Name _____ Date _____

15.1 Practice A

Write the percent as a decimal.

1. 81%	**2.** 78%	**3.** 5%	**4.** 8%
5. 40%	**6.** 60%	**7.** 23.7%	**8.** 16.75%
9. 150%	**10.** 210%	**11.** 186%	**12.** 416%
13. 100.8%	**14.** 5.17%	**15.** 0.4%	**16.** 0.04%

17. Describe and correct the error in writing 1.475% as a decimal.

✗ $1.475\% = 1.475\% = 147.5$

Write the decimal as a percent.

18. 0.66	**19.** 0.32	**20.** 0.51	**21.** 0.97
22. 0.01	**23.** 0.04	**24.** 0.312	**25.** 0.468
26. 0.5	**27.** 1.2	**28.** 1.08	**29.** 1.16
30. 0.003	**31.** 0.025	**32.** 0.0245	**33.** 2.025

34. Describe and correct the error in writing 1.8 as a percent.

✗ $1.8 = 1.8 = 18\%$

35. Fifty-four percent of the students in your class have moved at least one time. Write this percent as a decimal.

36. Only 0.15 of the total number of vehicles in your school parking lot are buses. What percent of the vehicles are buses?

37. You spent 0.88 of your allowance this week. What percent of your allowance did you spend?

38. On a history test, you get 86 out of a possible 100 points. Write a decimal and a percent that represent a score of 86 out of 100.

39. Of the fluids that you drink on a typical day, $\frac{1}{10}$ is milk and 50% is water. How many times more water do you drink than milk?

Write the percent as a fraction in simplest form and as a decimal.

40. 21%	**41.** 75%	**42.** 64%	**43.** 85%

Name _____ Date _____

15.1 Practice B

Write the decimal as a percent.

1. 0.54 **2.** 0.37 **3.** 0.222 **4.** 0.929

5. 1.4 **6.** 2.5 **7.** 20 **8.** 0.005

Write the percent as a fraction in simplest form and as a decimal.

9. 68% **10.** 9% **11.** 55% **12.** 26%

13. 42.4% **14.** 73.6% **15.** 31.25% **16.** 44.65%

17. About 36% of the students at a middle school are seventh graders. What percent are *not* in seventh grade?

18. The percents of three types of tickets collected at the gate for a high school football game are shown.

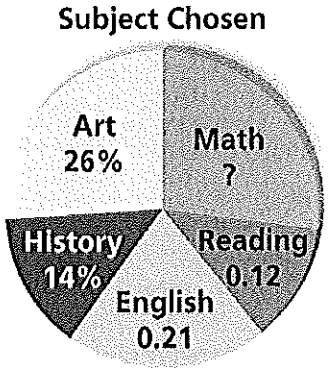
Ticket type	Student	Adult	Senior (65 and older)
Percent	48%	28%	14%

a. Write the percents as decimals and as fractions.

b. There is one other type of ticket that is not shown. It is a ticket for a child under 5. What percent of the tickets were of this type?

c. Make a bar graph to represent the percents for all four ticket types.

19. Students in an after-school enrichment program chose one of five subject areas.



a. What percent chose English or reading?

b. What percent chose English or history?

c. How many times more students chose English than reading?

d. What percent chose math? Write the percent as a decimal.

20. At one school, half of the students live within 1 mile, 78% live within 2 miles, and 0.1 of the students live between 2 and 3 miles from the school.

Make a table to show the percent of students who live at each distance from the school.

a. within 1 mile

b. between 1 and 2 miles

c. between 2 and 3 miles

d. more than 3 miles

Name _____ Date _____

15.2 Practice A

Tell which number is greater.

1. $\frac{3}{4}$, 70%
2. $\frac{1}{2}$, 0.54
3. 0.21, 21%
4. $\frac{2}{3}$, 66%
5. 0.482, 49%
6. 16%, 0.108
7. $\frac{12}{25}$, 48%
8. $\frac{1}{10}$, 12%
9. 1.2, 11%
10. 58%, $\frac{31}{50}$
11. 5020%, $50\frac{1}{4}$
12. 12.25%, $\frac{1}{8}$

13. Describe and correct the error in comparing 0.7% and $\frac{17}{25}$.

$\times$ $\frac{17}{25} \overset{\times 4}{=} \frac{68}{100}$ = 0.68%

0.7% is greater than 0.68%, so 0.7% is the greater number.

Use a number line to order the numbers from least to greatest.

14. 0.64, $\frac{13}{20}$, 63%
15. 45%, 0.46, $\frac{11}{25}$
16. 0.12, $\frac{1}{8}$, 0.135, 13%
17. $\frac{15}{16}$, 90%, 0.925, $\frac{7}{8}$, 0.93
18. $3\frac{2}{3}$, 362%, 3.66, $3\frac{3}{5}$, 36
19. 0.3, 27.3%, $\frac{11}{40}$, 28%, 0.27

20. You use 8 fluid ounces of fruit juice in a recipe to make 64 fluid ounces of fruit punch. A fruit punch you can buy at the store has 10% real fruit juice. Which has a higher percent of fruit juice?

21. While shooting baskets at a basketball hoop, you make 36 out of 80 shots. Your friend makes 43.75% of the shots. Who made a higher percent?

22. To earn a bonus in a video game, you must find at least 60% of the hidden gems. You find 25 out of 40 gems. Do you get the bonus? Explain.

23. The table shows the portion of students at a middle school that are in each grade. Order the grades from the least to the greatest number of students.

Grade	6	7	8
Portion of students	$33\frac{1}{3}$%	0.3125	$\frac{17}{48}$

Name _____ Date _____

15.2 Practice B

Tell which number is greater.

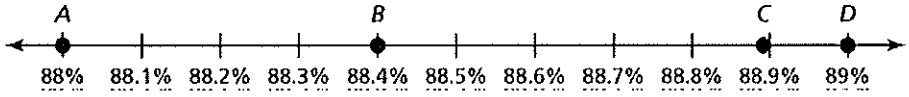
1. $\frac{1}{4}$, 22%
2. $\frac{5}{9}$, 55%
3. 3.2, 32%
4. 99.9%, 1

Use a number line to order the numbers from least to greatest.

5. $\frac{1}{3}$, 0.3, 33%, $\frac{8}{25}$, 33.6%
6. 210%, 2.2, $2.\overline{2}$, $\frac{43}{20}$

Tell which letter shows the graph of the number.

7. 0.884
8. $\frac{8}{9}$
9. $\frac{22}{25}$
10. 0.89



11. Describe a process that you can use to find a decimal whose value is between 31% and 32%.

12. Is 6 centimeters greater than 5% of a meter? Explain.

13. Does 6% of a pound weigh more than an ounce? Explain.

14. Order the periods of time from least to greatest.

    1% of an hour $\frac{2}{3}$ of a minute 0.0004 of a day

15. The table shows the portions of the U.S. population that lived in Florida in certain years.

Year	1860	1910	1960	2010
Portion of U.S. Population in Florida	0.45%	0.0082	$\frac{1}{36}$	$\frac{1}{16}$

    a. Order the portions from least to greatest.

    b. Since 1860, how has the population of Florida increased compared to the population of the United States? Why do you think this happened?

    c. Do you think this will always happen? Explain your reasoning.

16. Arsenic is toxic to humans. The greatest amount of arsenic that is allowed in drinking water is 10 parts per billion. A test shows that a source of drinking water contains 0.000002% arsenic. Is this an allowable amount? Explain.

Name _____ Date _____

15.3 Practice A

Use a model to estimate the answer to the question. Use a ratio table to check your answer.

1. What number is 20% of 40?
2. 12 is what percent of 50?
3. 42 is 60% of what number?
4. What number is 150% of 92?

Write and solve a proportion to answer the question.

5. 40% of what number is 15?
6. 24 is 0.6% of what number?
7. What percent of 75 is 27?
8. 17 is what percent of 68?
9. Of the 60 seeds that you plant, 80% germinate. How many seeds germinate?
10. You are charged 6% sales tax. You purchase a new bicycle and pay $27 in sales tax. What is the purchase price of the bicycle?

Write and solve a proportion to answer the question.

11. 0.2 is what percent of 16?
12. 19.6 is 24.5% of what number?
13. $\frac{3}{5}$ is 30% of what number?
14. What number is 45% of $\frac{5}{9}$?
15. You are making 28 name badges for a committee. You complete 75% of these on Monday. How many do you have left to complete on Tuesday?
16. You and your friend are selling tickets for the orchestra concert. On Thursday, you sold 15 tickets and your friend sold 10 tickets.
    a. What percent of the tickets sold on Thursday did you sell?
    b. On Friday, you sold 9 tickets and your friend sold 16 tickets. What percent of the tickets sold on Friday did you sell?
    c. What percent of the total tickets sold on Thursday and Friday did you sell?

Name _____ Date _____

15.3 Practice B

Write and solve a proportion to answer the question.

1. 55% of what number is 33?
2. What percent of 120 is 42?
3. 36 is 0.8% of what number?
4. 48 is what percent of 64?
5. Of the 360 runners at a 5-kilometer race, 20% are in the 35–39 age bracket. How many runners at the 5-kilometer race are in the 35–39 age bracket?
6. You pay $3.69 for a gallon of gasoline. This is 90% of the price of a gallon of gasoline one year ago. What was the price of a gallon of gasoline one year ago?
7. Describe and correct the error in using the percent proportion to answer the question below.

   "6 is 6.25% of what number?"

$$\frac{a}{w} = \frac{p}{100}$$
$$\frac{6}{w} = \frac{0.0625}{100}$$
$$w = 9600$$

Write and solve a proportion to answer the question.

8. $\frac{7}{8}$ is 70% of what number?
9. 7.2 is 250% of what number?
10. What number is 72% of $\frac{3}{8}$?
11. 1.4 is what percent of 1.12?
12. You earn a score of 86.8 on a standardized exam. Your score is 140% higher than your friend's score on the standardized exam. What is your friend's score?
13. 80% of a number is x. What is 40% of the number?
14. Answer each question.
    a. What is 35% of $90x$?
    b. What percent of $16x$ is $9x$?

Name _____ Date _____

15.4 Practice A

Answer the question. Explain the method you chose.

1. 24 is what percent of 60?
2. 8 is 40% of what number?

Write and solve an equation to answer the question.

3. What number is 70% of 120?
4. 30 is what percent of 120?
5. 112 is 56% of what number?
6. 128 is what percent of 80?
7. What number is 140% of 45?
8. 15 is 6% of what number?
9. There are 35 competitors in a marathon. Sixty percent of these finished the race in under four hours. How many competitors finished the race in under four hours?
10. Your class is going on a field trip. Twenty-four students have turned in their permission slips so far. This is 80% of the students in the class. How many students are in the class?
11. You take a test with 32 questions on it. You answer 24 questions correctly. What percent of the questions do you answer correctly?
12. You have r rare coins, consisting of p pennies and n nickels.
    a. p is 20% of 190. How many pennies do you have?
    b. 190 is 200% of r. How many rare coins do you have?
    c. n is 60% of r. How many nickels do you have?
13. The table shows the sales receipt for your purchase.
    a. The items with a "T" next to the price are subject to sales tax. What percent sales tax did you pay?
    b. Calculate the price of the top.
    c. The price you paid for the top was 60% of the original price. What was the original price of the top?

Item	Price
top	p
earrings	$ 3.00 T
socks	$ 2.00
granola bar	$ 0.50 T
Subtotal	$13.00
Tax	$ 0.21
Total	$13.21

Tell whether the following statement is *true* or *false*. Explain your reasoning.

14. 120% of a whole number is always greater than the number.
15. You can find 0.5% of a number by multiplying the number by $\frac{5}{100}$.

Name _____ Date _____

15.4 Practice B

Answer the question. Explain the method you chose.

1. 27 is what percent of 90?
2. 7 is 5% of what number?

Write and solve an equation to answer the question.

3. 27 is 0.5% of what number?
4. What number is 125% of 240?
5. 1.4% of what number is 28?
6. 27 is what percent of 72?
7. During a given month, there was a total of 23.6 inches of rain. This was 250% of the average rainfall for that month. What is the average rainfall for that month?
8. To maintain an acceptable level of chlorine in your pool, you add 1.4 gallons of chlorine. This is 0.007% of the amount of water in your pool. How many gallons of water are in your pool?
9. You must attend a minimum of 85% of the practices in order to play in the playoffs. You have made 37 of the 42 practices. Will you be able to play in the playoffs?
10. You are in charge of the seventh grade graduation dinner. The table shows the results of a survey of students' meal preferences.

Choice	Percent
Chicken Nuggets	25%
Spaghetti	?
Pizza	45%
Fish Sticks	?

   a. 144 students chose pizza. How many students responded to the survey?

   b. How many students chose chicken nuggets?

   c. The number of students choosing fish sticks was 50% of the number of students choosing spaghetti. How many students chose fish sticks?

   d. How many students chose spaghetti?

11. What is 15% of 40% of $180?
12. There are 15 copies of a popular CD left to be sold in a store. This is between 1% and 1.5% of the original number of copies of the CD in the store. The original number of CDs was between what two numbers?
13. Tell whether the statement is *true* or *false*. Explain your reasoning.

    If A is 45% of B, then the ratio $A : B$ is 9 : 20.

Find the percent to the nearest hundredth.

14. 16 is what percent of 38?
15. 50 is what percent of 38?

Name _____ Date _____

15.5 Practice A

Find the new amount.

1. 12 dogs decreased by 25%
2. 140 fluid ounces increased by 45%
3. 100 textbooks increased by 99%
4. 75 students decreased by 80%

Identify the percent of change as an *increase* or a *decrease*. Then find the percent of change. Round to the nearest tenth of a percent, if necessary.

5. 5 cups to 8 cups
6. 150 pounds to 135 pounds
7. 14 dollars to 10 dollars
8. 28 seconds to 23 seconds
9. $\frac{1}{3}$ to $\frac{2}{3}$
10. $\frac{1}{3}$ to $\frac{1}{6}$
11. Yesterday your bus ride to school took 10 minutes. Today your bus ride took 12 minutes. What is the percent of change?
12. Yesterday 270 concert tickets were sold. Today 216 tickets were sold.
    a. Find the percent of change in the number of tickets sold from yesterday to today.
    b. Use the percent of change from part (a) to predict the number of tickets sold tomorrow. Round to the nearest ticket, if necessary.
    c. Find the predicted percent of change in the number of tickets sold from yesterday to tomorrow. Round to the nearest tenth of a percent, if necessary.
13. This month a band has 6 musicians. This is a 50% increase from the number of musicians in the band last month. How many musicians were in the band last month?
14. The sides of a square garden are 8 feet long.
    a. You enlarge the garden to create a 25% increase in the length of each side. Find the new length of the sides.
    b. Find the percent of change in the perimeter of the garden. Round to the nearest tenth of a percent, if necessary.
    c. Find the percent of change in the area of the garden. Round to the nearest tenth of a percent, if necessary.

Name _____ Date _____

15.5 Practice B

Find the new amount.

1. 55 employees increased by 20%
2. 25° decreased by 60%
3. 15 customers increased by 200%
4. 4200 fans increased by 0.5%

Identify the percent of change as an *increase* or a *decrease*. Then find the percent of change. Round to the nearest tenth of a percent, if necessary.

5. 3.2 kilograms to 2.4 kilograms
6. 41 euros to 85 euros
7. $\frac{2}{7}$ to $\frac{4}{7}$
8. $\frac{5}{6}$ to $\frac{1}{3}$
9. Last month you swam the 50-meter freestyle in 28.38 seconds. Today you swam it in 27.33 seconds. What is your percent of change? Round to the nearest tenth of a percent, if necessary.
10. Last week 1200 burgers were served at the Burger Barn.
    a. This week 1176 burgers were served. What is the percent of change?
    b. Use the percent of change from part (a) to predict the number of burgers served next week. Round to the nearest whole number, if necessary.
11. The price of a share of a stock was $37.50 yesterday.
    a. Today there was a price decrease of 4%. What is today's price?
    b. Based on today's price in part (a), what percent of change is needed to bring the price back up to $37.50? Round to the nearest tenth of a percent, if necessary.
12. The table shows the membership of two scout troops.

Year	Troop A	Troop B
2010	14	21
2011	16	24

    a. What is the percent of change in membership from 2010 to 2011 for Troop A? Round to the nearest tenth of a percent, if necessary.
    b. What is the percent of change in membership from 2010 to 2011 for Troop B? Round to the nearest tenth of a percent, if necessary.
    c. Which troop has the better record in terms of the number of new members?
    d. Which troop has the better record in terms of the percent of change in membership?

Name _____ Date _____

15.6 Practice A

Copy and complete the table.

	Original Price	Percent of Discount	Sale Price
1.	$75	30%	
2.	$18	65%	
3.		30%	$42
4.		55%	$90
5.	$35		$28
6.	$55		$46.75

Find the cost to store or selling price.

7. Cost to store: $65

Markup: 25%

Selling price: ?

8. Cost to store: ?

Markup: 80%

Selling price: $122.40

9. The cost to a store for a box of cereal is $2.50. The store is selling the box of cereal for $3.50. What is the percent of markup?

10. A store pays $120 for a bicycle.

a. The store has a 60% markup policy. What is the selling price of the bicycle?

b. The store is now going out of business and is selling all of the bicycles at a 30% discount. What is the sale price of the bicycle?

c. Will the store make money or lose money on the bicycle? How much?

11. The selling price of a skateboard is $147. The store has a 75% markup policy. What is the cost of the skateboard to the store?

12. You buy a watch for $60.

a. There is a 6% sales tax. What is your total cost for the watch?

b. Your friend buys the same watch a month later. It is now sold at a discount of 15%. What is the new sale price?

c. What is your friend's total cost for the watch including tax?

d. What is the percent of change in the total cost?

Name _____ Date _____

15.6 Practice B

Find the original price, discount, sale price, selling price, markup, or cost to store. Round to the nearest penny, if necessary.

1. Original price: $130

   Discount: 45%

   Sale price: ?

2. Original price: $500

   Discount: ?

   Sale price: $175

3. Original price: ?

   Discount: 5%

   Sale price: $68.40

4. Cost to store: $1600

   Markup: 33%

   Selling price: ?

5. Cost to store: $65

   Markup: ?

   Selling price: $91

6. Cost to store: ?

   Markup: 25%

   Selling price: $437.50

7. You are buying shoes online. The selling price is $29.99. Round to the nearest penny, if necessary.

   a. The sales tax is 6.5%. What is the total cost?

   b. The cost of shipping is 15% of the total cost. What is the total cost plus shipping?

   c. If the total cost plus shipping is greater than $35, then you receive a 10% discount off the original selling price. Do you qualify? If so, what is the new total cost plus shipping?

8. You have a coupon for $15 off a video game. You can use it on 2 separate days.

   a. On Monday, the discounted price of your video game is $22.99. What is the original price of the game?

   b. What is the percent of discount to the nearest percent?

   c. On Thursday, the discounted price of your video game is $12.99. What is the original price of the game?

   d. What is the percent of discount to the nearest percent?

9. You buy a bracelet for $15. You sell it at a craft show for $25. What is the percent of markup to the nearest percent?

Name _____ Date _____

15.7 Practice A

An account earns simple interest. (a) Find the interest earned. (b) Find the balance of the account.

1. \$200 at 3% for 5 years
2. \$750 at 8% for 2 years
3. \$1600 at 5% for 1 year
4. \$500 at 12% for 6 months

Find the annual interest rate.

5. $I = \$18$, $P = \$150$, $t = 6$ years
6. $I = \$164.50$, $P = \$940$, $t = 2.5$ years

Find the amount of time.

7. $I = \$72$, $P = \$600$, $r = 4\%$
8. $I = \$174$, $P = \$1450$, $r = 8\%$
9. You deposit \$350 in a savings account. The account earns 2.5% simple interest per year. What is the balance after 2 years?

Find the amount paid for the loan.

10. \$1000 at 8% for 5 years
11. \$3500 at 10% for 2 years
12. You deposit \$2000 in a savings account earning 5% simple interest. How long will it take for the balance of the account to be \$3800?
13. Your parents charge a family ski trip of \$3000 on a credit card.
    a. The simple interest rate is 20%. The charges are paid after 6 months. What is the amount of interest paid?
    b. What is the total amount paid for the ski trip?
14. Your parents could have taken out a loan for the ski trip in Exercise 13.
    a. The simple interest rate is 6% and the time for the loan is 2 years. What would have been the total amount paid for the \$3000 ski trip?
    b. What would be the monthly payment, if there were equal monthly payments?
    c. Which loan option costs less, the credit card or the loan?
15. You deposit \$1200 in an account earning 8% simple interest.
    a. What is the account balance after 1 year?
    b. At the end of the first year, you deposit the balance of the account in a CD (certificate of deposit) earning 8% simple interest. What is the account balance after another year?

Name _____ Date _____

15.7 Practice B

An account earns simple interest. (a) Find the interest earned. (b) Find the balance of the account.

1. $2600 at 3.2% for 4 years
2. $75,000 at 8.5% for 3 months

Find the annual interest rate.

3. $I = \$41.80$, $P = \$440$, $t = 2$ years
4. $I = \$893.75$, $P = \$5500$, $t = 30$ months

Find the amount of time.

5. $I = \$9.90$, $P = \$360$, $r = 5.5\%$
6. $I = \$2064$, $P = \$10{,}000$, $r = 6.88\%$

Find the amount paid for the loan.

7. $20,000 at 7.5% for 10 years
8. $6000 at 12% for 2.5 years
9. You deposit $2000 in an account. The account earns $120 simple interest in 8 months. What is the annual interest rate?
10. You put money in two different accounts for one year each. The total simple interest for the two accounts is $140. You earn 6% interest on the first account, in which you deposited $1000. You deposited $800 in the second account. What is the annual interest rate for the second account?
11. You deposit $1200 in an account.
    a. The account earns 2.7% simple interest rate. What is the balance of the account after 3 months?
    b. The interest rate changes, and your new balance now earns 2% simple interest rate. What is the balance of the account after the next 6 months? Round to the nearest penny, if necessary.
    c. The interest rate changes again, and your new balance now earns 2.6% simple interest rate. What is the balance of the account after an additional 3 months? Round to the nearest penny, if necessary.
    d. How much did the account earn in simple interest for the year?
    e. Based on the interest in part (d), what is the actual simple interest rate for the year? Round to the nearest tenth of a percent.
12. You purchase a new guitar and take out a loan for $450. You have 18 equal monthly payments of $28 each. What is the simple interest rate for the loan? Round to the nearest tenth of a percent, if necessary.