

Lesson 6.1 Skills Practice

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Percents Can Make or Break You! Introduction to Percents

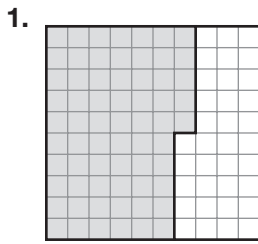
Vocabulary

Define the term in your own words.

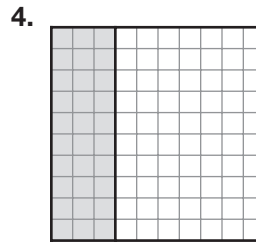
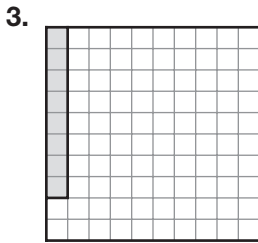
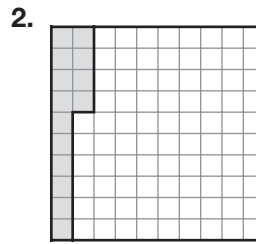
1. percent

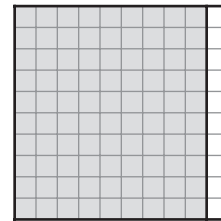
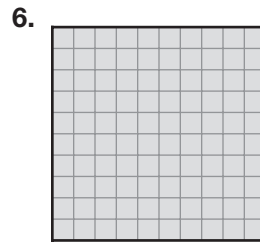
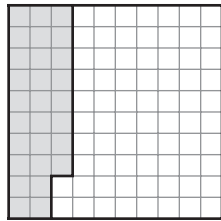
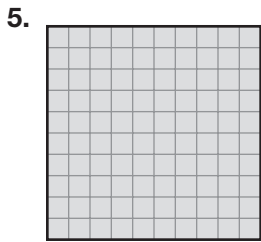
Problem Set

Each hundredths grid represents a whole. Write each shaded part as a fraction, decimal, and percent.



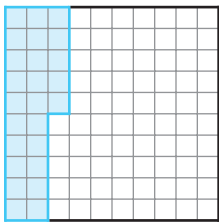
$\frac{65}{100}$, 0.65, 65%





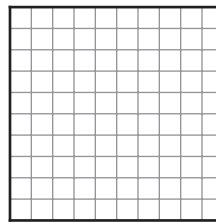
Shade the hundredths grids to represent the percent. Then, write the equivalent fraction and decimal for the percent.

7. 25%

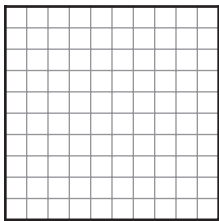


$\frac{25}{100}$, 0.25

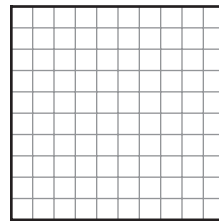
8. 82%



9. 3%

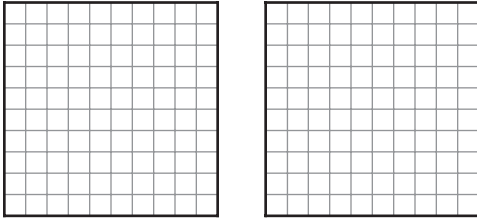


10. 60%

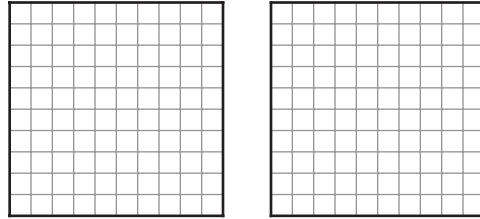


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11. 110%



12. 105%



Write each percent as a decimal.

13. 20%

$$\begin{aligned} 20\% &= \frac{20}{100} \\ &= 0.2 \end{aligned}$$

14. 17%

15. 4%

16. 9%

17. 113%

18. 152%

19. 25.8%

20. 72.6%

Write each decimal as a percent.

21. 0.92

22. 0.28

$$0.92 = \frac{92}{100}$$

$$= 92\%$$

23. 0.05

24. 0.8

25. 0.571

26. 0.032

27. 1.54

28. 2.91

Write each fraction as a percent.

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29. $\frac{2}{5}$

30. $\frac{3}{4}$

$$\frac{2}{5} = 2 \div 5$$

$$= 0.4$$

$$= 40\%$$

31. $\frac{3}{10}$

32. $\frac{5}{8}$

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33. $\frac{7}{16}$

34. $\frac{1}{16}$

35. $\frac{18}{5}$

36. $\frac{21}{6}$

Write a percent to answer each question.

37. Belinda got 18 out of 20 questions correct on a science test. What percent of the questions did Belinda get correct?

$$\begin{aligned} \frac{18}{20} &= 18 \div 20 \\ &= 0.9 \\ &= 90\% \end{aligned}$$

Belinda got 90% of the questions correct.

38. Hector got 42 out of 50 questions correct on a math test. What percent of the questions did Hector get correct?

39. In Mr. Rickard's class, 16 out of 25 students prefer to play soccer rather than basketball. What percent of the students prefer to play soccer?

40. In Mr. Rickard's class, 14 out of 25 students prefer to play baseball rather than football. What percent of the students prefer to play football?
41. Jin has a collection of 60 movies. Twenty-four of the movies are animated movies. What percent of Jin's movie collection are animated movies?
42. Gerain is practicing his free throws during basketball practice. He attempts 20 free throws and makes 13 baskets. What percent of his attempts were baskets?

Lesson 6.2 Skills Practice

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Wacky Weather! Estimating Percents

Vocabulary

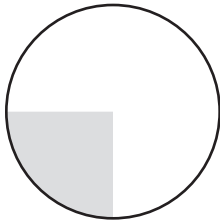
Define the term in your own words.

1. benchmark percent

Problem Set

Estimate the shaded part of each figure. Represent the shaded part as a fraction in simplest form, a decimal, and a percent.

1.

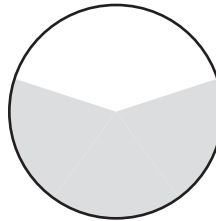


Fraction: $\frac{1}{4}$

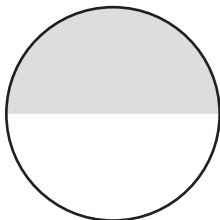
Decimal: $1 \div 4 = 0.25$

Percent: 25%

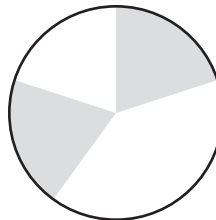
2.



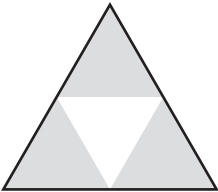
3.



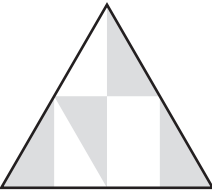
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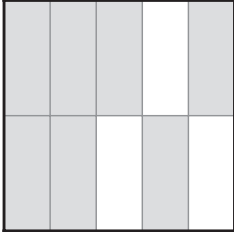
5.



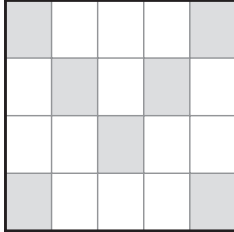
6.



7.



8.



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Calculate each percent using your knowledge of benchmark percents.

9. 50% of 40

10. 100% of 65

50% of 40 is half of 40.

50% of 40 = 20

11. 25% of 200

12. 50% of 500

13. 100% of 350

14. 25% of 160

Determine how to calculate each percent using benchmark percents.

15. How could you calculate 23% of a number?

Sample answer: Calculate 10% of the number and double it to get 20% of the number. Calculate 1% of the number and triple it to get 3% of the number. Add 20% and 3% to get 23%.

16. How could you calculate 65% of a number?

17. How could you calculate 42% of a number?

18. How could you calculate 14% of a number?

19. How could you calculate 96% of a number?

20. How could you calculate 8% of a number?

Calculate each percent using benchmark percents. Show your work.

21. 18% of 200

22. 32% of 150

Sample answer:

$$10\% \text{ of } 200 = 20$$

$$20\% \text{ of } 200 = 20 \times 2 \\ = 40$$

$$1\% \text{ of } 200 = 2$$

$$2\% \text{ of } 200 = 2 \times 2 \\ = 4$$

$$20\% - 2\% = 18\%$$

$$40 - 4 = 36$$

So, 18% of 200 = 36.

23. 54% of 300

24. 15% of 200

25. 45% of 350

26. 27% of 150

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Estimate each percent using benchmark percents. Show your work.

27. 24% of 76

28. 51% of 82

Sample answer:

$$24\% \text{ of } 76 \approx 25\% \text{ of } 76$$

$$50\% \text{ of } 76 = 76 \div 2$$

$$= 38$$

$$25\% \text{ of } 76 = 38 \div 2$$

$$= 19$$

So, 24% of 76 \approx 19.

29. 68% of 46

30. 14% of 38

31. 87% of 58

32. 9% of 753

Order the numbers in each set from greatest to least.

33. $0.35, \frac{1}{4}, 28\%, \frac{8}{9}$

$$\frac{8}{9} = 0.\bar{8}$$

$$28\% = 0.28$$

$$\frac{1}{4} = 0.25$$

From greatest to least: $\frac{8}{9}, 0.35, 28\%, \frac{1}{4}$

34. $\frac{25}{8}, 131\%, 0.9, 1.1$

35. $17.1\%, \frac{1}{6}, 0.4, 5.5\%$

36. $\frac{7}{8}, 0.1, 65\%, 1.5$

Lesson 6.3 Skills Practice

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It's All in the Follow-Through Determining the Percent of a Number

Problem Set

Calculate each percent.

1. 12% of 32

$$\begin{aligned} 12\% \text{ of } 32 &= 0.12 \times 32 \\ &= 3.84 \end{aligned}$$

2. 42% of 75

3. 7% of 26

4. 57% of 420

5. 63% of 18

6. 4% of 115

7. 28% of 90

8. 37% of 210

9. 11% of 88

10. 76% of 300

Use the given information to answer the question.

- 11.** Leon, Odell, and Shen play on the same baseball team. Leon had 16 hits during 25 at-bats. Odell had a hit 60% of the times he was at bat. Shen was at-bat 20 times and had 13 hits. Leon claims to be the best batter because he had the most hits during the season so far. Which player is most likely to get a hit and is the best batter?

Percent of at-bats that Leon gets a hit: $16 \div 25 = 0.64$, or 64%

Percent of at-bats that Odell gets a hit: 60%

Percent of at-bats that Shen gets a hit: $13 \div 20 = 0.65$, or 65%

Shen is most likely to get a hit and is the best batter.

- 12.** Denisa is saving for a new bicycle. The bicycle costs \$89. So far, Denisa has earned \$54 babysitting. What percent of the total cost of the bicycle has Denisa already earned? Round your answer to the nearest whole percent if necessary.

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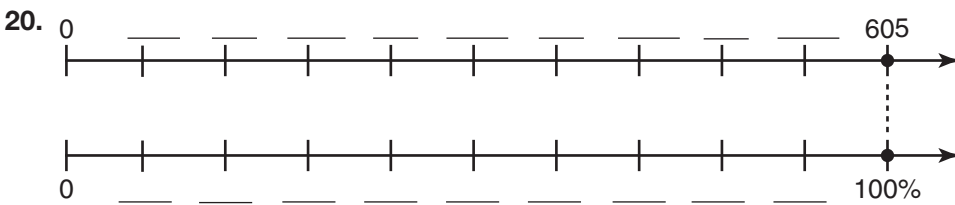
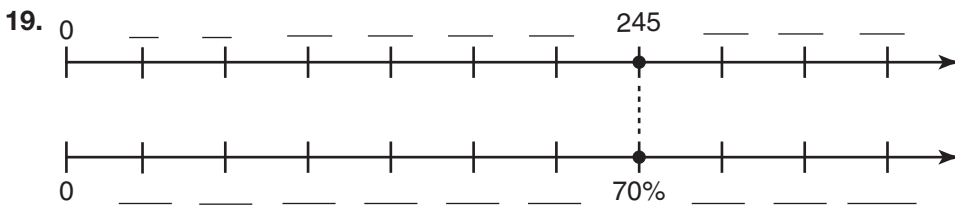
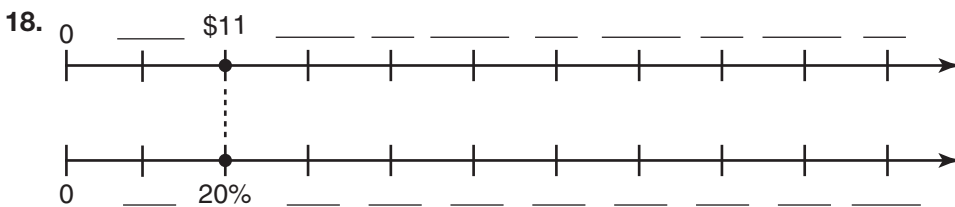
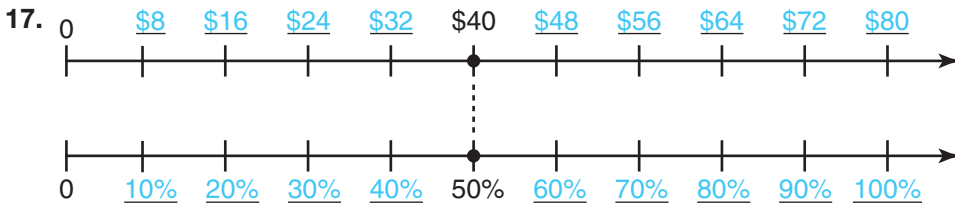
13. Yuko wants to buy a new video game console that costs \$299. His parents agree to pay for 40% of the cost of the console. How much must Yuko earn to buy the console? Round your answer to the nearest penny if necessary.

14. Kiana is saving for a new computer that costs \$499. So far, she has earned 68% of the cost of the computer. How much more must Kiana earn to buy the computer? Round your answer to the nearest penny if necessary.

15. Belinda's class is collecting donations of non-perishable food for the local food bank. The class set a goal to collect 500 pounds of food during the school year. So far, they have collected 73% of their goal. How many pounds of food has Belinda's class collected?

16. Haru's class is having a carwash to raise money to rebuild a local playground. The class set a goal to raise \$300 during the carwash. The class receives a donation of \$5 for each car they wash. So far, the class has collected 65% of their goal. How many more cars must Haru's class wash to meet their goal?

Complete each double number line.



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Lesson 6.4 Skills Practice

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Mi Mi Mi Mi Mi Mi Mi!

Determine the Part, Whole, or Percent of Percent Problems

Problem Set

Draw a model to represent each percent.

1. The model represents 20% of a group of triangles. Draw 100% of the group of triangles.



2. The model represents 5% of a group of stars. Draw 25% of the group of stars.



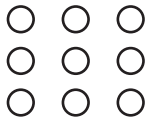
3. The model represents 10% of a rectangle. Draw 100% of the rectangle.



4. The model represents 4% of a group of squares. Draw 16% of the group of squares.



5. The model represents 75% of a group of circles. Draw 25% of the group of circles.



6. The model represents 80% of a group of triangles. Draw 100% of the group of triangles.



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7. The model represents 175% of a rectangle. Shade 100% of the rectangle.



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8. The model represents 200% of a rectangle. Shade 40% of the rectangle.



9. The model represents 125% of a group of circles. Draw 75% of the group of circles.



10. The model represents 150% of a group of stars. Draw 200% of the group of stars.



Calculate each percent by writing an equivalent fraction with a denominator of 100.

11. 13 out of 20

$$\frac{13}{20} = \frac{?}{100}$$

$$\begin{array}{l} \frac{13}{20} \xrightarrow{\times 5} \frac{65}{100} \\ \frac{13}{20} \xrightarrow{\times 5} \frac{65}{100} \end{array}$$

13 out of 20 = 65%

12. 4 out of 10

13. 37 out of 50

14. 7 out of 25

15. 3 out of 5

16. 6 out of 20

6

Answer each question by writing an equivalent fraction with a denominator of 100.

17. In Mr. Romero's class of 25 students, 13 of the students participate in school sports. What percent of the class participates in school sports?

$$\frac{13}{25} = \frac{?}{100}$$

$$\begin{array}{l} \frac{13}{25} \xrightarrow{\times 4} \frac{52}{100} \\ \frac{13}{25} \xrightarrow{\times 4} \frac{52}{100} \end{array}$$

So, 52% of Mr. Romero's class participates in school sports.

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18. In Mr. Romero’s class of 25 students, 4 of the students play in the school band. What percent of the class plays in the school band?

19. In Ms. Lin’s class of 20 students, 3 of the students participate in the school drama club. What percent of the class participates in the school drama club?

20. In Ms. Lin’s class of 20 students, 14 of the students will participate in the school science fair. What percent of the class will participate in the school science fair?

Use the given information to calculate each percent. Round your answer to the nearest whole percent.

21. Out of 220 students surveyed, 54 prefer R&B music. What percent prefer R&B music?

$$54 \div 220 = 0.245\overline{4}$$

$$\approx 24.55\%$$

$$\approx 25\%$$

About 25% of the students surveyed prefer R&B music.

22. Out of 220 students surveyed, 78 prefer pop music. What percent prefer pop music?

23. Out of 220 students surveyed, 13 prefer country music. What percent prefer country music?

24. Out of 220 students surveyed, 32 prefer alternative music. What percent prefer alternative music?

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25. Out of 220 students surveyed, 27 prefer rock music. What percent prefer rock music?

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26. Out of 220 students surveyed, 16 prefer metal music. What percent prefer metal music?

Determine each whole for the percent and part given.

27. 12 is 20% of what number?

$$\frac{20}{100} = \frac{12}{?}$$

$$\frac{1}{5} = \frac{12}{?}$$

$$\begin{array}{l} 1 \xrightarrow{\times 12} 12 \\ 5 \xrightarrow{\times 12} 60 \end{array}$$

So, 12 is 20% of 60.

28. 28 is 35% of what number?

29. 84 is 42% of what number?

30. 32 is 80% of what number?

31. 128 is 64% of what number?

32. 90 is 75% of what number?

Calculate each part using the percent equation.

- 33.** 35% of 60 is what number?

$$\frac{x}{100} = \frac{p}{w}$$

$$\frac{35}{100} = \frac{p}{60}$$

$$\frac{7 \xrightarrow{\times 3}}{20 \xrightarrow{\times 3}} = \frac{p}{60}$$

$$21 = p$$

So, 35% of 60 is 21.

- 34.** 25% of 132 is what number?

- 35.** 5% of 40 is what number?

- 36.** 15% of 80 is what number?

- 37.** 24 is what percent of 80?

- 38.** 3 is what percent of 60?

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- 39.** 30% of what number is 21?

- 40.** 40% of what number is 26?

Lesson 6.5 Skills Practice

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Practical Percents Practice! Using Percents in Real-World Situations

Vocabulary

Choose the term from the box that best completes each statement.

commission

gratuity

1. A _____ is an amount or percent of an item that is paid to employees or companies that sell merchandise.
2. A _____ is an amount or percent of a bill given by a customer to the wait staff at a restaurant as an appreciation of good service.

Problem Set

Calculate each value. Round your answer to the nearest tenth, if necessary.

1. What is 15% of 80?

$$\frac{x}{100} = \frac{p}{w}$$

$$\frac{15}{100} = \frac{p}{80}$$

$$15(80) = 100p$$

$$1200 = 100p$$

$$12 = p$$

12 is 15% of 80.

2. What is 12% of 140?

3. 42 is what percent of 70?

4. 10 is what percent of 25?

5. 42 is 30% of what number?

6. 78 is 65% of what number?

Answer each question using what you know about percent.

7. Cisco is buying a pair of jeans. The jeans were advertised as “On Sale! 20% off the original price of \$85.” When Cisco arrives at the store he sees a sign that says “Today Only! Take an additional 25% off all sale prices.” What is the final cost of the jeans?

$$20\% = 0.2$$

$$\text{discount: } \$85 \times 0.2 = \$17$$

$$\text{sale price: } \$85 - \$17 = \$68$$

$$25\% = 0.25$$

$$\text{additional discount off sale price: } \$68 \times 0.25 = \$17$$

$$\text{final price: } \$68 - \$17 = \$51$$

The final cost of the jeans is \$51.

8. Joelle is buying a summer dress. The dress was advertised as “On Sale! 15% off the original price of \$68.” Joelle also has a reward coupon that says “Take an additional 10% off the original price of one item.” What is the final cost of the dress?

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9. Perry works at the concession counter of the movie theater. On Saturday, the movie theater admitted 1200 customers. At the concession counter, Perry sold sodas to 647 customers. What percent of the customers purchased a soda? Round your answer to the nearest tenth.

10. Perry works at the concession counter of the movie theater. On Tuesday, the movie theater admitted 650 customers. At the concession counter, Perry sold popcorn to 28% of the customers. How many customers purchased popcorn?

11. Belinda is an automobile salesperson. She earns a 14% commission on her total sales. Last month she sold 4 cars for a total sales amount of \$65,452. What is her commission?

12. Nelson is a sales representative at a local electronics store. In addition to his regular salary, he earns a 3% commission on his total sales. Last month his commission was \$376.38. What was the total amount of Nelson's sales last month?
13. Roberto is an advertising sales representative for a magazine. He earns a commission on his total sales each month. Last month, Roberto sold \$75,000 in advertising. His commission was \$12,750. What percent does Roberto earn as commission?

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14. Isabel is a manager at a home improvement store. The store purchases doors in bulk and then sells them to customers with a 150% markup. Isabel labels the doors with the marked up customer price. The store purchased 100 doors for \$23,500. What customer price should Isabel label on each door?

15. Fernando is a manager at a jewelry store. The store purchases earrings in bulk and then sells them to customers with a 250% markup. A pair of earrings in Fernando's store is labeled with a customer price of \$650. What was the original price that Fernando paid for the earrings?

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16. Elena is the produce manager at a grocery store. The store purchases produce in bulk and then sells it to customers at a marked up price. The store purchases baskets of apples from a local farmer for \$3.00 per basket. Elena labels the baskets with a customer price of \$4.95. What percent did Elena mark up the baskets of apples?
17. Rakesha and her family have dinner in a restaurant. The total bill is \$125. Rakesha wants to add a 15% gratuity for the wait staff. How much should she add to the bill?
18. Jada is a waitress at a restaurant. She hopes to earn at least \$150 in tips on Saturday night. If each of Jada's customers adds an 18% gratuity to their bill, what is the total amount that Jada's customers must spend for her to reach her goal? Round your answer to the nearest hundredth.