

Applications

1. Find three examples of percents used in the real world. Newspapers, magazines, radio, and television are good places to look. Write down each example, or cut it out and tape it to your paper. For each example, describe how percents are used and what they mean.
2. Hot dogs at a carnival cost \$0.99 each plus 7% tax. What is the total cost for one hot dog?
3. Jason stops at a ball-toss game at the carnival. The sign reads, “Three balls for 50 cents or six balls for 80 cents.” What percent does he save by buying one set of six balls instead of two sets of three balls?
4. A class conducts a survey of 1,000 students.
 - a. The survey reveals that 20% of the students speak Spanish. How many students is this?
 - b. 6% of the students have forgotten their locker combinations at some time. How many students is this?
 - c. Of the sixth-grade students surveyed, 12% bring their lunches to school. Suppose 24 sixth-graders do this. How many sixth-graders are at the school?
5.
 - a. Arif and Keisha go to a restaurant for dinner. Their meals total \$13.75. The sales tax is 5%. How much tax is added to the bill?
 - b. They want to leave a 15% tip based on the bill and the tax combined. How much should they leave? Explain.
 - c. Arif ordered a more expensive meal than Keisha. After tax and tip are figured, he decides he should pay \$3 more than Keisha. How much should each pay?

6. Jen and Sarah go to lunch at the Green Grill. Their meal totals \$28. The sales tax is 6%.
- What is the total cost with the tax?
 - They want to leave a 20% tip based on the total cost before the tax. How much tip should they leave?
 - Describe two strategies that Jen and Sarah can use to figure the amount of the tip.

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7. Marilyn carries a tip calculator card with her. It lists the amounts for 15% and 20% tips on whole dollar values up to \$100. Her daughter notices a pattern. She says, "For each dollar the cost increases, the tips in the 15% column increase \$0.15."
- Explain why this pattern occurs for 15% tip values.
 - What is the amount of increase for each dollar increase in the 20% tip column?
 - The tip calculator card only goes up to \$100. How can you use the card if your restaurant bill totals \$325?
8. The Science Supply Store is having a sale. All graduated cylinders are 25% off. Mrs. Delmar buys four graduated cylinders that were originally \$8 each and six that were originally \$9.50 each.
- How much money will Mrs. Delmar save?
 - What percent of the original price will Mrs. Delmar pay?
 - Suppose the sales tax is 4%. What is Mrs. Delmar's total cost?

The local boutique is having a sale on hats. All regular-priced hats are 20% off. Shirley, Lisa, and Sandy each find a hat to buy.

- Shirley's beach hat was originally \$24.95. What is the sale price?
- Sandy finds a sun visor that was originally \$12.50. What is the sale price?
- Lisa finds a hat that is already marked down. The price tag shows that the original price was \$36. The marked-down price is \$27. What percent has the hat been marked down? Explain.



12. a. Inline skates are on sale for 35% off the regular price. What fraction off is this discount?
- b. The original price of one pair of inline skates is \$124.99. What is the sale price?
- c. A tax of 5% is computed on the sale price. What is the total cost of the inline skates?



Connections

13. Theo does $\frac{3}{10}$ of his homework. What percent is equal to $\frac{3}{10}$? What percent does Theo still have left to do?
14. **Multiple Choice** In a survey, 75% of 400 parents said they give their children fruit as a snack. How many parents of those surveyed is this?
- A. 150 B. 200 C. 225 D. 300
15. If $2.4 \div 0.2 = 12$, is $2.4 \div 0.5$ greater than or less than 12? Explain.
16. If $0.25 \times 0.8 = 0.2$, is $0.25 \div 0.8$ greater than or less than 0.2?
17. A certain bean plant grows 15% of its height each day. Express this percent as a decimal.
18. **Multiple Choice** Ike's Bikes requires 25% of the cost as a down payment for a new mountain bike. What fraction of the cost is this percent?
- F. $\frac{9}{35}$ G. $\frac{5}{21}$ H. $\frac{8}{32}$ J. $\frac{7}{24}$

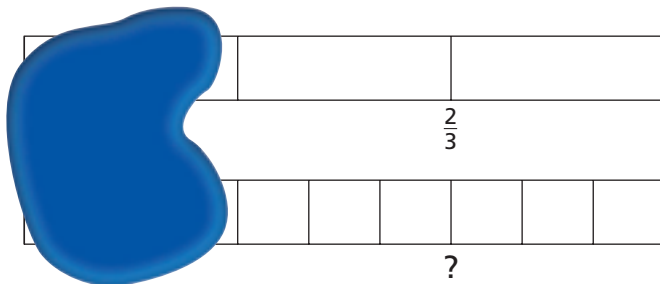
Homework
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For: Help with Exercise 15
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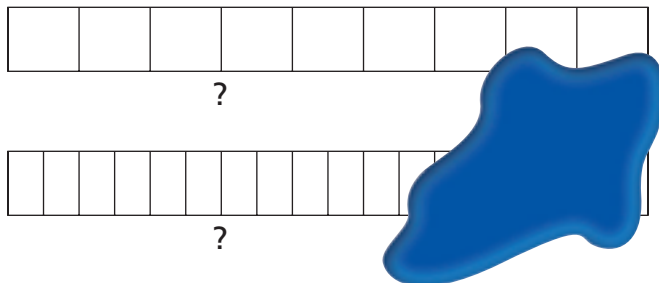
- 19.** Four friends order a square pizza. Marisa says she isn't very hungry and only wants 10% of the pizza. Tomarr is very hungry and says he will eat 50% of the pizza. Jon says he will eat 35%, and Kwan says she will eat 15%. Is this possible? Explain your reasoning.
- 20.** The Running Shoe Company advertises that they will award prizes for 1% of the total number of entries in a contest. They receive 1,600 entries. How many prizes do they award?

In Exercises 21 and 22, a paint spill covers up part of the fraction strips. Use what is showing to reason about each set of strips and to find fractions equivalent to those marked.

21.



22.



Find numbers that will make each sentence true. There may be more than one solution. If so, show at least two solutions.

23. $\frac{4}{9} = \frac{\square}{\square}$

24. $\frac{\square}{\square} = \frac{3}{5}$

25. $\frac{\square}{3} = \frac{8}{\square}$

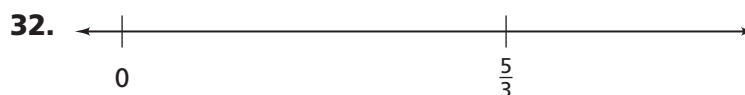
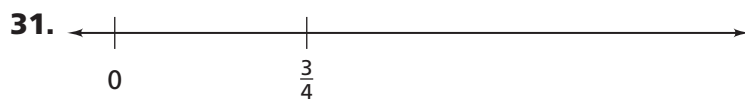
26. $\frac{5}{\square} = \frac{\square}{18}$

Extensions

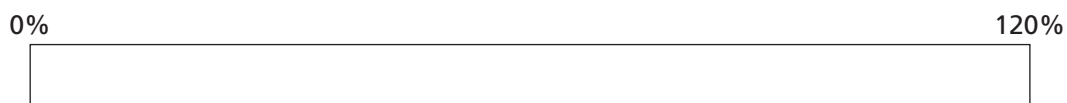
27. Write a percent problem that involves discounts on food, cars, books, clothes, or other items. Solve your problem.
28. You are shopping in Chicago, Illinois, where the state sales tax is $6\frac{1}{4}\%$. You purchase a \$5.00 map of the city. What is your total cost?
29. Carrie buys a pair of jeans that cost \$32.00. The local sales tax is $2\frac{1}{2}\%$ and the state sales tax is 5%.
- What is the amount of each tax?
 - What is the total cost of the jeans?
30. In January the news reported an inflation rate of 4%. In February, the news reported that inflation had increased by 10% since the January report. What does that mean? What is the new rate of inflation?



For Exercises 31 and 32, copy the number line (including all the labeled marks). Mark each number line at 1. Rewrite each fraction, including 1, as a decimal and a percent.



33. Copy the percent bar below. Mark it carefully to show the location of 100%.



- 34.** Each year the Mannel Department Store has a big end-of-summer sale. At the sale, they give customers an additional 25% off on all marked-down merchandise.



- a.** A beach towel had an original price of \$22. It was marked down 10%. What is the final price, after the additional 25% discount?
- b.** A patio table and four chairs originally cost \$350. They were marked down 50%. What is the final cost of the table and chairs with the additional discount?

Find numbers that will make each sentence true.

35. $\frac{1}{3} = \frac{\square}{9} = \frac{\square}{6}$ **36.** $\frac{\square}{18} = \frac{8}{12} = \frac{4}{\square}$ **37.** $\frac{3}{\square} = \frac{12}{\square} = \frac{9}{\square}$ **38.** $\frac{\square}{3} = \frac{\square}{21} = \frac{\square}{6}$

- 39.** In Exercises 35–38, which sentences have more than one possible answer? Why?
- 40.** A box of macaroni and cheese says that it makes 25% more than the regular box. If a regular box makes three cups of macaroni and cheese, how many cups will this box make?