

Lesson 1

Audio Tutor 2/14 Listen and Understand

Percent as a Ratio

Objective Relate ratios and percents.

Vocabulary
percent



Learn About It

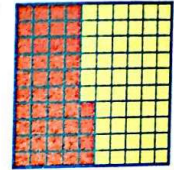
A **percent (%)** is a ratio that compares a number to 100.

In a survey, 44 percent of the teenagers interviewed said they enjoy spending time at the local mall on weekends.

What does 44 percent mean?

Look at the picture on the right. Write a ratio to compare the number of red squares to the total number of squares in the grid.

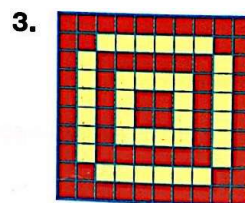
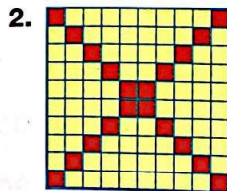
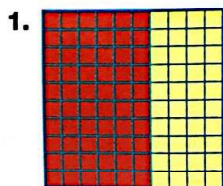
$$\frac{\text{number of red squares}}{\text{number of squares in the grid}} = \frac{44}{100} \rightarrow 44 \text{ percent, or } 44\%$$



Solution: 44% means that 44 out of every 100 teenagers surveyed enjoy spending time at the mall.

Guided Practice

For each grid, write the percent of squares that are shaded red and the percent that are shaded yellow.



Write each ratio as a percent.

4. 56 out of 100 5. 29 out of 100 6. 100 out of 100 7. $\frac{2}{100}$ 8. $\frac{33}{100}$

Write each percent as a ratio in word form and in fraction form.

9. 38 percent 10. 70 percent 11. 6% 12. 19% 13. 94%

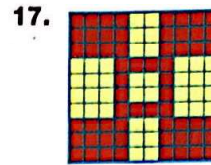
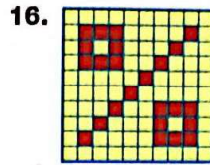
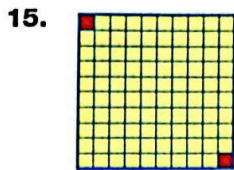
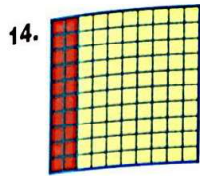
Explain Your Thinking ► How would you write $x\%$ as a ratio?

Ask Yourself

- What should the second term of the ratio be?
- Did I use the part as the first term of the ratio?

Practice and Problem Solving

For each grid, write the percent of squares that are shaded red and the percent that are shaded yellow.



Write each ratio as a percent.

18. 35 out of 100 19. 18 out of 100 20. 24 out of 100

21. $\frac{7}{100}$

22. $\frac{60}{100}$

23. $\frac{90}{100}$

24. $\frac{87}{100}$

25. $\frac{13}{100}$

26. $\frac{9}{100}$

27. $\frac{78}{100}$

Write each percent as a ratio in word form and in fraction form.

28. 45 percent

29. 20 percent

30. 60%

31. 72%

32. 96%

33. 55%

34. 17%

35. 32%

36. 8%

37. 85%

Write a ratio and a percent of the squares for each color in the grid at right.

38. red

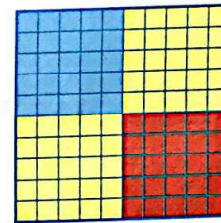
39. blue

40. yellow

41. red and blue

42. green

43. red, blue, and yellow



Solve.

44. Only 17 out of every 100 teens said they enjoy going to the mall after school. What percent is that?

46. **Predict** Suppose 1,000 teens were surveyed in Problem 44. How many of the teens said they like to spend time at the mall after school? Explain.

45. **Analyze** If 17% of teens go to the mall after school, what percent does not go to the mall?

47. **Represent** Girls made up 1% less than half of the 44% of teens who said they like to spend weekend time at the mall. Use a 10×10 grid to show this percent.

Mixed Review and Test Prep

Open Response

Evaluate each expression, given

$a = \frac{2}{3}$, $b = \frac{1}{8}$, and $c = 2\frac{1}{4}$. (Ch. 6, Lesson 7)

48. $a + b$

49. $2c - b$

50. $6c \div 3$

51. $b \times c$

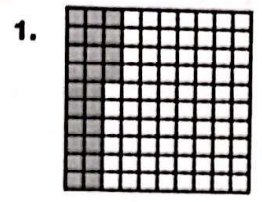
Multiple Choice

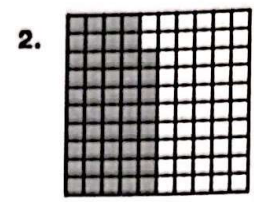
52. In a survey of 100 sixth-graders, 4 said they never have been to a mall. What percent of the students never have been to a mall? (Ch. 17, Lesson 1)

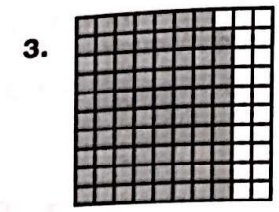
A 0.4% B 4% C 40% D 400%

Percent as a Ratio

For each grid, write the percent of squares that are shaded and the percent that are not shaded.







Write each ratio as a percent.

4. 3 out of 100

5. $\frac{97}{100}$

6. $\frac{15}{100}$

Write each percent as a ratio in word form and in fraction form.

7. 42 percent

8. 83%

9. 61%

Write a ratio and a percent for each letter in the grid at right.

10. Letter B

11. Letter E

A	B	B	B	C	C	C	D	D	D
A	B	B	B	C	C	C	D	D	D
A	B	B	B	C	C	C	D	E	E
A	B	B	B	C	C	C	D	E	E
A	B	B	B	C	C	C	D	E	E
A	B	B	B	C	C	C	D	E	E
A	A	C	C	C	C	C	D	E	E
A	A	C	C	C	C	C	D	E	E
A	A	C	C	C	C	C	D	E	E

Test Prep

12. In a survey of 100 sixth-graders, 15 said they preferred denim jeans to other types of trousers. What percent preferred denim?

- A 0.15%
- B 1.5%
- C 15%
- D 150%

13. In a survey of 100 sixth-graders, 38 said they liked the pizza the cafeteria served for lunch. What percent is this? How do you know?

Percent as a Ratio

How to Write a Ratio as a Percent

A survey showed that 29 out of 100 students play an instrument.

Step 1: Write a ratio to compare the number of students who play an instrument to the total number of students.

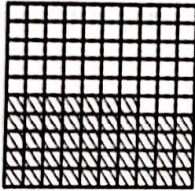
$$\frac{29}{100}$$

Step 2: Express the ratio as a percent.

$$\frac{29}{100} = 29\%$$

For each grid, write the percent of squares that are shaded and the percent that are not shaded.

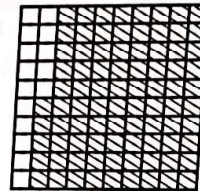
1.



Shaded _____

Not shaded _____

2.



Shaded _____

Not shaded _____

Write each ratio as a percent.

3. 6 out of 100

4. 64 out of 100

5. 99 out of 100

6. 71 out of 100

Write each percent as a ratio in word form and in fraction form.

7. 10 percent

8. 92%

9. 4%

10. 57%

Problem Solving

11. A survey showed that 67 out of 100 shoppers used coupons. What percent of those surveyed did not use coupons?

Show Your Work