Name _____

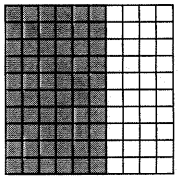
Reteaching
11-1

Understanding Percent

A percent is a ratio that compares a part to a whole.
The second term in the ratio is always 100.
The whole is 100%.
The grid has 60 of 100 squares shaded.

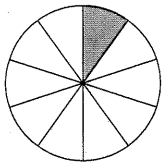
$\frac{60}{100} = 60\%$

So, 60% of the grid is shaded.



When the second term of a ratio is not 100, you can write an equivalent ratio with a denominator of 100 or use a proportion to find the percent shown by the part.

The circle has 1 of 10 equal-size parts shaded.



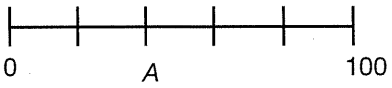
$\frac{1}{10} = \frac{10}{100} = 10\%$ or $\frac{1}{10} = \frac{x}{100}$

$10x = 100$

$x = 10$

So, 10% of the circle is shaded.

The line segment represents 100%. What percent is shown by Point *A*?



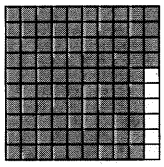
$\frac{2}{5} = \frac{40}{100} = 40\%$ or $\frac{2}{5} = \frac{x}{100}$

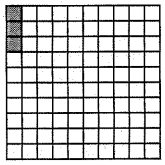
$5x = 200$

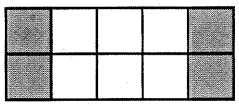
$x = 40$

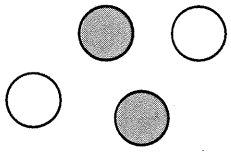
So, 40% of the line segment is shaded.

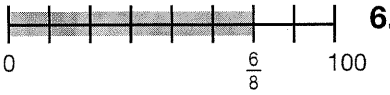
Write the percent of each figure that is shaded.

1.  **94%**

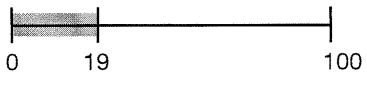
2.  **3%**

3.  **40%**

4.  **50%**

5. 

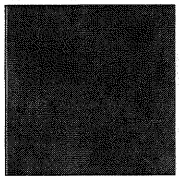
75%

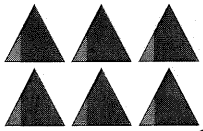
6. 

19%

7. **Number Sense** Jana divided a sheet of paper into 5 equal sections and colored 2 of the sections red. What percent of the paper did she color? **40%**

8. **Writing to Explain** Shade each model to show 100%. Explain how you knew how many parts to shade. **Since the whole is 100%, I knew I should shade all of each model.**



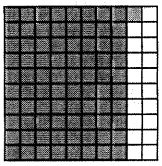


Name _____

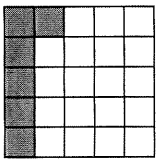
Practice
11-1

Understanding Percent

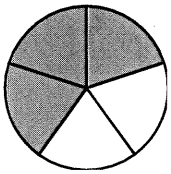
Write the percent of each figure that is shaded.

1. 

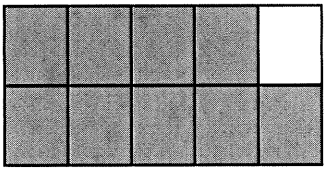
81%

2. 

24%

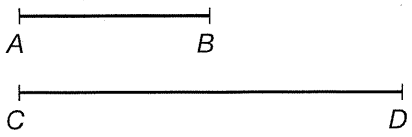
3. 

60%

4. 

90%

5. **Number Sense** What percent of line segment *AB* is equal to 50% of line segment *CD*?



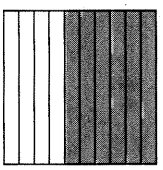
100%

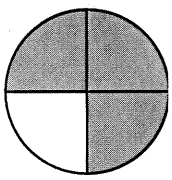
6. The line segment below shows 100%. Show 25%, 50%, and 75% of the segment.

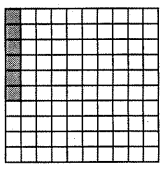
25% 50% 75%

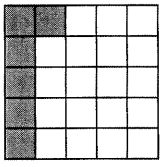
X Y

7. Which of the following figures is 60% shaded?

(A) 

B 

C 

D 

8. **Writing to Explain** You are thirsty, so a friend has offered to give you 50% of his water. What information must you have in order to find out how much water your friend will give you?

Sample answer: The total amount of water your friend has

Name _____

Enrichment
11-1

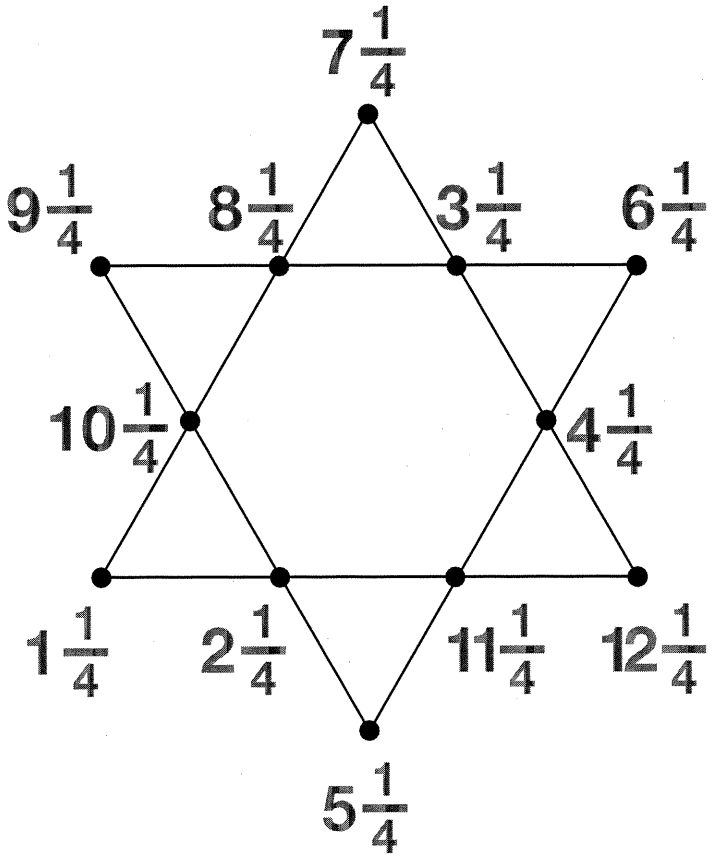
Does It Add Up?

Number Sense

Write the numbers from the fraction bank at the points on the star so the sum of the four points on each of the six longest segments is 27.

FRACTION BANK

$10\frac{1}{4}$	$7\frac{1}{4}$	$3\frac{1}{4}$	$5\frac{1}{4}$
$4\frac{1}{4}$	$12\frac{1}{4}$	$8\frac{1}{4}$	$11\frac{1}{4}$
$6\frac{1}{4}$	$2\frac{1}{4}$	$9\frac{1}{4}$	$1\frac{1}{4}$

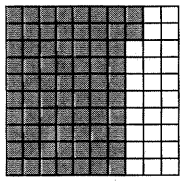


Name _____

Reteaching
11-2

Fractions, Decimals, and Percents

Fractions, decimals, and percents all name parts of a whole. Percent means per hundred, so 15% means 15 parts per hundred. The grid to the right has 72 out of 100 squares shaded. The shaded part can be represented with a fraction, $\frac{72}{100}$ ($\frac{18}{25}$ in simplest form), by a decimal, 0.72, and by a percent, 72%.



Write 36% as a fraction in simplest form and as a decimal.

$36\% = \frac{36}{100} = 0.36$

Simplify the fraction:

$\frac{36}{100} = \frac{36 \div 4}{100 \div 4} = \frac{9}{25}$

So, $36\% = \frac{9}{25} = 0.36$.

Write 0.47 as a fraction in simplest form and as a percent.

$0.47 = \frac{47}{100} = 47\%$

Write $\frac{3}{4}$ as a decimal and as a percent.

You can use a proportion or divide to help you.

Use a proportion:

$\frac{3}{4} = \frac{n}{100}$

$4n = 300$

$n = 75$

Use division:

$$\begin{array}{r} 0.75 \\ 4\overline{)3.00} \\ \underline{2\,8} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

So, $\frac{3}{4} = \frac{75}{100} = 0.75 = 75\%$.

Write each number in two other ways. Write fractions in simplest form.

1. $\frac{2}{100}$ 0.02 ; 2%
2. $\frac{71}{100}$ 0.71 ; 71%
3. $\frac{9}{10}$ 0.9 ; 90%
4. 17% 0.17 ; $\frac{17}{100}$
5. 48% 0.48 ; $\frac{12}{25}$
6. 60% 0.6 ; $\frac{3}{5}$
7. 0.04 $\frac{1}{25}$; 4%
8. 0.22 $\frac{11}{50}$; 22%

9. **Writing to Explain** Jamal said that he could write a percent as a decimal by moving the decimal point two places to the left and deleting the percent sign. Is he correct? How do you know?

Yes, I looked at the exercises and his conjecture worked for those numbers.

10. **Number Sense** Two stores sell their goods at the manufacturers' suggested retail prices, so their prices are the same. Which store has the greatest markdown from their original prices?

GOODS 2 GO
$\frac{1}{4}$ off
original prices!

BUY AND BYE
30% off
original prices!

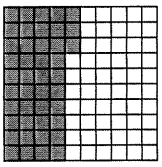
Buy and Bye; $\frac{1}{4} = 25\%$, $30 > 25$.

Name _____

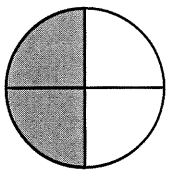
Practice
11-2

Fractions, Decimals, and Percents

Describe the shaded portion of each as a fraction, decimal, and percent.

1. 

$\frac{43}{100}$, 0.43, 43%

2. 

$\frac{2}{4}$, 0.5, 50%

Write each in two other ways.

3. 64%

0.64, $\frac{64}{100}$

4. 0.09

9%, $\frac{9}{100}$

5. $\frac{12}{50}$

24%, 0.24

6. 37%

$\frac{37}{100}$, 0.37

7. $\frac{4}{250}$

0.016, 1.6%

8. 0.023

$\frac{2.3}{100}$, 2.3%

The table at the right shows the number of states in the United States at different times in history. There are currently 50 states in the United States. Use the information to answer the questions.

Year	States
1792	15
1817	20
1836	25
1848	30
1863	35
1889	40
1896	45
1959	50

9. In what year were there 0.5 as many states as today?

1836

10. What percent of the current number of states had joined the United States by the year 1863?

70%

11. In what year were there about $\frac{2}{3}$ as many states as in 1896? 1848

12. Which of the following is equivalent to 98%?

A 0.49 B $\frac{100}{98}$ (C) 0.98 D $\frac{49}{100}$

13. **Writing to Explain** Explain how you would write $\frac{5}{6}$ as a percent.

Sample answer: I would use a proportion:

$\frac{5}{6} = \frac{X}{100}$.

Name _____

Enrichment
11-2

Find a Pair!

Number Sense

Find two adjacent squares whose sum or difference equals 12.47. Write each of the ten pairs below as an addition or a subtraction sentence.

110.7	98.3	85.83	145.25	132.78
16.2	3.73	17.24	2,251.1	2,238.63
159.17	145.67	133.2	9.58	2.89
30.4	17.17	4.7	7.77	20.4
29.8	17.33	157.46	145	132.53

1. $98.3 - 85.83 = 12.47$
2. $145.25 - 132.78 = 12.47$
3. $16.2 - 3.73 = 12.47$
4. $2{,}251.1 - 2{,}238.63 = 12.47$
5. $145.67 - 133.2 = 12.47$
6. $9.58 + 2.89 = 12.47$
7. $17.17 - 4.7 = 12.47$
8. $4.7 + 7.77 = 12.47$
9. $145 - 132.53 = 12.47$
10. $29.8 - 17.33 = 12.47$

Name _____

Reteaching
11-3

Percents Greater Than 100 or Less Than 1

All percents can be written as fractions in simplest form and as decimals. Percents greater than 100% represent amounts greater than one whole and can be written as improper fractions and as decimals greater than 1. Percents less than 1% represent amounts less than $\frac{1}{100}$ of the whole.

Write 275% as a fraction in simplest form and as a decimal.

Since percent is parts per hundred, write the percent as a fraction with a denominator of 100. $\frac{275}{100}$

Simplify the fraction. $\frac{275}{100} = \frac{275 \div 25}{100 \div 25} = \frac{11}{4} = 2\frac{3}{4}$

To write the number as a decimal, divide the numerator by the denominator.
So, $275\% = 2\frac{3}{4} = 2.75$ $275 \div 100 = 2.75$

Write $\frac{1}{5}$% as a fraction in simplest form and as a decimal.

Write the fraction in the percent as a decimal. $\frac{1}{5}\% = 0.2\%$

Write the percent as a fraction with a denominator of 100. $\frac{0.2}{100}$

Write the numerator as a whole number. $\frac{0.2}{100} = \frac{0.2 \times 10}{100 \times 10} = \frac{2}{1{,}000}$

Simplify the fraction. $\frac{2}{1{,}000} = \frac{2 \div 2}{1{,}000 \div 2} = \frac{1}{500}$

Divide the fraction to write the number as a decimal. $\frac{1}{500} = 0.002$

So, $\frac{1}{5}\% = \frac{1}{500} = 0.002$.

Write each percent as a fraction and as a decimal. Write fractions in simplest form.

1. 137% $\frac{137}{100}$; 1.37
2. 115% $\frac{23}{20}$; 1.15
3. 222% $\frac{111}{50}$; 2.22
4. 500% $\frac{5}{1}$; 5.0
5. 182% $\frac{91}{50}$; 1.82
6. 450% $\frac{9}{2}$; 4.5
7. 0.4% $= \frac{0.4}{100} = \frac{0.4}{100 \times 10} = \frac{4}{1{,}000}$ Simplify: $\frac{1}{250}$; Decimal: 0.004
8. $\frac{3}{4}\% = \frac{0.75}{100} = \frac{0.75}{100 \times 100} = \frac{75}{10{,}000}$ Simplify: $\frac{3}{400}$; Decimal: 0.0075

9. **Writing to Explain** Caryn and Alfonso bought school supplies. Caryn spent 130% of the amount Alfonso spent. She said that she spent 1.3 times the amount that Alfonso spent. Is Caryn correct? Explain.

Yes, 130% = 1.3, so Caryn is correct.

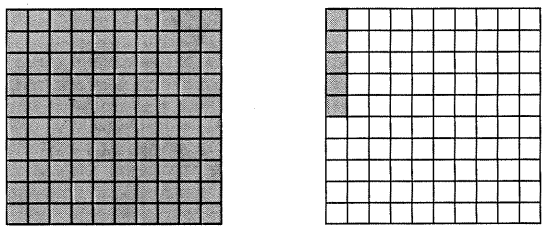
Name _____

Practice
11-3

Percents Greater Than 100 or Less Than 1

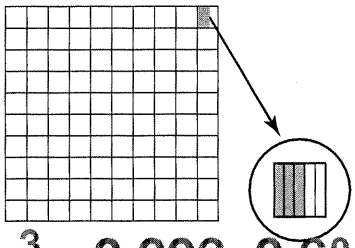
Write a fraction in simplest form, a decimal, and a percent to name each shaded part.

1.



$\frac{21}{20}$, 1.05, 105%

2.



$\frac{3}{500}$, 0.006, 0.6%

Write each percent as a fraction and as a decimal. Write fractions in simplest form.

3. 188% $\frac{47}{25}$; 1.88

4. 145% $\frac{29}{20}$; 1.45

5. 261% $\frac{261}{100}$; 2.61

6. 350% $\frac{7}{2}$; 3.5

7. 275% $\frac{11}{4}$; 2.75

8. 420% $\frac{21}{5}$; 4.2

9. 400% $\frac{4}{1}$; 4.0

10. $\frac{1}{5}$% $\frac{1}{500}$; 0.002

11. 0.7% $\frac{7}{1{,}000}$; 0.007

12. $\frac{1}{4}$% $\frac{1}{400}$; 0.0025

13. The land area of Yosemite National Park is 3079 km^2. This is about 189% of the land area of Sequoia National Park. Write 189% as a fraction in simplest form and as a decimal.

A $\frac{100}{189}$, 0.53 (rounded)

B $\frac{189}{100}$, 1.89

C $\frac{189}{100}$, 18.9

D $\frac{3079}{189}$, 16.29

14. Writing to Explain Nathan wanted to save $400 for a new bicycle. He saved 110% of his goal amount. Write 110% as a fraction in simplest form and as a decimal. Has he saved enough money to buy the bicycle? Explain how you know.

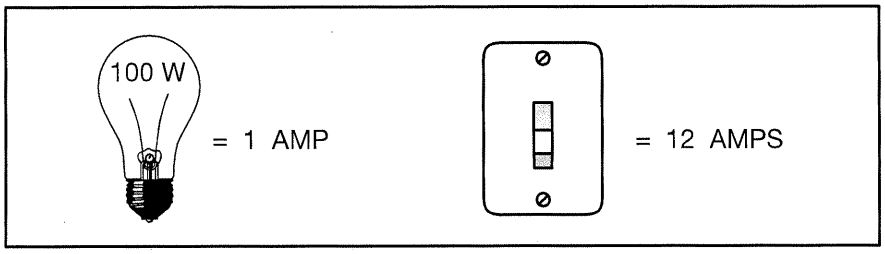
$\frac{11}{10}$, 1.1; He has saved more than enough money because 100%, the whole, is the goal amount. A percent over 100% is greater than the whole. Since Nathan has saved 110%, he has saved $440, which is more than the goal.

Name _____

Enrichment
11-3

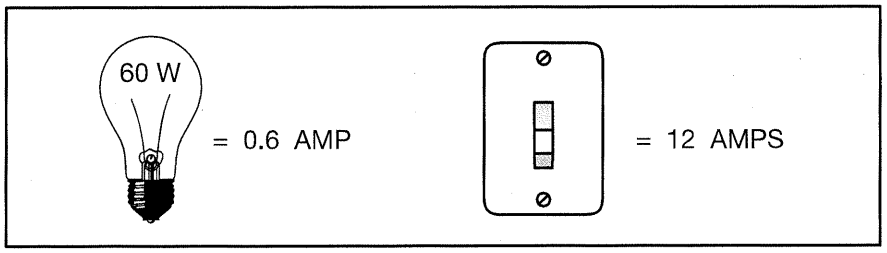
Can You Turn the Light On?

Number Sense



1. A 100-watt lightbulb uses 1 AMP of electrical power and 1 light switch can run 12 AMPS. How many switches do you need to run 60 100-watt lightbulbs? **5 switches**

2. How many switches would you need to run 75 100-watt bulbs? **7 switches**



3. The 60-watt bulb uses 0.6 AMPS of electricity. How many switches will be needed to handle 30 60-watt bulbs? **2 switches**

4. How many switches would be needed to handle 75 60-watt bulbs? **4 switches**

5. 120-watt bulbs will use 1.2 AMPS of electricity. If 12-AMP switches are used, how many switches will be needed to run 40 120-watt bulbs? **4 switches**

6. 150-watt bulbs will use 1.5 AMPS of electricity. If the same 12-AMP switches are used, how many of the switches will need to be installed to handle 20 150-watt bulbs? **3 switches**

7. 15-watt bulbs will use 0.15 AMPS of electricity. How many 12-AMP switches will be needed to handle 100 15-watt bulbs? **2 switches**

8. Can 5 12-AMP switches handle 27 150-watt bulbs and 19 120-watt bulbs? If not, how many more switches are needed?

No; 1 more switch

Name _____

Reteaching
11-4

Estimating Percent

Estimate 8% of 300,000.

Round the percent.
$8\% \approx 10\%$

Think of the equivalent decimal.
$10\% = 0.1$

Multiply.
$0.1 \times 300{,}000 = 30{,}000$

Estimate 27% of 297.

Round both numbers.
$27\% \approx 30\%$ $297 \approx 300$

Think of an equivalent decimal.
$30\% = 0.3$

Multiply.
$0.3 \times 300 = 90$

To multiply by 0.1, move the decimal point one place to the left.

$0.1 \times 50 = 5$ $0.1 \times 4700 = 470$ $0.1 \times 3{,}659 = 365.9$

To multiply by a multiple of 0.1, such as 0.3, break apart the number.
$0.3 = 0.1 \times 3$

Multiply one step at a time.
$0.1 \times 300 = 30$ $30 \times 3 = 90$

Round each percent, then write the equivalent decimal.

1. 41% 40%, 0.4
2. 88% 90%, 0.9
3. 76% 80%, 0.8
4. 22% 20%, 0.2
5. 37% 40%, 0.4
6. 59% 60%, 0.6

Break apart each decimal so the numbers are easier to multiply.

7. 0.4 0.1×4
8. 0.9 0.1×9
9. 0.6 0.1×6

Estimate each percent.

10. 9% of 20 2
11. 21% of 31 6
12. 31% of 37 12
13. 38% of 49 20
14. 49% of 101 50
15. 61% of 19 12
16. 59% of 304 180
17. 70% of 471 350
18. 84% of 149 120

19. **Number Sense** What is another way to estimate 51% of 42?
51% is close to 50%, which equals $\frac{1}{2}$. $42 \div 2 = 21$.

20. **Reasoning** If 10% of a number is 100, what is 15% of that number? Explain how you determined your answer. If 10% of a number is 100, then 5% of the same number is 50. 10% + 5% = 15%, so 15% of the number is 100 + 50 = 150.

Name _____

Practice
11-4

Estimating Percent

Estimate. **Sample answers are given for 1-19.**

1. 35% of 102 **35**
2. 42% of 307 **120**
3. 79% of 13 **8**
4. 84% of 897 **720**
5. 13% of 97 **13**
6. 28% of 95 **30**
7. 61% of 211 **120**
8. 19% of 489 **100**
9. 48% of 641 **320**
10. 21% of 411 **80**
11. 77% of 164 **128**
12. 51% of 894 **450**
13. 39% of 306 **120**
14. 62% of 522 **300**
15. 48% of 341 **170**

16. **Number Sense** Which would you need to estimate to find an answer, 45% of 200 or 46% of 97?

46% of 97

17. The school store sold 48 items on Monday. Of those items, 60% were pens. About how many pens were sold on Monday?

About 30 pens

18. The school cafeteria workers cooked 52 lb of pasta on Thursday. Of that, 90% was sold on Thursday, and 10% was stored in the refrigerator. About how much pasta was stored in the refrigerator?

About 5 lb

19. On a rainy day, 76% of the students in the school brought umbrellas. There are 600 students in the school. About how many students brought umbrellas?

About 450 students

20. Which of the following is the best estimate for 68% of 251?

A 150

(**B**) 175

C 204

D 210

21. **Writing to Explain** Explain how you would estimate 79% of 389.

Sample answer: To find an estimate, round 79% to 80% and 389 to 400. So, 80% of 400 is 320.

Name _____

Enrichment
11-4

Animal Ages

Estimation

Use the chart of maximum lifespans and your knowledge of compatible numbers to find each answer.

Maximum Lifespan

Animal	Years	Animal	Years
Aardvark	23	Fin whale	116
Andean condor	72	Giant panda	26
Blue macaw	64	Hedgehog	14
Canadian otter	21	Land snail	15
Capybara	12	Millipede	7
Common box tortoise	138	Marion's tortoise	152
Common octopus	3	Roundworm	39

1. Which animal has a maximum lifespan that is about 52% of the maximum lifespan of a fin whale? **Blue macaw**

2. Which animal has a maximum lifespan that is about 17% of the maximum lifespan of a Marion's tortoise? **Giant panda**

3. Which animal has a maximum lifespan that is about 22% of the maximum lifespan of a blue macaw? **Hedgehog**

4. Which animal has a maximum lifespan that is about 29% of the maximum lifespan of a Canadian otter? **Millipede**

5. Which animal has a maximum lifespan that is about 15% of the maximum lifespan of an Andean condor? **Capybara**

6. Which animal has a maximum lifespan that is about 66% of the maximum lifespan of a roundworm? **Giant panda**

Name _____

Reteaching
11-5

Finding the Percent of a Number

Find 77% of 240.

First estimate.
$77\% \approx 75\% = \frac{3}{4}$
$\frac{3}{4} \times 240 = 180$

Use a decimal.
Change the percent to a decimal.
$77\% = 0.77$

Multiply.
$0.77 \times 240 = 184.8$

The answer 184.8 is close to the estimate 180.

Use a proportion.

Write the percent as a fraction.
$77\% = \frac{77}{100}$

Write the proportion and solve.
$\frac{x}{240} = \frac{77}{100}$
$100x = 18{,}480$
$\frac{100x}{100} = \frac{18{,}480}{100}$
$x = 184.8$

Find the percent of each number.

1. 25% of 24 **6**
2. 50% of 72 **36**
3. 72% of 88 **63.36**
4. 18% of 97 **17.46**
5. 66% of 843 **556.38**
6. 46% of 388 **178.48**
7. 89% of 111 **98.79**
8. 0.7% of 392 **2.744**
9. 110% of 640 **704**

10. **Geometry** Ava's aquarium is 10 in. tall, 15 in. long, and 8 in. wide. The aquarium is 95% filled with water. How many cubic inches of water are in the aquarium?

1,140 in.^{3}

11. DeWayne used his music club membership card to get 15% off the cost of a CD. If the regular price of the CD was $15.95, how much did DeWayne pay?

$13.56

12. Marla bought a dress priced at $89.99. She used a 20% off coupon. How much did she pay for the dress?

$71.99

13. **Writing to Explain** Tell how you could use a proportion to find 125% of 500. Why is the solution greater than the original number?

I would use a proportion: $\frac{125}{100} = \frac{x}{500}$. Then, I would think about what number times 100 = 500 and then multiply 125 by that number, 5. The solution is greater than the original number because the percent is greater than 100.

Name _____

Practice
11-5

Finding the Percent of a Number

Find the percent of each number.

1. 42% of 800	336	**2.** 5.6% of 425	23.8	**3.** 85% of 15	12.75
4. $33\frac{1}{3}$% of 678	226	**5.** 12% of 65	7.8	**6.** 58% of 324	187.92
7. 98% of 422	413.56	**8.** 32% of 813.5	260.32	**9.** 78% of 219	170.82
10. 13% of 104	13.52	**11.** 24% of 529	126.96	**12.** 4.5% of 82	3.69
13. 64% of 912	583.68	**14.** 128% of 256	327.68	**15.** 63% of 1,368	861.84

16. About 42% of the flag of the United States is red. On a flag that is 9 feet tall and 15 feet wide, how many square feet are red?

56.7 ft^2

17. **Estimation** Estimate 68% of 32, then find the actual answer. Which is greater?

Estimate: 24; Actual: 21.76; Estimate is greater.

For **18** and **19**, round your answer to the nearest whole number.

18. An adult has 206 bones. Of those, approximately 2.9% are found in the inner ear. About how many bones in the human body are found in the inner ear?

6 bones

19. Approximately 12.6% of the bones are vertebrae in the human back. About how many bones in the human body are vertebrae?

26 bones

20. 45 is 12% of which number?

A 540 **B** 450 **C** 375 **D** 5.4

21. **Writing to Explain** Without calculating, tell which is greater, 52% of 3,400 or 98% of 1,500. Explain.

52% of 3,400 is greater. About half of 3,400 is greater than about all of 1,500.

Name _____

Enrichment
11-5

Savings Account

Decision Making

James has saved $200 to purchase some new skateboarding equipment. Use the list of items and their prices to answer the questions.

Equipment Price List
Skateboard: $100
Skateboarding Shoes: $60.00
Knee Pads: $30.00
Elbow Pads: $20.00
Wrist Guards: $20.00
Helmet: $50.00
Ramp: $115.00

1. Can James spend less than 50% of his savings on new skateboarding shoes? Explain.

   Yes, 50% of $200 is $100 and the shoes are $60.

2. Which item or combination of items can James buy with 25% of his savings?

   Helmet; knee pads and elbow pads, knee pads and wrist guards, or elbow pads and wrist guards

3. James has 75% of his savings left. Can he buy a new skateboard and new shoes? Explain.

   No, 75% of $200 is $150 and the board and shoes total $160.

4. Which 3 items would total 35% of James's savings? Name 2 items that would also total 35% of his savings.

   Knee pads, elbow pads, and wrist guards; helmet and wrist guards, or helmet and elbow pads

5. James decides to buy a skateboard and a helmet. What percentage of his savings is left?

   25%

6. James's mother says she too has been saving to help him purchase new equipment. If she has $500 in the account, what percentage of that money will James need to add to his $200 to be able to purchase all of the items on his list?

   39%

Name _____

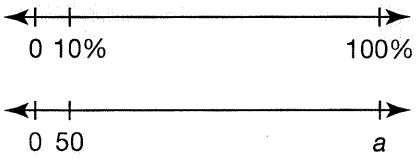
Reteaching
11-6

Finding the Whole

You can draw a number line model to help you solve this problem:

> Darlene spent 10% of her allowance and saved the rest. The amount she spent was 50 cents. How much is Darlene's allowance?

In the problem, 50 cents is the part and 10% is the percent. You need to find Darlene's allowance, *a*.



The model shows 10% as the percent, 50 cents as the part, and *a*, the whole you are trying to find.

A proportion can also help you find the whole.

$\frac{10}{100} = \frac{50}{a}$

$a = 500$

500 cents = $5.00

Darlene's allowance is $5.00.

Think: 10 times what number equals 50?
Since $10 \times 5 = 50$, then
multiply 100×5 to get 500.

For **1** through **3**, draw a number line model to help you solve the problem. **Check students' drawings.**

1. Li rode her bike 25% of the way to school. She rode 5 blocks. How many blocks does Li live from school?

   20 blocks

2. Bob brought 40% of the collected canned goods to the food pantry. If Bob brought 160 cans to the pantry, how many cans were collected?

   400 cans

3. Sid memorized 60% of his lines for the class play. He memorized 60 lines. How many lines long was Sid's part in the play?

   100 lines

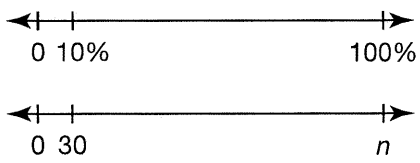
Name _____

Practice
11-6

Finding the Whole

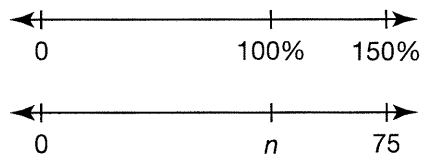
In **1** through **4**, use the number lines and write a proportion to solve.

1. 10% of what number is 30?



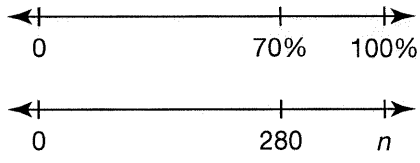
$\frac{10}{100} = \frac{30}{n}$; $n = 300$

2. 150% of what number is 75?



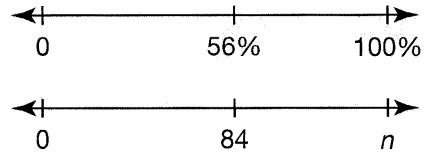
$\frac{150}{100} = \frac{75}{n}$; $n = 50$

3. 70% of what number is 280?



$\frac{70}{100} = \frac{280}{n}$; $n = 400$

4. 56% of what number is 84?



$\frac{56}{100} = \frac{84}{n}$; $n = 150$

For **5** through **8**, find each whole.

5. 60% of what number is 12?

20

6. 100% of what number is 61?

61

7. 40% of what number is 5?

12.5

8. 14% of what number is 7?

50

9. Only 5% of the total attendees for a concert have arrived. If 105 people have arrived, how many attendees are expected?

(A) 2,100 **B** 2,025 **C** 1,950 **D** 1,800

10. Writing to Explain You want to solve 11% of what number is 22. Explain how you can do this using a proportion

Write the first ratio as $\frac{11}{100}$ and set it equal to $\frac{22}{n}$. Since $11 \times 2 = 22$ you can multiply 100×2 to get 200. Check: 11% of 200 = 22

Name _____

Enrichment
11-6

Percent Problems

Number Sense

1. Marisa and Mario were both given $560 for their birthdays. Marisa saved 30% and Mario saved 70%. How much did each save?

   Marisa saved $168 and Mario saved $392.

2. Toni spent $72.25 getting her hair styled for the prom. The salon was having a 15% off sale. How much was the original price of Toni's hair treatment?

   $85.00

3. Brad waited until a laptop computer went on sale for $799. He had a coupon good for 25% off. How much did Brad pay for his laptop computer?

   $599.25

4. Anya traveled 880 miles to visit her grandfather. She drove 40% of those miles. How many miles did she drive?

   352 miles

5. Gene earned $950 delivering papers. If he spent 25% of his earnings, how much money did Gene have left?

   $712.50

6. Mae bought a $75 skirt at 35% off and a $160 pair of ice skates at 40% off. How much did she save in all? Write an equation to find the total savings, and then solve.

   $(0.35 \times 75) + (0.40 \times 160) =$

   $26.25 + 64 = \$90.25$

7. Lisa earned $426 grooming horses. She donated 9% of her earnings to a local animal shelter. How much money did Lisa donate to the shelter?

   $38.34

Name _____

Reteaching
11-7

Problem Solving: Reasonableness

After solving a problem, look back and check that your answer is reasonable and that you answered the correct question.

Terrell bought a skateboard on sale for 20% off the original price. He also had a coupon for 10% off. The original price was $80. How much did Terrell pay for the skateboard before tax?

Answer: Terrell paid $24 for the skateboard.

Is my answer reasonable?

Since the discount is about 30% off, Terrell will pay about 70% of the original cost of the skateboard.

70% of $80 is $56.

The answer is not reasonable because the price of the skateboard should be about 70% of the original price, or $56.

Ask yourself:

Did I use the correct operation(s) to solve the problem?

Is all of my work correct?

Is the actual answer close to my estimate?

Did I answer the correct question?

Yes. The question asks for the sale price of the skateboard.

Ask yourself:

What am I asked to find?

Look back and check. Tell if the answer given is reasonable. Explain why or why not.

1. Marita bought some toys for her cat at the pet store. The pet store is having a storewide discount of 15% on all pet toys. How much will Marita pay for the toys if the total price before the discount is $42?
Answer: The discount price is $35.70. Sample answer:
The answer is reasonable. 10% of $40 is $4, and 5% of $40 is $2. $40 − $6 is $34 and $34 is close to $35.70.

2. Frankie paid a total of $53.50 for some fish for his aquarium. The price includes a coupon for 7% off. What was the cost of the fish?
Answer: The fish cost $50.00. Sample answer:
The answer is not reasonable since the price of the fish before the discount should be more than $53.50.

Name _____

Practice
11-7

Problem Solving: Reasonableness

Look back and check. Tell if the answer given is reasonable. Explain why or why not.

1. A shipment of 200 games is 20% video games, 50% board games, and 30% puzzles. How many board games are chess if 25% of the board games are chess?
   Answer: The number of chess games is 50.
   Sample answer: The answer is not reasonable. 50% of 200 is 100 and 25% of 100 is 25. Chess is 25% of half of the games, not 25% of all of the games.

2. A DVD player costs $199. How much will it cost if it is 15% off?
   Answer: The cost of the DVD player will be $169.15.
   Sample answer: The answer is reasonable. 10% of $200 is $20, so 5% of $200 is $10. $200 − $30 is $170 and $170 is close to $169.15.

3. **Write a Problem** An ad in the newspaper is offering 25% off ski lift tickets at Big Bear. The original tickets cost $60. Write a problem using the information from the ad. Then give an answer for someone to look back and check for reasonableness.
   Sample answer: What is the cost of ski lift tickets if the original price is $60 and a newspaper ad is offering 25% off? Answer: The cost is $45.

4. Students at Warm Springs Middle School are going on a field trip to Orange County. If 60% of the 120 students signed up for the field trip are girls, and 25% of the girls are in sixth grade, how many sixth grade girls are going on the field trip?

   (A) 18 **B** 25 **C** 43 **D** 102

5. **Writing to Explain** Bailey paid $42 for a backpack that was 40% off the original price. Is $56 a reasonable price for the original cost of the backpack? Explain.
   Sample answer: No, since you pay 60% if the price is 40% off and 60% of $70 is $42, the original cost is $70.

Name _____

Enrichment
11-7

What a Bargain!

Number Sense

Match the pricing information on the left with the correct sale on the right.