac{1}{5}\%$.

7. When changing from a percent to a mixed number, the fraction does not need to be reduced.

8. $75\% = 0.75 = \frac{3}{4}$

Practice

Change each fraction or mixed number to a percent. If necessary, round to the nearest tenth of a percent. See Examples 1 through 5.

1. $\frac{3}{100}$ **2.** $\frac{7}{100}$ **3.** $\frac{16}{100}$ **4.** $\frac{29}{100}$ **5.** $\frac{1}{2}$

6. $\frac{1}{10}$ **7.** $\frac{3}{4}$ **8.** $\frac{1}{4}$ **9.** $\frac{1}{20}$ **10.** $\frac{11}{20}$

11. $\frac{2}{5}$ **12.** $\frac{4}{5}$ **13.** $\frac{13}{50}$ **14.** $\frac{43}{50}$ **15.** $\frac{56}{64}$

16. $\frac{35}{56}$ **17.** $\frac{1}{25}$ **18.** $\frac{6}{25}$ **19.** $\frac{1}{8}$ **20.** $\frac{5}{8}$

21. $\frac{7}{12}$

22. $\frac{1}{12}$

23. $1\frac{1}{6}$

24. $2\frac{5}{6}$

25. $1\frac{1}{4}$

26. $1\frac{3}{4}$

27. $1\frac{1}{20}$

28. $1\frac{17}{20}$

29. $2\frac{1}{10}$

30. $5\frac{3}{10}$

31. $2\frac{1}{15}$

32. $4\frac{1}{18}$

Change each percent to a fraction or mixed number and reduce, if possible. See Examples 7 and 8.

33. 5%

34. 4%

35. 15%

36. 48%

37. 17%

38. 43%

39. 25%

40. 50%

41. 33%

42. 66%

43. 100%

44. 300%

45. 120%

46. 150%

47. 125%

48. 536%

49. 12.5%

50. 62.5%

51. 0.75%

52. 0.25%

53. $\frac{1}{2}\%$

54. $\frac{1}{4}\%$

55. $12\frac{1}{2}\%$

56. $37\frac{1}{2}\%$

57. $16\frac{2}{3}\%$

58. $83\frac{1}{3}\%$

59. $33\frac{1}{3}\%$

60. $66\frac{2}{3}\%$

Find the missing forms of each number.

	Fraction form	Decimal form	Percent form
61.	$\frac{5}{8}$		
62.	$\frac{11}{20}$		
63.		0.09	
64.		1.75	
65.			36%
66.			10.5%

Applications

Solve.

67. A department store offers a 35% discount during a special sale on dresses. Change 35% to a fraction reduced to lowest terms.

68. A department store offers a 30% discount during a special sale on men's suits. Change 30% to a fraction reduced to lowest terms.

69. Betty pays income tax of 24% on her pay from working as a labor and delivery nurse. Express 24% as a fraction reduced to lowest terms.

70. The portfolio of an investor increased by 385%. Express this as a mixed number reduced to lowest terms.

71. Creaky Cowboy Café is unable to sell 12.8% of their pastries on a given day. Express 12.8% as a fraction reduced to lowest terms.

72. A cat gives birth to a litter of kittens with different coat patterns. 37.5% of the kittens are orange. Express 37.5% as a fraction reduced to lowest terms.

73. A certain very precise voltmeter will measure the voltage with no greater than 0.035% error. This means that the difference between the actual voltage and the indicated voltage is no greater than 0.035% of the measured voltage; this is expressed as ±0.035%. Express this maximum error as a fraction reduced to lowest terms.

74. Consider each measurement.

a. There are 12 inches in a foot. What percent of a foot is an inch?

b. There are 4 quarts in a gallon. What percent of a gallon is a quart?

c. There are 16 ounces in a pound. What percent of a pound is an ounce?

75. In a sophomore class of 250 students, 10 students represent the sophomore class on the student council. What percent of the class is on the student council?

76. Out of a possible total of 240 points on an exam, David received 204 points. What percent of the exam did David get correct?

77. Three gallons of fluoride are in a 4,000,000 gallon supply of drinking water. What percent of the drinking water is fluoride?

78. To receive a Bachelor of Science (BS) degree at a certain college, the student must complete a total of 128 credit hours, of which 41 of these credits must be general education Core Skills courses. What percent of the total curriculum is dedicated to general education courses?

79. According to the laws in the United States, a person can be arrested for driving under the influence of alcohol if the blood alcohol concentration (BAC) is 0.08% or greater, where BAC in decimal form is defined as the number of grams of alcohol in 1 milliliter of blood. [1]

a. Assume that 2 milliliters of blood has 0.0022 grams of alcohol, what is the BAC in decimal units? (**Hint:** Divide the amount of alcohol by the amount of blood.)

b. Express this as a percent.

c. Does this exceed the legal limit of 0.08%?

80. In 2020, approximately 88,000,000 Americans were between the ages of 25 and 44. If the total US population was approximately 329,000,000 people, what percentage (to the nearest percent) of the population is between the ages of 25 and 44? [2]

1 Source: dui.drivinglaws.org/drink-table.php
2 Source: www.statista.com/statistics/241488/population-of-the-us-by-sex-and-age/

81. A recipe to create self-rising flour says to mix 120 grams of all-purpose flour with 5 grams of salt and 8 grams of baking powder. The salt and baking powder mixture make up what percent of the self-rising flour? Round your answer to the nearest tenth of a percent.

82. A sample of perfume is made with 21 drops of peach oil, 35 drops of rosemary oil, and 14 drops of sandalwood oil. The oil mixture is then diluted with 100 drops of perfumer's alcohol. Round your answers to the nearest tenth of a percent. (**Hint:** The denominator is equal to the total number of drops that make up the perfume.)

a. What percent of the perfume sample does the rosemary make up?

b. The perfumer's alcohol makes up what percent of the perfume sample?

c. The oil mixture makes up what percent of the perfume sample?

Writing & Thinking

83. Justify why mixed numbers are a larger percentage than proper fractions alone. (Consider the value of 100%.)

84. Describe the process to change a percent to a fraction or mixed number.