Name _____ Date _____ Class _____

LESSON 8-1

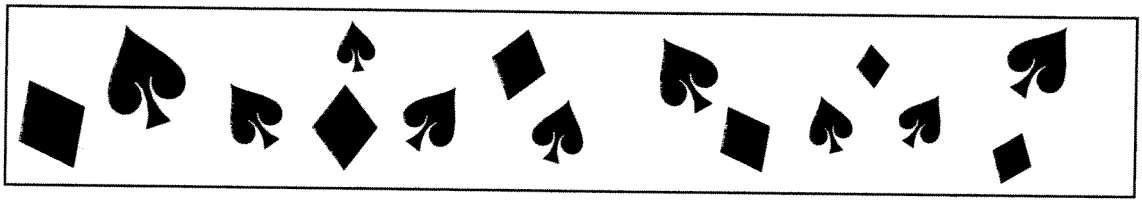
Practice B

Ratios and Rates

Use the table to write each ratio.

Animals in the Zoo	
Elephants	12
Giraffes	8
Lions	9
Seals	10
Otters	16

1. lions to elephants _____
2. giraffes to otters _____
3. lions to seals _____
4. seals to elephants _____
5. elephants to lions _____
6. Write three equivalent ratios to compare the number of diamonds with the number of spades in the box. _____



Use the table to write each ratio as a fraction.

Baseball Team Stats		
	Titans	**Orioles**
Wins	12	9
Losses	14	15

7. Titans wins to Titans losses _____
8. Orioles losses to Orioles wins _____
9. Titans losses to Orioles losses _____
10. Orioles wins to Titans wins _____
11. A 6-ounce bag of raisins costs $2.46. An 8-ounce bag of raisins costs $3.20. Which is the better deal? _____
12. Barry earns $36.00 for 6 hours of yard work. Henry earns $24.00 for 3 hours of yard work. Who has the better hourly rate of pay? _____

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Name _____ Date _____ Class _____

LESSON 8-2

Practice B

Proportions

Find the missing value in each proportion.

1. $\frac{24}{8} = \frac{n}{2}$ _____

2. $\frac{4}{9} = \frac{20}{n}$ _____

3. $\frac{n}{36} = \frac{5}{6}$ _____

4. $\frac{n}{5} = \frac{4}{10}$ _____

5. $\frac{3}{9} = \frac{2}{n}$ _____

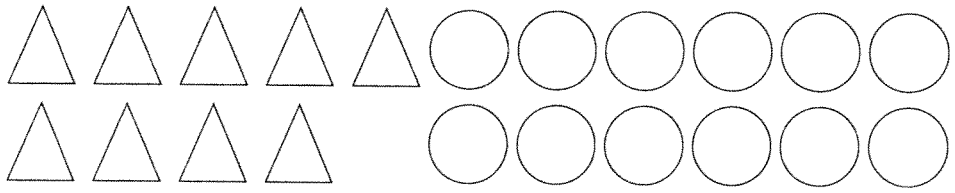
6. $\frac{6}{n} = \frac{3}{7}$ _____

7. $\frac{5}{3} = \frac{n}{6}$ _____

8. $\frac{9}{6} = \frac{6}{n}$ _____

9. $\frac{2}{130} = \frac{1}{n}$ _____

Write a proportion for each model.

10. 

_____

11. 

_____

12. Shane's neighbor pledged $1.25 for every 0.5 miles that Shane swims in the charity swim-a-thon. If Shane swims 3 miles, how much money will his neighbor donate?

_____

13. Barbara's goal is to practice piano 20 minutes for every 5 minutes of lessons she takes. If she takes a 20 minute piano lesson this week, how many minutes should she practice this week?

_____

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Name _____ Date _____ Class _____

LESSON 8-3

Practice B

Proportions and Customary Measurement

Find each missing value.

1. 3 yards = _____ inches
2. _____ yards = 87 feet
3. _____ cups = 104 fluid ounces
4. 2 years = _____ weeks
5. 4 pounds = _____ ounces
6. _____ hours = 2 days
7. _____ minutes = 9 hours
8. _____ gallons = 48 cups
9. _____ cups = 4 pints
10. 36 inches = _____ yards

Compare. Write <, >, or =.

11. 4 quarts ☐ 24 cups
12. 2.5 feet ☐ 32 inches
13. 250 seconds ☐ 4 minutes
14. 5 cups ☐ 40 fluid ounces
15. 56 ounces ☐ 3.5 pounds
16. 38 hours ☐ $1\frac{1}{2}$ days
17. 1.5 miles ☐ 2,500 yards
18. $3\frac{1}{2}$ tons ☐ 6,000 pounds

19. Cassandra drank $8\frac{1}{2}$ cups of water during the mountain hike. How many fluid ounces of water did she drink?

_____

20. Stan cut a wooden plank into 4 pieces. Each piece was 18 inches long. How long was the plank before Stan cut it?

_____

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Name _____ Date _____ Class _____

LESSON 8-3

Problem Solving

Proportions and Customary Measurement

Write the correct answer.

1. Each side of a professional baseball base must measure 15 inches. What is the base's side length in feet?

_____

2. In the NBA, any shot made from 22 feet or more from the basket is worth 3 points. How many yards from the basket is that?

_____

3. The maximum weight for a professional bowling ball is 16 pounds. What is the maximum weight in ounces?

_____

4. A professional hockey goal is 6 feet wide and 4 feet high. What is the area of the goal in square yards?

_____

5. An NFL football field is 120 yards long. How many times would you have to run across the field to run 1 mile?

_____

6. The halftime break in an NBA game is 15 minutes. How many seconds long is the break? How many hours?

_____

7. The official length for a marathon race is 26.2 miles. How many yards long is a marathon? How many feet?

_____

_____

8. The fastest time for a marathon race was set in 1999. The runner completed the race in 7,542 seconds. What is the record in hours?

_____

_____

Circle the letter of the correct answer.

9. An NFL football can be no less than $\frac{87}{96}$ feet long. What is the minimum length for an official football in inches?

   A $10\frac{7}{8}$ inches

   B $1\frac{3}{32}$ inches

   C $\frac{87}{1152}$ inches

   D $2\frac{69}{96}$ inches

10. An official Olympic-sized swimming pool holds 880,000 gallons of water! How many fluid ounces of water is that?

    F 1,4080,000 fluid ounces

    G 7,040,000 fluid ounces

    H 112,640,000 fluid ounces

    J 1,760,000 fluid ounces

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Name _____ Date _____ Class _____

LESSON 8-7

Practice B

Percents

Write each percent as a fraction in simplest form.

1. 30% _____

2. 42% _____

3. 18% _____

4. 35% _____

5. 100% _____

6. 29% _____

7. 56% _____

8. 70% _____

9. 25% _____

Write each percent as a decimal.

10. 19% _____

11. 45% _____

12. 3% _____

13. 80% _____

14. 24% _____

15. 6% _____

Order the percents from least to greatest.

16. 89%, 42%, 91%, 27% _____

17. 2%, 55%, 63%, 31% _____

18. Sarah correctly answered 84% of the questions on her math test. What fraction of the test questions did she answer correctly? Write your answer in simplest form.

_____

19. Chloe swam 40 laps in the pool, but this was only 50% of her total swimming workout. How many more laps does she still need to swim?

_____

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Name _____ Date _____ Class _____

LESSON 8-8

Practice B

Percents, Decimals, and Fractions

Write each decimal as a percent.

1. 0.03 _____

2. 0.92 _____

3. 0.18 _____

4. 0.49 _____

5. 0.7 _____

6. 0.09 _____

7. 0.26 _____

8. 0.11 _____

9. 1.0 _____

Write each fraction as a percent.

10. $\frac{2}{5}$ _____

11. $\frac{1}{5}$ _____

12. $\frac{7}{10}$ _____

13. $\frac{1}{20}$ _____

14. $\frac{1}{50}$ _____

15. $\frac{4}{50}$ _____

Compare. Write <, >, or = .

16. 60% ☐ $\frac{2}{3}$

17. 0.4 ☐ $\frac{2}{5}$

18. 0.5 ☐ 5%

19. $\frac{1}{100}$ ☐ 0.03

20. $\frac{7}{9}$ ☐ 72%

21. $\frac{3}{10}$ ☐ 35%

22. Bradley completed $\frac{3}{5}$ of his homework. What percent of his homework does he still need to complete?

_____

23. After reading a book for English class, 100 students were asked whether or not they enjoyed it. Nine twenty-fifths of the students did not like the book. How many students liked the book?

_____

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Name _____ Date _____ Class _____

LESSON 8-9

Reteach

Percent Problems

You can use proportions to solve percent problems.

To find 25% of 72, first set up a proportion.

$$\frac{25}{100} = \frac{x}{72}$$

$25 \cdot 72 = 100 \cdot x$ Next, find cross products.

$1{,}800 = 100x$

$\frac{100x}{100} = \frac{1{,}800}{100}$ Then solve the equation.

$x = 18$

So, 18 is 25% of 72.

Use a proportion to find each number.

1. Find 3% of 75. **2.** Find 15% of 85. **3.** Find 20% of 50. **4.** Find 6% of 90.

_____ _____ _____ _____

You can use multiplication to solve percent problems.

To find 9% of 70, first write the percent as a decimal.

$9\% = 0.09$

Then multiply using the decimal.

$0.09 \cdot 70 = 6.3$

So, 9% of 70 = 6.3.

Use multiplication to find each number.

5. Find 80% of 48. **6.** Find 6% of 30. **7.** Find 40% of 120. **8.** Find 20% of 98.

_____ _____ _____ _____

9. Find 70% of 70. **10.** Find 35% of 120. **11.** Find 9% of 50. **12.** Find 40% of 150.

_____ _____ _____ _____

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Name _____ Date _____ Class _____

LESSON 8-9

Practice B

Percent Problems

Find the percent of each number.

1. 8% of 40 _____

2. 105% of 80 _____

3. 35% of 300 _____

4. 13% of 66 _____

5. 64% of 50 _____

6. 51% of 445 _____

7. 14% of 56 _____

8. 98% of 72 _____

9. 24% of 230 _____

10. 35% of 225 _____

11. 44% of 89 _____

12. 3% of 114 _____

13. 70% of 68 _____

14. 1.5% of 300 _____

15. 85% of 240 _____

16. 47% of 13 _____

17. 20% of 522 _____

18. 2.5% of 400 _____

19. Jenna ordered 28 shirts for her soccer team. Seventy-five percent of those shirts were size large. How many large shirts did Jenna order?

_____

20. Douglas sold 125 sandwiches to raise money for his boy scout troop. Eighty percent of those sandwiches were sold in his neighborhood. How many sandwiches did Douglas sell in his neighborhood?

_____

21. Samuel has run for 45 minutes. If he has completed 60% of his run, how many minutes will Samuel run in all?

_____

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Name _____ Date _____ Class _____

LESSON 8-10

Practice B

Using Percents

Write the correct answer.

1. Carl and Rita ate breakfast at the local diner. Their bill came to $11.48. They gave their waitress a tip that was 25% of the bill. How much money did they give the waitress for her tip?

_____

2. The school's goal for the charity fundraiser was $3,000. They exceeded the goal by 22%. How much money for charity did the school raise at the event?

_____

3. Rob had a 15% off coupon for the sporting goods store. He bought a tennis racket that had a regular ticket price of $94.00. How much did Rob spend on the racket after using his coupon?

_____

4. Lisa's family ordered sandwiches to be delivered. The total bill was $21.85. They gave the delivery person a tip that was 20% of the bill. How much did they tip the delivery person?

_____

5. A portable CD player costs $118.26. The sales tax rate is 7%. About how much will it cost to buy the CD player?

_____

6. Kathy bought two CDs that each cost $14.95. The sales tax rate was 5%. About how much did Kathy pay in all?

_____

7. Tom bought $65.86 worth of books at the book fair. He got a 12% discount since he volunteered at the fair. About how much did Tom's books cost after the discount?

_____

8. Sawyer bought a T-shirt for $12.78 and shorts for $17.97. The sales tax rate was 6%. About how much money did Sawyer spend altogether?

_____

9. Melody buys a skateboard that costs $79.81 and a helmet that costs $26.41. She uses a 45% off coupon on the purchase. If Melody pays with a $100 bill, about how much change should she get back?

_____

_____

10. Bruce saved $35.00 to buy a new video game. The game's original price was $42.00, but it was on sale for 30% off. The sales tax rate was 5%. Did Bruce have enough money to buy the game? Explain.

_____

_____

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Name _____ Date _____ Class _____

LESSON 8-1 Problem Solving
Ratios and Rates

Use the table to answer each question.

Atomic Particles of Elements

Element	Protons	Neutrons	Electrons
Gold	79	118	79
Iron	26	30	26
Neon	10	10	10
Platinum	78	117	78
Silver	47	61	47
Tin	50	69	50

1. What is the ratio of gold protons to silver protons?

_____

2. What is the ratio of gold neutrons to platinum protons?

_____

3. What is the ratio of platinum neutrons to neon neutrons?

_____

4. What is the ratio of iron electrons to tin electrons?

_____

5. What are two equivalent ratios of the ratio of neon protons to tin protons?

_____

_____

6. What are two equivalent ratios of the ratio of iron protons to iron neutrons?

_____

_____

7. A ratio of one element's neutrons to another element's electrons is equivalent to 3 to 5. What are those two elements?

_____

8. The ratio of two elements' protons is equivalent to 3 to 1. What are those two elements?

_____

Circle the letter of the correct answer.

9. Which element in the table has a ratio of 1 to 1, no matter what parts you are comparing in the ratio?

A iron **C** tin

B neon **D** silver

10. If the ratio for any element is 1:1, which two parts is the ratio comparing?

F protons to neutrons

G electrons to neutrons

H protons to electrons

J neutrons to electrons

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Name _____ Date _____ Class _____

LESSON 8-2

Problem Solving

Proportions

Write the correct answer.

1. For most people, the ratio of the length of their head to their total height is 1:7. Use proportions to test your measurements and see if they match this ratio.

_____

_____

2. The ratio of an object's weight on Earth to its weight on the Moon is 6:1. The first person to walk on the Moon was Neil Armstrong. He weighed 165 pound on Earth. How much did he weigh on the Moon?

_____

3. It has been found that the distance from a person's eye to the end of the fingers of his outstretched hand is proportional to the distance between his eyes at a 10:1 ratio. If the distance between your eyes is 2.3 inches, what should the distance from your eye to your outstretched fingers be?

_____

4. Chemists write the formula of ordinary sugar as $C_{12}H_{22}O_{11}$, which means that the ratios of one molecule of sugar are always 12 carbon atoms to 22 hydrogen atoms to 11 oxygen atoms. If there are four sugar molecules, how many atoms of each element will there be in 4 molecules of sugar?

_____

_____

5. According to doctors, a healthy diet should follow the ratio for meat to vegetables of 2.5 servings to 4 servings. If you eat 7 servings of meat a week, how many servings of vegetables should you eat?

_____

6. A 150-pound person will burn 100 calories while sitting still for one hour. Following this ratio, how many calories will a 100-pound person burn while sitting still for one hour?

_____

Circle the letter of the correct answer.

7. Recently, 1 U.S. dollar was worth 1.58 in euros. If you exchanged $25 at that rate, how many euros would you get?

   A 39.50 euros

   B 15.82 euros

   C 26.58 euros

   D 23.42 euros

8. Recently, 1 United States dollar was worth 0.69 English pounds. If you exchanged 500 English pounds, how many dollars would you get?

   F 345 U.S. dollars

   G 725 U.S. dollars

   H 500.69 U.S dollars

   J 499.31 U.S. dollars

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Name _____ Date _____ Class _____

LESSON 8-7

Problem Solving

Percents

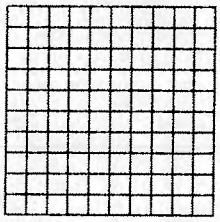
Use the circle graph to answer each question in simplest form.

1. What fraction of the total 2000 music sales in the United States were rock recordings?

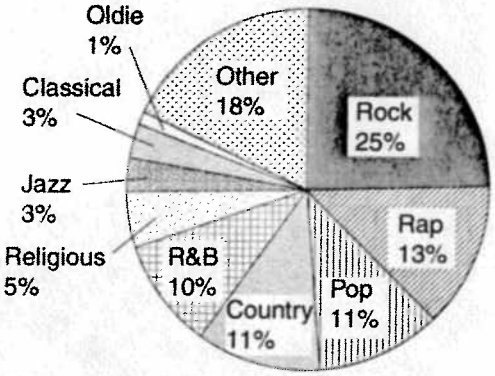
_____

2. On this grid, model the percent of total United States music sales that were rap recordings. Then write that percent as a decimal.

_____



U.S. Recorded Music Sales, 2000



3. What kind of music made up $\frac{1}{20}$ of the total U.S. music recording sales?

_____

4. What fraction of the United States music sales were country recordings?

_____

Circle the letter of the correct answer.

5. What fraction of all United States recording sales did jazz and classical music make up together?

A $\frac{6}{10}$ C $\frac{1}{5}$

B $\frac{3}{50}$ D $\frac{11}{100}$

6. What kind of music made up $\frac{1}{10}$ of the total music recording sales in the United States in 2000?

F Pop H R&B

G Jazz J Oldies

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Name _____ Date _____ Class _____

LESSON 8-8

Problem Solving

Percents, Decimals, and Fractions

Write the correct answer.

1. Deserts cover about $\frac{1}{7}$ of all the land on Earth. About what percent of Earth's land is made up of deserts?

_____

2. The Sahara is the largest desert in the world. It covers about 3% of the total area of Africa. What decimal expresses this percent?

_____

3. Cactus plants survive in deserts by storing water in their thick stems. In fact, water makes up $\frac{3}{4}$ of the saguaro cactus's total weight. What percent of its weight is water?

_____

4. Daytime temperatures in the Sahara can reach 130°F! At night, however, the temperature can drop by 62%. What decimal expresses this percent?

_____

5. About $\frac{4}{5}$ of all the water in the southwestern United States is used for irrigation to grow crops in the desert. What percent of that region's water is used for desert irrigation?

_____

6. About 2,000 years ago, Native Americans built irrigation canals across deserts that carried water to nearly $\frac{1}{3}$ of Arizona's total area. About what percent of Arizona's area is that?

_____

7. The desert nation of Saudi Arabia is the world's largest oil producer. About $\frac{1}{4}$ of all the oil imported to the United States is shipped from Saudi Arabia. What percent of our nation's oil is that?

_____

8. About $\frac{2}{5}$ of all the food produced on Earth is grown on irrigated cropland. What percent of the world's food production relies on irrigation? What is the percent written as a decimal?

_____

Circle the letter of the correct answer.

9. About $\frac{3}{25}$ of all the freshwater in the United States is used for drinking, washing, and other domestic purposes. What percent of our fresh water resources is that?

   A 3% **C** 12%

   B 25% **D** $\frac{1}{5}$

10. Factories and other industrial users account for about $\frac{23}{50}$ of the total water usage in the United States. Which of the following show that amount as a percent and decimal?

    F 46% and 0.46 **H** 50% and 0.5

    G 23% and 0.23 **J** 46% and 4.6

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Name _____ Date _____ Class _____

LESSON 8-9

Problem Solving

Percent Problems

In 2000, the population of the United States was about 280 million people.

Use this information to answer each question.

1. About 20% of the total United States population is 14 years old or younger. How many people is that?

_____

2. About 6% of the total United States population is 75 years old or older. How many people is that?

_____

3. About 50% of Americans live in states that border the Atlantic or Pacific Ocean. How many people is that?

_____

4. About 12% of all Americans live in California. What is the population of California?

_____

5. About 7.5% of all Americans live in the New York City metropolitan area. What is the population of that region?

_____

6. About 12.3% of all Americans have Hispanic ancestors. What is the Hispanic American population here?

_____

7. Males make up about 49% of the total population of the United States. How many males live here?

_____

8. About 75% of all Americans live in urban areas. How many Americans live in or near large cities?

_____

Circle the letter of the correct answer.

9. About 7.4% of all Americans live in Texas. What is the population of Texas?

   A 74 million **C** 7.4 million

   B 20.72 million **D** 2.072 million

10. Between 1990 and 2000, the population of the United States grew by about 12%. What was the U.S. population in 1990?

    F 250 million **H** 313.6 million

    G 33.6 million **J** 268 million

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Name _____ Date _____ Class _____

LESSON 8-10

Problem Solving

Using Percents

Use the table to answer each question.

Federal Income Tax Rates, 2001

Single Income	Tax Rate	Married Joint Income	Tax Rate
$0 to $27,050	15%	$0 to $45,200	15%
$27,051 to $65,550	27.5%	$45,201 to $109,250	27.5%
$65,551 to $136,740	30.5%	$109,251 to $166,500	30.5%
$136,741 to $297,350	35.5%	$166,501 to $297,350	35.5%
More than $297,350	39.1%	More than $297,350	31.5%

1. If a single person makes $25,000 a year, how much federal income tax will he or she have to pay?

_____

2. If a married couple makes $148,000 together, how much federal income tax will they have to pay?

_____

3. The average American with a college degree earns $33,365 a year. About how much federal income tax does he or she have to pay at a single rate?

_____

4. The governor of New York makes a higher salary than in any other state—$179,000 a year. How much federal income tax does that governor have to pay at a single rate?

_____

5. The average salary for a public school teacher in the United States is $42,898. If two teachers are married, what is the average amount of federal income taxes they have to pay together?

_____

_____

6. In 2002 President George W. Bush received an annual salary of $400,000. Vice President Dick Cheney got $186,300. How much federal income tax do they each have to pay on their salary?

_____

_____

Circle the letter of the correct answer.

7. Members of the U.S. Congress each earn $145,100 a year. How much federal income tax does each pay on their salary?

A $51,510.50 **C** $21,765

B $44,255.50 **D** $39,902.50

8. A married couple each working a minimum-wage job will earn an average of $21,424 together a year. How much income tax will they pay?

F $5,891.60 **H** $321.36

G $3,213.60 **J** $6,534.32

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