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Math Connects

Course 2

Word Problem Practice Workbook

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To the Student This *Word Problem Practice Workbook* gives you additional examples and problems for the concept exercises in each lesson. The exercises are designed to aid your study of mathematics by reinforcing important mathematical skills needed to succeed in the everyday world. The materials are organized by chapter and lesson, with one *Word Problem Practice worksheet* for every lesson in *Glencoe Math Connects, Course 2*.

Always keep your workbook handy. Along with your textbook, daily homework, and class notes, the completed *Word Problem Practice Workbook* can help you review for quizzes and tests.

To the Teacher These worksheets are the same as those found in the Chapter Resource Masters for *Glencoe Math Connects, Course 2*. The answers to these worksheets are available at the end of each Chapter Resource Masters booklet as well as in your Teacher Wraparound Edition interleaf pages.

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Word Problem Practice Workbook, Course 2

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1-1 Word Problem Practice

A Plan for Problem Solving

MAGAZINES For Exercises 1 and 2, use the table that shows the costs of several popular magazines.

Costs of Popular Magazines		
Magazine	**Cost of Yearly Subscription**	**Cost of a Single Copy**
Teen World	$9.98 (12 issues)	$3.25
Soccer World	$19.97 (6 issues)	$4.99
Book Nation	$19.98 (12 issues)	$2.99
TV Weekly	$46.28 (52 issues)	$1.95

1. How much could you save by buying *Teen World* with a yearly subscription rather than 12 single copies?

2. Which of the magazines saves you the most money by purchasing a yearly subscription instead of an equivalent number of single copies? How much will you save?

3. BICYCLING Adriana can ride her bicycle 6 miles in one hour. How long will it take her to ride 15 miles?

4. BASKETBALL At Johnson Middle School an average of 500 people attended each of the 15 home basketball games. If admission was $3 per person, about how much money was collected in all?

5. THEATER A local theater has floor seating, balcony seating, and box seating. If the theater contains 2,500 seats with 425 seats in the balcony and 215 box seats, how many seats are on the floor?

6. POPCORN Janelle plans to buy three boxes of popcorn at the movies for herself and two friends. If each box costs $1.95, how much change will she receive when she pays with a ten-dollar bill?

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1-2 Word Problem Practice

Powers and Exponents

1. SPACE SHUTTLE The cost of each flight of the Space Shuttle is about $10,000,000. Write this amount in exponential form.	**2. ANIMALS** The African bush elephant is the largest land animal and weighs about 8 tons. Write this amount in exponential form.
3. VOLUME To find the volume of a rectangular box you multiply the length times the width times the height. In a cube all sides are the same length. If the cube has length, width, and height of 6 inches, write the volume as a product. Then write it in exponential form.	**4. SCIENCE** A certain type of cell doubles every hour. If you start with one cell, at the end of one hour you would have 2 cells, at the end of two hours you have 4 cells, and so on. The expression $2 \times 2 \times 2 \times 2 \times 2$ tells you how many cells you would have after five hours. Write this expression in exponential form; then evaluate it.
5. MATH Write 625 using exponents in as many ways as you can.	**6. PREFIXES** Many prefixes are used in mathematics and science. The prefix giga in gigameter represents 1,000,000,000 meters. Write this prefix as a power of ten.
7. LIBRARY The school library contains 9^4 books. How many library books are in the school library?	**8. HOT DOGS** The concession stand at the county fair sold 6^3 hot dogs on the first day. How many hot dogs did they sell?

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1-3 Word Problem Practice

Squares and Square Roots

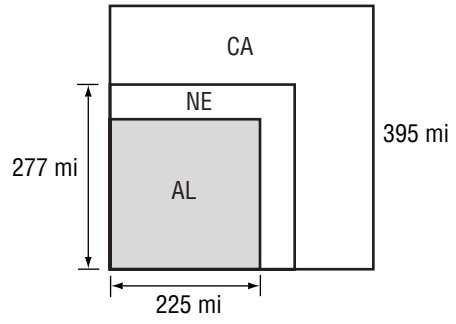
1. FERTILIZER John bought a bag of lawn fertilizer that will cover 400 square feet. What are the dimensions of the largest square plot of lawn that the bag of fertilizer will cover?

2. GEOMETRY The area A of a circle in square feet with a radius r in feet is given approximately by the formula $A \approx 3.14r^2$. What is the approximate area of a circle with a radius of 3 feet?

3. MOTION The time t in seconds for an object dropped from a height of h feet to hit the ground is given by the formula $t = \sqrt{\frac{2h}{32}}$. How long will it take an object dropped from a height of 500 feet to hit the ground? Round to the nearest tenth.

4. PACKAGING A cardboard envelope for a compact disc is a square with an area of 171.61 square centimeters. What are the dimensions of the envelope?

5. GEOGRAPHY Refer to the squares below. They represent the approximate areas of California, Alabama, and Nebraska. Find the area of Alabama.



6. Use the figure in Exercise 5. How much larger is California than Nebraska?

Lesson 1-3

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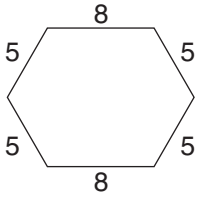
1-4 Word Problem Practice

Order of Operations

1. FOOTBALL The middle school team scored three field goals worth three points each and two touchdowns with extra points worth seven points each. Write a numerical expression to find the team's score. Then evaluate the expression.

2. BOOKS Juan goes to the school book fair where paperback books are $1.50 and hardback books are $3.00. Juan buys 5 paperback and 2 hardback books. Write a numerical expression to find how much Juan paid for the books. Then evaluate the expression.

3. GEOMETRY The perimeter of a hexagon is found by adding the lengths of all six sides of the hexagon. For the hexagon below write a numerical expression to find the perimeter. Then evaluate the expression.



4. MONEY Aisha bought school supplies consisting of 6 spiral notebooks costing $0.39 each, 2 packages of pencils at $0.79 each, and a 3-ring binder for $1.99. Write an expression to find the total amount Aisha spent on school supplies. Then evaluate the expression.

5. REASONING Use the order of operations and the digits 2, 4, 6, and 8 to create an expression with a value of 2.

6. NUMBER SENSE Without parentheses, the expression $8 + 30 \div 2 + 4$ equals 27. Place parentheses in the expression so that it equals 13; then 23.

7. MONEY Tyrone bought 5 postcards at $0.55 each and a set of postcards for $1.20. Write an expression to find the total amount Tyrone spent on postcards. Then evaluate the expression.

8. DINING Mr. Firewalks took his family out to eat. They ordered 3 meals costing $8.99 each, 2 sodas at $1.50 each, and 1 glass of tea for $1.25. Write an expression to find the total amount the Firewalks family spent on dinner before taxes and tip. Then evaluate the expression.

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1-5 Word Problem Practice

Problem-Solving Investigation: Guess and Check

1. Joan and Amber have a combined age of 34. If Amber is 2 years less than twice Joan's age, how old is each person?	**2.** A number is divided by 3. Then 14 is added to the quotient. The result is 33. What is the original number?
3. The key club made $192 at their candle sale. They sold round candles for $4 and square candles for $6. If they sold twice as many square candles as round ones, how many of each type of candle did the key club sell?	**4.** Landon has 37 baseball cards. If 4 cards can fit on one page, how many pages does Landon need to buy?
5. Rick earns $500 less than three times as much as Jim. If their combined salary is $49,500, how much do they each earn?	**6.** The square root of a number is subtracted from the sum of the number and 12. The result is 42. What is the original number?

Lesson 1-5

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1-6 Word Problem Practice

Algebra: Variables and Expressions

1. FIELD TRIP The seventh grade math classes are going on a field trip. The field trip will cost \$7 per student. Write an expression to find the cost of the field trip for s students. What is the total cost if 26 students go on the trip?	**2. SOCCER** Jason earns \$20 per game as a referee in youth soccer games. Write an expression to find how much money Jason will earn for refereeing any number of games. Let n represent the number of games Jason has refereed. How much will he earn for refereeing 6 games?
3. PROFIT The expressions $c - e$, where c stands for the money collected and e stands for the expenses, is used to find the profit from a basketball concession. If \$500 was collected and expenses were \$150, find the profit for the concession.	**4. SAVINGS** Kata has a savings account that contains \$230. She decides to deposit \$5 each month from her monthly earnings for baby-sitting after school. Write an expression to find how much money Kata will have in her savings account after x months. Let x represent the number of months. Then find out how much she will have in her account after 1 year.
5. MONEY Mr. Wilson has \$2,500 in his savings account and m dollars in his checking account. Write an expression that describes the total amount that he has in both accounts.	**6. ANIMALS** Write an expression to represent the total number of legs on h horses and c chickens. How many legs are there in 5 horses and 6 chickens?
7. T-SHIRTS The band wants to order T-shirts. The T-shirts cost \$15 each plus a shipping fee of \$10. Write an expression to find the total cost of c T-shirts.	**8. TEMPERATURE** The expression $\frac{9}{5}C + 32$, where C stands for temperature in degrees Celsius, is used to convert Celsius to Fahrenheit. If the temperature is 20 degrees Celsius, find the temperature in degrees Fahrenheit.

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1-7 Word Problem Practice

Algebra: Equations

1. GAS MILEAGE Mr. Moseley's car has a 20-gallon gas tank. It took 14 gallons of gas to fill his tank. Use the equation $14 + g = 20$ to find the number of gallons g that he had before he filled his tank with gas.	**2. PAINTING** Latisha earned \$5 an hour painting for her dad. If she made \$40 last week, use $5h = 40$ to find how many hours h she painted.
3. LUMBER Mrs. Garcia had a piece of board that was 15 feet long. She cut off 6.5 feet. Use the equation $6.5 + \ell = 15$ to determine how much of the board ℓ she has left.	**4. MAGAZINES** Mahpee was selling magazine subscriptions. He earned \$5 plus \$0.50 for each subscription he sold. If Mahpee earned \$25, use the equation $25 = 5 + 0.50n$ to find the number of subscriptions n he sold.
5. TIRES The cost of a car tire is \$45 plus \$10 per order regardless of the number of tires purchased. If Mrs. Sato places an order for \$190, use the equation $45t + 10 = 190$ to find the number of tires t she purchased.	**6. AREA** If the area of a rectangle is 30 square centimeters and the length is 6 centimeters, use the equation $30 = 6w$ to find the width w of the rectangle.
7. SUPPLIES The Jones Middle School had \$4,000 to spend on office supplies. They had already spent \$1,250. Use the equation $1{,}250 + d = 4{,}000$ to find how much money d the school had left for other supplies.	**8. PENCILS** Mi-Leng spent 90 cents on 6 pencils. Use the equation $90 = 6c$ to find the cost c of each pencil.

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1-8 Word Problem Practice

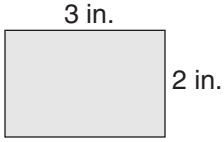
Algebra: Properties

1. MUSIC Mr. Escalante and Mrs. Turner plan to take their music classes to a musical revue. Tickets cost $6 each. Mr. Escalante's class needs 22 tickets, and Mrs. Turner's class needs 26 tickets. Use the Distributive Property to write a sentence to express how to find the total cost of tickets in two ways.

2. SAVINGS Mrs. Perez was looking at her bank account statement. She noticed that her beginning balance was $500, and she had added nothing to her account. What was the ending balance on her statement? What property did you apply?

3. ADDITION Mr. Brooks was working on addition using dominos with a group of 1st graders. When picking the domino with 3 dots on one end and 5 dots on the other, some students read. "3 plus 5 equal 8" while others read it as "5 plus 3 equals 8." What property were these children using? Explain.

4. AREA Aleta noticed that for the rectangle below she could either multiply 2 times 3 or 3 times 2 to get its area of 6 square inches. What property allows her to do this?



5. NUMBER CUBES Students in Mr. Rivas' class were practicing their multiplication skills by rolling three 6-sided number cubes. Wapi rolled a 2, a 3, and a 5 on his roll. He multiplied the three numbers as follows using the order of operations: $(2 \times 3) \times 5 = 30$. Write another way Wapi could have performed the multiplication without changing the order of the numbers. State the property you used.

6. FACTS Bik was working on memorizing her multiplication facts. She noticed that anytime she multiplied a number by 1, she got the same number she started with. What property allows this to be true?

7. MONEY Mei was trying to figure out the cost of 4 boxes of cereal for $2.25 each. Write a sentence to show Mei an easy way to do her calculations. What property did you apply to help her?

8. WALKING Jacob walked 3 blocks to Ping's house, then 5 blocks to Jamal's house. Write a sentence to show that the distance from Ping's to Jamal's is the same as the return walk home. Name the property illustrated in your sentence.

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1-9 Word Problem Practice

Algebra: Arithmetic Sequences

1. NUMBERS The multiples of two form a sequence as follows: 2, 4, 6, 8, 10, 12, 14, 16, …. Describe the sequence you see? What about the multiples of three? Four? Five?	**2. OLYMPICS** The summer Olympics occur every four years. If the last summer Olympics happened in 2004, when are the next three times that it will occur? Describe the sequence the Olympic years form?
3. BABY-SITTING Tonya charges $3.50 per hour to baby-sit. The sequence $3.50, $7.00, $10.50, $14.00, … represents how much she charges for each subsequent hour. For example, $10.50 is the third term that represents how much she charges for 3 hours. What are the next three terms in the sequence? How much does she charge for 7 hours of baby-sitting?	**4. RECTANGLES** Suppose you start with 1 rectangle and then divide it in half. You now have 2 rectangles. You divide each of these in half, and you have 4 rectangles. The sequence for this division is 1, 2, 4, 8, 16, . . . rectangles after each successive division. Describe the sequence that results?
5. BACTERIA Three bacteria are in a dish. Each hour the number of bacteria multiplies by four. If at the end of the first hour there are 12 bacteria, how many bacteria are there at the end of the next three hours? Describe the sequence that results?	**6. ENROLLMENT** The enrollment at Grove Middle School is expected to increase by 40 students each year for the next 5 years. If their current enrollment is 600 students, find their enrollment after each of the next 5 years.
7. SALARY Mrs. Malone's current salary is $1,500. She expects it to increase $100 per year. Write the first 6 terms of a sequence that represents her salary. The first term should be her current salary. What does the sixth term represent?	**8. FIBONACCI** The Fibonacci sequence is named after Leonardo Fibonacci who first explored it. Look at the Fibonacci sequence below and describe its pattern. 1, 1, 2, 3, 5, 8, 13, 21, 34, …

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1-10 Word Problem Practice

Algebra: Equations and Functions

1. TECHNOLOGY The fee for your pager service is $22 per month. Make a function table that shows your total charge for 1, 2, 3, and 4 months of service.	**2. MEASUREMENT** Joe takes 2 steps for every one step that Kim takes. Write an equation in two variables showing the relationship between Joe's steps and Kim's steps. If Kim takes 15 steps, how many steps will Joe have to take to cover the same distance?
3. TRAINS Between Hiroshima and Kokura, Japan, the bullet train averages a speed of 164 miles per hour, which is the fastest scheduled train service in the world. Make a function table that shows the distance traveled at that speed in 1, 2, 3, and 4 hours.	**4. BUSINESS** Grant earns $5 for each magazine that he sells. Write an equation in two variables showing the relationship between the number of magazines sold and the amount of money made. If Grant sells 12 magazines, how much money will he make?
5. GEOMETRY The formula for the volume of a rectangular prism whose base has an area of 8 square units is $V = 8h$, where V is the volume and h is the height. Make a function table that shows the volume of a rectangular prism with a height of 3, 4, 5, and 6 units.	**6. GEOMETRY** The fastest insect in the world is the dragonfly with a top speed of 36 miles per hour. Write an equation in two variables describing the relationship between the length of the dragonfly's flight and the distance traveled. If a dragonfly flies for 3 hours, how far can he travel?

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2-1 Word Problem Practice

Integers and Absolute Value

1. DEATH VALLEY The lowest point in the United States is Death Valley in California. Its altitude is 282 feet below sea level. Write an integer to represent the altitude of Death Valley.	**2. RAIN** A meteorologist reported that in the month of April there were 3 inches more rainfall than normal. Write an integer to represent the amount of rainfall above normal in April.
3. ARCHIMEDES A famous mathematician and physicist named Archimedes was born in 287 B.C. Write an integer to express the year of his birth.	**4. TEMPERATURE** In our world's tropical rain forests, the average temperature of every month is 64 degrees above zero or higher. Write an integer to express this temperature.
5. STOCK MARKET A certain stock gained 5 points in one day and lost 4 points the next day. Write integers to represent the stock's gains and losses for the two days.	**6. ALTITUDE** An airplane pilot changed his altitude by 100 meters. Describe what this could mean.

NAME _____ DATE _____ PERIOD _____

2-2 Word Problem Practice

Comparing and Ordering Integers

HISTORY OF WRITING For Exercises 1 and 2, use the table below. It shows important events in the history of writing.

Event	Aprox. Year
The *Iliad* and the *Odyssey* are composed by Homer.	700 BC
T'sai Lun invents paper.	105 AD
Date of oldest existing papyrus	2200 BC
Ovid wrote *Metamorphosis*.	5 AD
Torah is compiled.	450 BC
Metal type developed in Korea	1241 AD

EXTREME TEMPERATURES For Exercises 3–5, use the table below. It shows the extreme temperatures for four states. Temperatures are in degrees Fahrenheit.

Extreme Temperatures (°F)

State	Highest	Lowest
Alabama	104	3
Nebraska	118	−47
Maine	101	−30
Florida	109	−2

1. Write each year as an integer.

2. Order the integers from Exercise 1 from least to greatest. Write a sentence describing the earliest and most recent events in the table.

3. Arrange the highest temperatures from greatest to least.

4. What is the median low temperature for these four states?

5. Nebraska's lowest temperature was −47°F, and Maine's lowest temperature was −30°F. Write a true statement using the two temperatures with the symbol $>$ or $<$.

6. MONEY Mr. Firewalks pays close attention to how much money is in his checking account. One week he deposited $230, spent $15 on a lunch, and loaned $25 to a friend. Write each transaction as an integer, and list them from least to greatest.

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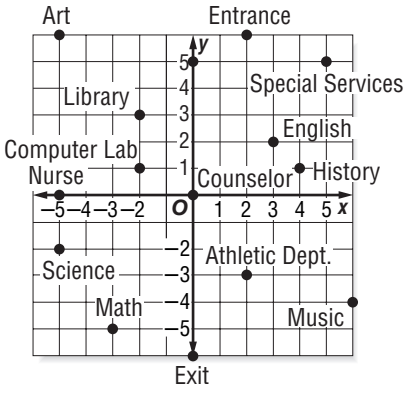
2-3 Word Problem Practice

The Coordinate Plane

SCHOOL For Exercises 1–4, use the coordinate plane at the right. It shows a map of the rooms in a middle high school.



1. Thalia is in the room located at $(-2, 1)$. What room is she in? Describe in words how to get from the origin to this point.	**2.** Thalia's next class is 8 units to the right and 5 units down on the map from where she is now. In what room is Thalia's next class? Find the ordered pair that represents the location of that room.
3. Tyrone is in the Art room, but his next class is in the History room. Give Tyrone directions on how to get to the History room.	**4.** On the map, which classrooms are located in the third quadrant? Describe the coordinates of all points in the third quadrant.
5. NEIGHBORHOOD Delsin made a map of his neighborhood in such a way that each intersection is a point on a coordinate plane. Right now, Delsin stands at point $(-4, -3)$. Give the ordered pair of where he will be if moves 5 units to the right and 7 units up on the map.	**6. NEIGHBORHOOD** Refer to Exercise 5. In which quadrant is Delsin when he is done walking? Describe this quadrant.

NAME _____ DATE _____ PERIOD _____

2-4 Word Problem Practice

Adding Integers

Write an addition expression to describe each situation. Then find each sum.

1. FOOTBALL A team gains 20 yards. Then they lose 7 yards.	**2. MONEY** Roger owes his mom $5. He borrows another $6 from her.
3. GOLF Juanita's score was 5 over par on the first 9 holes. Her score was 4 under par on the second 9 holes.	**4. HOT AIR BALLOON** A balloon rises 340 feet into the air. Then it descends 130 feet.
5. CYCLING A cyclist travels downhill for 125 feet. Then she travels up a hill 50 feet.	**6. AIRPLANE** A plane descends 1,200 feet. Then it descends another 500 feet.

NAME _____ DATE _____ PERIOD _____

2-5 Word Problem Practice

Subtracting Integers

Subtract.

1. FOOTBALL A team gained 5 yards on their first play of the game. Then they lost 6 yards. Find the total change in yardage.	**2. CHECKING** Your checking account is overdrawn by $50. You write a check for $20. What is the balance in your account?
3. TEMPERATURE The average temperature in Calgary, Canada, is 22°C in July and −11°C in January. Find the range of the highest and lowest temperatures in Calgary.	**4. ROLLER COASTER** A roller coaster begins at 90 feet above ground level. Then it descends 105 feet. Find the height of the coaster after the first descent.
5. SAVINGS Sonia has $235 in her savings account. She withdraws $45. What is left in her savings account?	**6. BEACH** Wai and Kuri were digging in the sand at the beach. Wai dug a hole that was 15 inches below the surface, and Kuri dug a hole that was 9 inches below the surface. Find the difference in the depths of their holes.

Lesson 2-5

NAME _____ DATE _____ PERIOD _____

2-6 Word Problem Practice

Multiplying Integers

Multiply.

1. TEMPERATURE Suppose the temperature outside is dropping 3 degrees each hour. How much will the temperature change in 8 hours?	**2. DIVING** A deep-sea diver descends below the surface of the water at a rate of 60 feet each minute. What is the depth of the diver after 10 minutes?
3. STOCK A computer stock lost 2 points each hour for 6 hours. Describe the total change in the stock after 6 hours.	**4. DROUGHT** A drought can cause the level of the local water supply to drop by a few inches each week. Suppose the level of the water supply drops 2 inches each week. How much will it change in 4 weeks?
5. MONEY Mrs. Rockwell lost money on an investment at a rate of $4 per day. Describe the change in her investment after two weeks.	**6. TENNIS BALLS** Josh purchased 8 cans of tennis balls. The cans came with 3 balls in each can. How many balls did Josh purchase?

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2-7 Word Problem Practice

Problem-Solving Investigation: Look for a Pattern

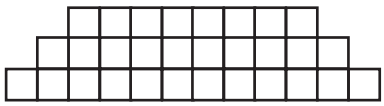
Solve each problem using any strategy you have learned.

1. COLLECTIONS Brittany received 8 silver dollars on her eighth birthday. After her next birthday she had 15 and after the next she had 22. After her eleventh birthday she had 29 silver dollars. How many silver dollars will she have after her 16th birthday if her collection increases at the same rate every year?

2. PATTERNS List the next three terms in the following sequence.

27, 39, 51, 63, …

3. GEOMETRY There are 6 rows of squares stacked upon each other. The first three are shown. How many total squares are needed for the entire pattern?



4. TICKET SALES Madison High School is putting on a school play. They decide to charge $11 for main floor seats and $7 for balcony seats. If the school sold twice as many main floor seats as balcony seats and made $870, how many of each type of seat did they sell?

5. EXERCISE The table below shows the distance Katie ran each day this week. If Katie wants to run 30 a week. How many miles must she run on Sunday?

Monday	4 miles
Tuesday	7 miles
Wednesday	5 miles
Thursday	5 miles
Friday	2 miles
Saturday	3 miles

6. AGE Brad is three years more than half of Brandon's age. If their combined age is 93 years, how old is each man?

Lesson 2-7

NAME _____ DATE _____ PERIOD _____

2-8 Word Problem Practice

Dividing Integers

Divide.

1. STOCK MARKET During a 5-day workweek, the stock market decreased by 65 points. Find the average daily change in the market for the week.	**2. MOTION** Mr. Diaz decreased the speed of his car by 30 miles per hour over a period of 10 seconds. Find the average change in speed each second.
3. WEATHER Over the past seven days, Mrs. Cho found that the temperature outside had dropped a total of 35 degrees. Find the average change in temperature each day.	**4. BASKETBALL** The basketball team lost their last 6 games. They lost by a total of 48 points. Find their average number of points relative to their opponents.
5. POPULATION The enrollment at Davis Middle School dropped by 60 students over a 5-year period. What is the average yearly drop in enrollment?	**6. SUBMARINE** A submarine descends at a rate of 60 feet each minute. How long will it take it to descend to a depth of 660 feet below the surface?

NAME _____ DATE _____ PERIOD _____

3-1 Word Problem Practice

Writing Expressions and Equations

OLYMPICS For Exercises 1–4, use the table that shows the number of medals won by each country in the 2006 Winter Olympics.

2006 Winter Olympic Medals					
Country	**Medals**	**Country**	**Medals**	**Country**	**Medals**
Germany	29	Norway	19	China	11
USA	25	Sweden	14	France	9
Canada	24	Switzerland	14	Netherlands	9
Austria	23	Korea	11	Finland	9
Russia	22	Italy	11	Czech Republic	4

Let x represent the number of medals won by Italy.

1. Write an expression using x to represent the number of medals won by Norway.

2. Write an expression using x to represent the number of medals won by the Czech Republic.

3. Which country's number of medals can be represented by $2x$?

4. Which country's number of medals can be represented by $2x + 3$?

5. GEOGRAPHY The Virgin Islands were acquired by the United States in 1927. This is 29 years after Puerto Rico was acquired. Write an equation to model this situation.

6. POPULATION According to the Census Bureau, the U.S. population grew from 281.4 million in April 2000 to 284.8 million in July 2001. Write an equation to model this situation.

NAME _____ DATE _____ PERIOD _____

3-2 Word Problem Practice

Solving Addition and Subtraction Equations

ANIMALS For Exercises 1–4, use the table.

The average lifespans of several different types of animals are shown in the table.

Average Lifespans of Animals			
Animal	**Lifespan (yr)**	**Animal**	**Lifespan (yr)**
Black Bear	18	Guinea Pig	4
Dog	12	Puma	?
Giraffe	10	Tiger	16
Gray Squirrel	10	Zebra	?

1. The lifespan of a black bear is 3 years longer than the lifespan of a zebra. Write an addition equation that you could use to find the lifespan of a zebra.

2. Solve the equation you wrote in Exercise 1. What is the lifespan of a zebra?

3. The lifespan of a guinea pig is 8 years shorter than the lifespan of a puma. Write a subtraction equation that you could use to find the lifespan of a puma.

4. Solve the equation you wrote in Exercise 3. What is the lifespan of a puma?

5. TECHNOLOGY A survey of teens showed that teens in Pittsburgh aged 12-17 spend 15.8 hours per week online. Teens in Miami/Ft. Lauderdale spend 14.2 hours per week online. Write and solve an addition equation to find the difference in time spent online by teens in these cities.

6. SPORTS Annika Sorenstam won the 2006 MasterCard Classic with a final score of 8 under par, or -8. Her scores for the first two of the three rounds were -5 and -1. What was Ms. Sorenstam's score for the third round?

NAME _____ DATE _____ PERIOD _____

3-3 Word Problem Practice

Solving Multiplication Equations

1. TRAVEL The speed limit on an Arizona highway is 75 miles per hour. Suppose a truck traveling at the speed limit drives 225 miles before the driver stops for a break. Write a multiplication equation to find the length of time the truck has traveled.	**2. TRAVEL** Solve the equation you wrote in Exercise 1. How long did the truck travel?
3. FLOWERS A gardening expert recommends that flower bulbs be planted to a depth of three times their height. Suppose Jenna determines that a certain bulb should be planted at a depth of 4.5 inches. Write a multiplication equation to find the height of the bulb.	**4. FLOWERS** Solve the equation you wrote in Exercise 3. What is the height of the bulb?
5. EXERCISE A 125-pound person uses 4.4 Calories per minute when walking. Write a multiplication equation to find the number of minutes of walking it will take for a 125-pound person to use 198 Calories.	**6. EXERCISE** Solve the equation you wrote in Exercise 5. How many minutes of walking it will take for a 125-pound person to use 198 Calories?
7. ELECTRICITY The electric company charges \$0.06 per kilowatt hour of electricity used. Write a multiplication equation to find the number of kilowatt hours of electricity for which the Estevez family was charged if their electric bill was \$45.84.	**8. ELECTRICITY** Solve the equation you wrote in Exercise 7. For how many kilowatt hours of electricity was the Estevez family charged?

NAME _____ DATE _____ PERIOD _____

3-4 Word Problem Practice

Problem-Solving Investigation: Work Backward

For Exercises 1-3, use the information below.

WEATHER The temperature in Columbus, Ohio on Monday is 35 degrees warmer than it was on Sunday. Saturday's temperature was 7 degrees cooler than Sunday's. At 45 degrees, Friday's temperature was 22 degrees warmer than Saturday's.

For Exercises 4-6, refer to the table below.

MONEY Shelly needs to go to the grocery store to get some items for a dinner party she is hosting with her brother Preston.

Green Pepper	$1.79
Flank Steak	$8.54
Wild Rice	$3.29
Romaine Lettuce	$3.79
Cucumber	$0.99

1. What was the temperature on Monday?

2. Estimate the average temperature for the time period from Saturday to Monday.

3. How many degrees cooler was the temperature on Friday than Monday?

4. How much money should she take to purchase the items contained in the table?

5. If Shelly has $24.00 in her purse before she goes to the store, how much will she have left after she shops?

6. If Preston pays Shelly for half the cost of the groceries, how much does he pay?

7. NUMBER THEORY How many different two-digit numbers can you make using the numbers 3, 7, 9, and 2 if no digit is repeated within a number?

8. PATTERNS The following numbers follow a pattern: 2, 8, 32, 128. What would the fifth number in the pattern be?

NAME _____ DATE _____ PERIOD _____

3-5 Word Problem Practice

Solving Two-Step Equations

1. GOLF It costs \$12 to attend a golf clinic with a local pro. Buckets of balls for practice during the clinic cost \$3 each. How many buckets can you buy at the clinic if you have \$30 to spend?	**2. MONEY** Paulo has \$145 in his savings account. He earns \$36 a week mowing lawns. If Paulo saves all of his earnings, after how many weeks will he have \$433 saved?
3. RETAIL An online retailer charges \$6.99 plus \$0.55 per pound to ship electronics purchases. How many pounds is a DVD player for which the shipping charge is \$11.94?	**4. MONEY** Caitlin has a \$10 gift certificate to the music store. She has chosen a number of CDs from the \$7 bargain bin. If the cost of the CDs is \$32 after the gift certificate is credited, how many CDs did Caitlin buy?
5. EMPLOYMENT Mrs. Jackson earned a \$500 bonus for signing a one-year contract to work as a nurse. Her salary is \$22 per hour. If her first week's check including the bonus is \$1,204, how many hours did Mrs. Jackson work?	**6. PHOTOGRAPHY** Morgan subscribes to a website for processing her digital pictures. The subscription is \$5.95 per month and 4 by 6 inch prints are \$0.19 each. How many prints did Morgan purchase if the charge for January was \$15.83?

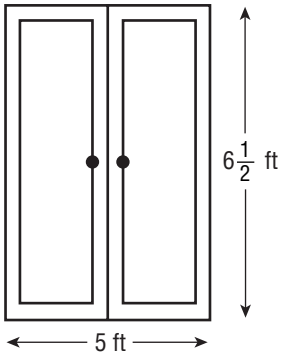
NAME _____ DATE _____ PERIOD _____

3-6 Word Problem Practice

Measurement: Perimeter and Area

1. BUILD A FENCE Mrs. Chen wants to build a fence around her yard so that her dog, Fluffy, can run free. The yard she wants to fence is 60 feet by 30 feet. The fencing is sold by the linear foot, so in order to figure out how much fencing she needs, Mrs. Chen needs to know the perimeter of the yard.
Find the yard's perimeter.

2. WINDOWS Mrs. Johnson was planning to caulk around the frame of her patio doors that measure 5 feet by $6\frac{1}{2}$ feet. In order to help her to know how much caulk to buy, find the perimeter of the doors.



3. SOCCER The dimensions of a field for Men's and Women's NCAA soccer can be no more than 80 yards by 120 yards. If the field has those dimensions what is the perimeter of the field?

4. FENCING Mr. Lao is planning to build a rectangular cattle pen that measures 50 feet by 75 feet. Find the total length of fencing that he will need to purchase.

5. CARPET Mr. Yuji plans on buying carpet for his bedroom that measures 12 feet by 12 feet. So he will know how much carpet to buy, find the area of his bedroom.

6. BORDER Mrs. Jackson is going to put up a wallpaper border along the top of the walls in her dining room. If the dining room measures 16 feet by 12 feet, how much border should she buy?

7. LOBBY A hotel lobby measures 40 yards by 60 yards. Find the area and perimeter of the lobby's floor.

8. MURAL An artist painted a mural measuring 9 feet by $20\frac{1}{2}$ feet. Find the area and perimeter of the mural.

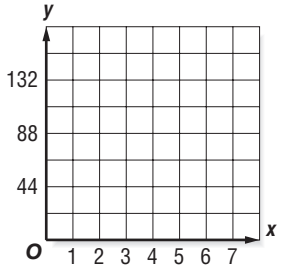
NAME _____ DATE _____ PERIOD _____

3-7 Word Problem Practice

Functions and Graphs

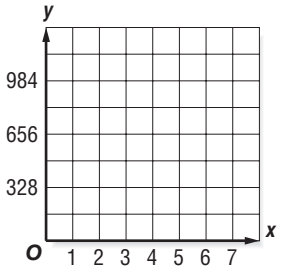
1. TECHNOLOGY The fee for your pager service is $22 per month. Make a function table that shows your total charge for 1, 2, 3, and 4 months of service.

2. TECHNOLOGY Use the information in Exercise 1 to write an equation in which x represents the number of months and y represents the total charge. Then graph the equation.

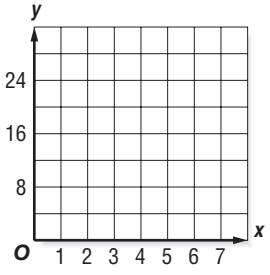


3. TRAINS Between Hiroshima and Kokura, Japan, the bullet train averages a speed of 164 miles per hour, which is the fastest scheduled train service in the world. Make a function table that shows the distance traveled at that speed in 1, 2, 3, and 4 hours.

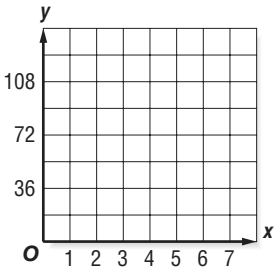
4. TRAINS Use the information in Exercise 3 to write an equation in which x represents the number of hours and y represents the distance. Then graph the equation.



5. GEOMETRY The formula for the volume of a rectangular prism whose base has an area of 8 square units is $V = 8h$, where V is the volume and h is the height. Graph the function.



6. ANIMALS The fastest insect in the world is the dragonfly with a top speed of 36 miles per hour. Write an equation using x to represent hours and y to represent distance. Then graph the equation.



NAME _____ DATE _____ PERIOD _____

4-1 Word Problem Practice

Prime Factorization

1. AGE The average life expectancy in the United States is now 77.6 years. Round to the nearest whole number, and write it as a product of primes	**2. FOOTBALL** A football team's record for the season is 12 wins and 4 losses. Write their record as a product of primes.
3. BASKETBALL The average height of players in the NBA is 6 feet 7 inches. Write this height in inches as a product of primes.	**4. TRAVELING** The distance between Washington, D.C. and Chicago, IL is about 590 miles by air. Write this distance as a product of primes.
5. SCIENCE There are 118 elements in the Periodic Table. List all of the factors of 118. What type of number is this?	**6. READING** A copy of *A Tale of Two Cities*, the classic written by Charles Dickens, has about 530 pages. Write this as a product of primes.

NAME _____ DATE _____ PERIOD _____

4-2 Word Problem Practice

Greatest Common Factor

1. TABLE TENNIS Rebecca has 20 table tennis balls and 16 table tennis paddles. She wants to sell packages of balls and paddles bundled together. What is the greatest number of packages she can sell with no leftover balls or paddles?	**2. TUMBLING** Mr. Nicolet wants to organize equal-sized groups of boys and girls for tumbling exercises. If there are 12 boys and 18 girls and each group is all boys or all girls, what is the largest size group he can organize?
3. BAKE SALE Volunteers at a bake sale want to sell slices of banana nut bread and raisin bread packaged together. They have 63 slices of banana nut bread and 45 slices of raisin bread, and they plan to use all the bread. What is the greatest number of packages they can put together? How many slices of each type of bread are in a package?	**4. DOG TREATS** Krista wants to give her dog a special treat. She has 81 dog bones and 54 pieces of beef jerky. If she wants to give her dog the same number of treats every day, what is the greatest number of days she can feed the dog these treats? How many of each type should she give the dog?
5. FRUIT TREES Mr. Farber has 84 pear trees and 180 apple trees. He wants to plant the trees in rows of equal width. Find the most trees that can be planted in a row if each row has only one type of tree.	**6. BOARDS** A scouting troop has three boards of lengths 14 feet, 28 feet, and 21 feet. If the boards must be cut to produce equal-sized pieces, what is the longest piece that can be cut with no waste?

Lesson 4-2

NAME _____ DATE _____ PERIOD _____

4-3 Word Problem Practice

Problem-Solving Investigation: Make an Organized List

Solve using any method.

1. NUMBER THEORY How many different 2-digit numbers can be made using the digits 3, 7, 8, 9, 2?	**2. MONEY** Raul is shopping and stops at the drug store, grocery and the mall. He spent \$6.99, \$12.49, and \$16.45 at each respective store, and has \$11.20 in his wallet when he returns home. How much money did he have when he began shopping?
3. BIRTH MONTH Renee is comparing her birth month to the birth month of the other girls in her class. Sherry was born two months before Renee, and Angela was born 4 months after Sherry. Corrine was born 3 months before Angela but 1 month after Allison. If Allison was born in July, in what month was Renee born?	**4. PATTERNS** The following numbers form a pattern: 1, 2, 4, 8. What is the fifth number in the sequence?
5. TIME Juanita is trying to get used to waking up earlier in the morning. She wakes up at 8:30 now, but wants to wake up at 7:15. If she wakes up five minutes earlier each morning, how many mornings will it be until she wakes up at 7:15?	**6. MILEAGE** Julie is making a trip by car. Julie knows that her car gets 32 miles per gallon, and holds ten gallons of gasoline. If Julie has $\frac{1}{4}$ of a tank of gas left, how many more miles can she travel before she needs to refuel?
7. CLOTHES Carly is taking a vacation with her family and packs three pairs of shorts and four tops. How many different outfits can she make if she wears each top with each pair of shorts?	**8. FOOD** Carlos is making a fruit salad and wants to use only 2 types of fruit. If he has blueberries, strawberries, grapes, oranges, and bananas on hand, how many combinations could he make?

NAME _____ DATE _____ PERIOD _____

4-4 Word Problem Practice

Simplifying Fractions

1. EXAM Mr. Bonilla gave an exam and 20 out of 25 students passed the exam. What fraction of the students passed the exam? Write the answer in simplest form.	**2. GASOLINE** Aisha filled her car's 24-gallon gas tank. She took a short trip and used 8 gallons of gas. What fraction of the full gas tank was used on the trip? Write the answer in simplest form.
3. BICYCLES A local community college has 860 students. Of these 860 students, 220 ride bicycles. Write the number of bike riders as a fraction of the number of students at the college in simplest form.	**4. PRESIDENTS** Of the first 22 presidents, 8 were from New York. Write the number of presidents from New York as a fraction of the first 22 presidents in simplest form.
5. TIME Ten hours is what part of a day? Write the fraction in simplest form.	**6. MEASUREMENT** Eighteen inches is what part of a yard? Write the fraction in simplest form.

NAME _____ DATE _____ PERIOD _____

4-5 Word Problem Practice

Fractions and Decimals

1. BOYS AND GIRLS There were 6 girls and 18 boys in Mrs. Johnson's math class. Write the number of girls as a fraction of the number of boys. Then write the fraction as a repeating decimal.	**2. CATS** In a neighborhood of 72 families, 18 families own one or more cats. Write the number of families who own one or more cats as a fraction. Then write the fraction as a decimal.
3. CELLULAR PHONES In Italy, about 74 of every 100 people use cellular telephones. Write the fraction of cellular phone users in Italy. Then write the fraction as a decimal.	**4. FRUITS** Ms. Rockwell surveyed her class and found that 12 out of the 30 students chose peaches as their favorite fruit. Write the number of students who chose peaches as a fraction in simplest form. Then write the fraction as a decimal.
5. TRAVEL Tora took a short trip of 320 miles. He stopped to have lunch after he had driven 120 miles. Write the fraction of the trip he had completed by lunch in simplest form. Then write the fraction as a decimal.	**6. VOTING** In a recent school election, 208 of the 325 freshmen voted in their class election. Write the fraction of freshmen who voted. Then write the fraction as a decimal.

NAME _____ DATE _____ PERIOD _____

4-6 Word Problem Practice

Fractions and Percents

1. LUNCHES Three out of every 10 students in Mr. Chan's class bring their lunch to school. Write this ratio as a percent.	**2. COMPUTERS** In 2007, 57 out of every 100 school age children (ages 6 to 17 years) had access to a computer both at home and at school. Write this ratio as a percent.
3. SALES TAX In one town, the sales tax is 8%. Write this percent as a fraction in simplest form.	**4. HYGIENE** Ms. Agosto surveyed her class and found that 15 out of 30 students brushed their teeth more than twice a day. What percent of students brushed more than twice a day?
5. DISCOUNT A local retail store was having a sale and offered all their merchandise at a 25% discount. Write this percent as a fraction in simplest form.	**6. SPACE FLIGHT** About 64% of all individuals who have flown in space from 1961 to 2001 are from the United States. Write this percent as a fraction in simplest form.

NAME _____ DATE _____ PERIOD _____

4-7 Word Problem Practice

Percents and Decimals

1. AREA New Mexico's land area is about 0.03 of the total area of the United States. What percent is New Mexico's land area of the total area of the United States?	**2. SCALE MODEL** A scale model of a building is 0.25 the actual size. What percent of the actual size of the building is the model?
3. NFL COACHES Don Shula ranks among the most successful coaches in the National Football League. In his career, he won 0.665 of his games. Write the decimal as a percent.	**4. SOFTBALL** Jenny's batting average is 0.346. Write the decimal as a percent.
5. VITAMINS A multiple vitamin contains 450 milligrams of calcium. This is 45% of the recommended daily allowance. Write the percent as a decimal.	**6. BASKETBALL** Tao makes 74% of his free throws. Write the percent as a decimal.
7. SALES TAX The sales tax in a town is 7.25%. Write the percent as a decimal.	**8. FIELD TRIP** In Ms. Silver's English class, $20\frac{1}{4}\%$ of the students signed up to visit a local museum. Write the percent as a decimal.

NAME _____ DATE _____ PERIOD _____

4-8 Word Problem Practice

Least Common Multiple

1. PROMOTION In a promotion for a local delicatessen, every eighth customer will get a free sandwich and every sixth customer will get a free drink. Which customer will be first to get both a free sandwich and a free drink?	**2. WORK** Alano and Abey both work at night. Alano has every fourth night off and Abey has every sixth night off. If they are both off tonight, how long will it be before they are both off again?
3. RADIO A radio station is giving away a discount coupon to every twelfth caller and a free concert ticket to every twentieth caller. Which caller will be first to win both the coupon and the ticket?	**4. MUSIC** Faith spent the same amount of money on cassette tapes as she did on CDs. If tapes cost \$12 and CDs cost \$16, what is the least amount of money she could have spent on each?
5. BIKES Three bike riders ride around a circular path. The first rider circles the path in 12 minutes, the second in 18 minutes, and the third in 24 minutes. If they all start at the same place, at the same time, and go in the same direction, after how many minutes will they meet at the starting point?	**6. PAPER GOODS** At a party store, paper cups come in packages of 15, paper plates come in packages of 30, and napkins come in packages of 20. In order to have the same number of cups, plates, and napkins, what is the least number of each that must be purchased?

NAME _____ DATE _____ PERIOD _____

4-9 Word Problem Practice

Comparing and Ordering Rational Numbers

1. RAIN The amount of rainfall was measured after a recent storm. The north side of town received $\frac{7}{8}$ inch of rain, and the south side received $\frac{13}{15}$ inch of rain. Which side of town received more rain from the storm?	**2. MOVIES** Because he sees movies at his local theater so often, Delmar is being offered a discount. He can have either $\frac{1}{3}$ off his next ticket or 30% off his next ticket. Which discount should Delmar choose? Explain.
3. TRACK Willie runs the 110-meter hurdles in $17\frac{3}{5}$ seconds, and Anier runs it in $17\frac{6}{11}$ seconds. Which runner is faster?	**4. FARMING** Cassie successfully harvested $\frac{7}{12}$ of her crop, and Robert successfully harvested 58% of his crop. Which person successfully harvested the larger portion of his or her crop?
5. TRANSPORTATION My-Lien has enough room in her truck to move 3.385 tons of gravel. Her father has asked her to move $3\frac{5}{16}$ tons. Will My-Lien be able to move all of the gravel in only one trip? Explain.	**6. WOOD WORKING** Kishi has a bolt that is $\frac{5}{8}$ inch wide, and she drilled a hole 0.6 inch wide. Is the hole large enough to fit the bolt? Explain.
7. PIZZA In a recent pizza-eating contest, Alfonso ate $1\frac{3}{8}$ pizzas, Della ate $1\frac{3}{10}$ pizzas, and Delsin ate $1\frac{4}{9}$ pizzas. Which person won the contest?	**8. STUDYING** For a recent algebra exam, Pat studied $1\frac{8}{15}$ hours, Toni studied $1\frac{11}{20}$ hours, and Morgan studied $1\frac{9}{16}$ hours. List the students in order by who studied the most.

NAME _____ DATE _____ PERIOD _____

5-1 Word Problem Practice

Estimating with Fractions

COOKING For Exercises 1–4, use the recipe shown below.

Lightning Creamed Potatoes
$\frac{1}{3}$ cup water
$1\frac{1}{2}$ teaspoon salt
$3\frac{3}{4}$ cups pared potatoes, cut in bite-size pieces
$\frac{1}{3}$ cup finely chopped onion
$\frac{1}{2}$ cup light cream

serves 6

1. Daniel wants to serve twelve people the Lightning Creamed Potatoes. Estimate how much salt he will need if he doubles the recipe.

2. Rosita wants to triple the recipe above. Estimate how many cups of pared potatoes she will need.

3. Alvin is going to serve six people. He only has $1\frac{1}{4}$ cups of pared potatoes. About how many cups of potatoes will he have to borrow?

4. Katrina wants to make half of the recipe. About how many cups of potatoes will she need?

5. CARPENTRY A board is $17\frac{3}{4}$ inches long. Carmen wants to shorten the length by about $1\frac{7}{8}$ inches. Estimate the length of the board after the board has been shortened.

6. TRACK Akira ran two miles. He ran the first mile in $7\frac{3}{4}$ minutes and the second mile in $8\frac{3}{4}$ minutes. Estimate how long it took Akira to run two miles.

NAME _____ DATE _____ PERIOD _____

5-2 Word Problem Practice

Adding and Subtracting Fractions

RETAIL STORES For Exercises 1–4 use the table at the right. It shows what fraction of the stores at a mall fall into seven categories.

Type of Store	Fraction of Stores in Mall
jewelry	$\frac{1}{30}$
clothing	$\frac{8}{15}$
gifts	$\frac{3}{20}$
electronics	$\frac{1}{20}$
department	$\frac{1}{15}$
shoes	$\frac{1}{15}$
athletic	$\frac{1}{10}$

1. What fraction of the stores are jewelry or gift stores?

2. What fraction of the stores are clothing or electronics stores?

3. Which type of store has the greatest number of stores?

4. How many more clothing stores are there than athletic stores? Write as a fraction.

5. SEWING Jin wants to make a scarf and matching hat for his sister. The patterns call for $\frac{7}{8}$ yard of fabric for the scarf and $\frac{1}{2}$ yard of fabric for the hat. How much fabric should Jin buy?

6. RESTAURANT Ms. Malle owns a restaurant. Typically, $\frac{1}{5}$ of the customers order fish, while $\frac{1}{4}$ of the customers order poultry. What fraction of her customers order either fish or poultry?

NAME _____ DATE _____ PERIOD _____

5-3 Word Problem Practice

Adding and Subtracting Mixed Numbers

HEIGHT For Exercises 1–6, use the table below. It shows the heights of five students. Write all answers in simplest form.

Student	Height (ft)
Karen	$5\frac{1}{6}$
Arturo	6
Felisa	$4\frac{11}{12}$
Max	$5\frac{3}{4}$
Silvia	$5\frac{1}{4}$

1. How much taller is Max than Felisa?

2. How much shorter is Karen than Arturo?

3. If Silvia stood on a box that was $1\frac{5}{6}$ feet high, how far would the top of her head be from the floor?

4. What is the sum of Felisa and Silvia's heights?

5. The distance from the floor to Karen's knee is $1\frac{1}{4}$ feet. What is the distance from her knee to the top of her head?

6. Max grew $\frac{1}{3}$ foot last year. How tall was he last year?

NAME _____ DATE _____ PERIOD _____

5-4 Word Problem Practice

Problem-Solving Investigation: Eliminate Possibilities

Solve each problem using any strategy you have learned.

1. SHOPPING Jillian has $125 to buy school clothes. She bought a sweater for $45, two pairs of jeans for $35 each, and 2 headbands that cost $1.50 each. If socks are $3.00 per pack, how many packs can she buy?

2. PATTERNS List the next three terms in the sequence.

21, 24, 27,…

3. CAKE Libby ate $\frac{1}{4}$ of her birthday cake and Scott ate $\frac{1}{3}$ of her birthday cake. The rest was wrapped up and sent home with the Thomas family. What fraction of the cake was sent home with the Thomas family?

4. SNACKS Jesse eats an apple every day after school. On weekends, he eats 2 apples each day. How many apples does Jesse eat in one week where he goes to school for five days and is at home for two days on the weekend?

A 7 apples **C** 14 apples

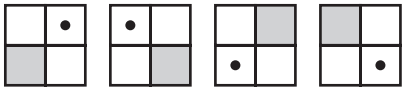
B 5 apples **D** 9 apples

5. LEMONADE Amber is making lemonade for her Yearbook Club meeting. She wants to have $4\frac{1}{2}$ gallons and has already made $3\frac{1}{4}$ gallons. How much more does she have to make?

F $3\frac{1}{4}$ gallons **H** $4\frac{1}{2}$ gallons

G $1\frac{1}{4}$ gallons **J** 2 gallons

6. GEOMETRY Draw the next two figures in the pattern.



7. ROLLER COASTERS A roller coaster has a weight limit of 500 pounds. If a group of teenagers is waiting to ride the roller coaster and the average weight of the teens is 140 pounds, how many can ride the roller coaster?

8. WORK The table below shows the number of hours Antoine has worked this week. If he wants to work a total of 25 hours, how many hours does he need to work on Saturday?

Day	Hours
Sunday	8
Monday	3
Tuesday	2
Wednesday	3
Thursday	0
Friday	4

NAME _____ DATE _____ PERIOD _____

5-5 Word Problem Practice

Multiplying Fractions and Mixed Numbers

1. POPULATION If $\frac{4}{5}$ of the population of a certain town is considered to be middle class and the population of the town is 2,000, how many people are considered middle class?	**2. READING** Robin has read $\frac{3}{4}$ of a book. Mark said he had read $\frac{1}{2}$ as much as Robin. What fraction of the book has Mark read?
3. RADIO A radio station spends $\frac{1}{40}$ of each 24 hours on public service announcements. How much time is spent on public service announcements each day?	**4. SALE** A bicycle is on sale for $\frac{2}{3}$ of its original price. If the original price is \$354, what is the sale price?
5. STUDENT POPULATION One sixth of the students at a local college are seniors. The number of freshmen students is $2\frac{1}{2}$ times that amount. What fraction of the students are freshmen?	**6. SEWING** Anna wants to make 4 sets of curtains. Each set requires $5\frac{1}{8}$ yards of fabric. How much fabric does she need?
7. RUNNING It takes Awan $8\frac{1}{3}$ minutes to run one mile. It takes Kate $1\frac{1}{5}$ times longer. How long does it take Kate to run one mile?	**8. STOCK** Carl bought some stock at \$25 a share. The stock increased to $1\frac{1}{2}$ times its value. How much is the stock per share?

Lesson 5-5

NAME _____ DATE _____ PERIOD _____

5-6 Word Problem Practice

Algebra: Solving Equations

1. BIKING The speed s that Brandon can ride his bike if he rides $\frac{3}{5}$ of an hour and travels 4 miles is given by the equation $4 = \frac{3}{5}s$. What is Brandon's speed?	**2. BAND** The woodwind section of the middle school band makes up $\frac{1}{4}$ of the band. There are 9 members in the woodwind section. Use the equation $\frac{1}{4}m = 9$ to find the number of members m in the band.
3. SALE A coat is selling for $\frac{3}{4}$ of the original price. The sale price is \$180. The original price p can be found using the equation $\frac{3}{4}p = 180$. Find the original price.	**4. SALARIES** Aaron's annual salary is $\frac{2}{3}$ as much as Juanita's salary. Aaron makes \$46,000. Find Juanita's salary x using the equation $46{,}000 = \frac{2}{3}x$.
5. ENDANGERED SPECIES In the U. S., there are $\frac{14}{29}$ as many endangered species of birds as of reptiles. The number of endangered species of birds b can be compared to the 14 endangered species of reptiles using $\frac{14}{29}b = 14$. Find the number of endangered species of birds.	**6. SALES TAX** The sticker price p of a purchase with $\frac{1}{10}$ sales tax and a total price (including tax) of \$5.28 can be found using the equation $\frac{11}{10}p = 5.28$. What is the sticker price?
7. SEWING Each costume uses $\frac{3}{4}$ yard of fabric. The number of costumes c that can be made using $11\frac{1}{4}$ yards of fabric can be found using the equation $\frac{3}{4}c = 11\frac{1}{4}$. Find the number of costumes that can be made.	**8. SAVINGS** Jasmine saves \$46 each month from her part-time job. She saves $\frac{2}{5}$ of her earnings. Her earnings a can be found by using the equation equation $\frac{2}{5}a = 46$. Find her earnings.

NAME _____ DATE _____ PERIOD _____

5-7 Word Problem Practice

Dividing Fractions and Mixed Numbers

1. PUPPETS If a puppet requires $\frac{3}{4}$ yards of material, how many puppets can be made from 9 yards of material?	**2. COOKING** A batch of cookies requires $1\frac{1}{2}$ cups of sugar. How many batches can Ty make with $7\frac{1}{2}$ cups of sugar?
3. FOOD Julia has $3\frac{1}{2}$ pounds of dog food. She plans to split it equally among her 7 dogs. How much dog food will each dog receive?	**4. SNOW CONES** Roger has a 28-pound block of ice for his snow cone stand. If each snow cone requires $\frac{2}{3}$ pound of ice, how many snow cones can Roger make?
5. APPLES Juan took 6 apples and cut each into one-eighths. How many pieces of apple did he have?	**6. VACATION** The Torres family drove 1,375 miles during their $6\frac{1}{4}$-day vacation. Find the average number of miles they traveled each day.
7. RUNNING Hugo just joined the cross-country team and can run at a rate of $\frac{1}{7}$ mile each minute. How long will it take him to run a 5-mile race?	**8. LUMBER** Mrs. Shin has a piece of lumber that is $11\frac{5}{8}$ inches wide. She plans to split the width of lumber into 3 equal pieces. How wide will each piece be?

Lesson 5-7

NAME _____ DATE _____ PERIOD _____

6-1 Word Problem Practice

Ratios

1. ELECTIONS In an election for sheriff, 210 people voted. If there were 1,260 possible voters, write a ratio to compare the number of people who voted to the number of possible voters.	**2. DENTAL CARE** Taru surveyed 60 dentists and found that 48 favored the use of fluoride toothpaste. Write a ratio to compare the number of dentists favoring the use of a flouride toothpaste to all dentists surveyed.
3. E-MAIL One morning, Mirna counted 15 junk e-mails out of 21 e-mails in her inbox. Write a ratio comparing the number of junk e-mails to the total number of e-mails.	**4. SURFING** One evening at his local surf spot, Jeff counted 28 surfers in the water. Among those, he counted 21 that had hoods on their wetsuits. Write a ratio comparing the number of surfers with hoods to the total number of surfers.
5. MUSIC A music company signed 12 new artists to its label in 2002. Out of the 12, 10 artists have hit songs. Write a ratio to compare the number of artists with hit songs to the total number of artists signed in 2002.	**6. BASEBALL** Nate had 26 hits at 50 times at bat last season. Write a ratio to compare the number of hits to the number of times at bat.
7. BASEBALL In baseball, David has 10 hits out of 14 at bats. Adam has 15 hits out of 21 at bats. For each player, write a ratio that represents his total number of hits out of times at bat. Are these ratios equivalent?	**8. DRIVING** Sarah can drive 198 miles on 11 gallons of gasoline. On 6 gallons of gasoline, Rachel can travel 138 miles. Write a ratio that compares miles traveled per gallon of gasoline for each car. Do the cars get the same mileage?

NAME _____ DATE _____ PERIOD _____

6-2 Word Problem Practice

Rates

1. TRAVEL During Sonia's trip across the country, she traveled 2,884 miles. Her trip took 7 days. Find a unit rate to represent the average miles she traveled per day during the trip.	**2. BUDGET** Steve was offered $5,025 per year for a weekend lifeguarding job at a local pool. He wants to know how much his monthly income will be at this salary level. What is his rate of pay in dollars per month?
3. MUSIC Randall recorded 8 songs on his most recent CD. The total length of the CD is 49 minutes. Find a unit rate to represent the average length per song on the CD.	**4. CARPETING** Hana paid $1,200 for the carpet in her living room. The room has an area of 251.2 square feet. What was her unit cost of carpeting in dollars per square foot? Round to the nearest cent.
5. SHOPPING An 8-ounce can of tomatoes costs $1.14. A 12-ounce can costs $1.75. Which can of tomatoes has the better unit price?	**6. PETS** Last month, Hao's dog ate 40 cans of dog food in 31 days. How many cans should Hao buy to feed his dog for the next 6 days?

NAME _____ DATE _____ PERIOD _____

6-3 Word Problem Practice

Rate of Change and Slope

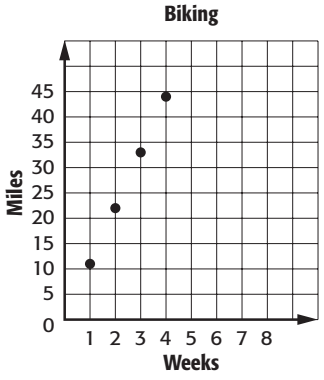
1. WATER At 2 P.M., the level of the water in the pool was 10 feet. At 6 P.M., the level of water was 2 feet. Find the rate of change of the water.

2. MONEY JoAnne is depositing money into a bank account. After 3 months there is $150 in the account. After 6 months, there is $300 in the account. Find the rate of change of the account.

3. TEMPERATURE The temperature at noon was 88°F. By 4 P.M., the temperature was 72°F. Find the rate of change of the temperature.

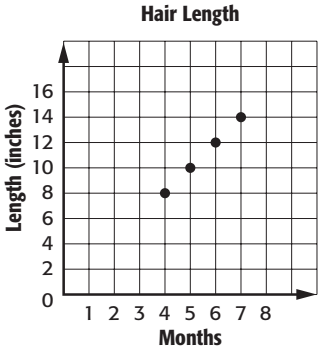
4. GROWTH Jaz was 43 inches tall. Eighteen months later, she was 52 inches tall. Find the rate of change for Jaz's height.

5. BIKING The graph represents how far Kevin biked given the number of weeks he has been biking. Find the rate of change.



6. HAIR Graph the data. Find the slope of the line. Describe what the slope means.

Month	4	5	6	7
Length (in inches)	8	10	12	14



NAME _____ DATE _____ PERIOD _____

6-4 Word Problem Practice

Measurement: Changing Customary Units

1. WEIGHT The average weight of a baby at birth is 7 pounds. How many ounces is this?	**2. WATERFALLS** The height of Niagara Falls is 182 feet. How many yards high is it?
3. GASOLINE The gasoline tank of a minivan holds 18 gallons. How many quarts is this?	**4. TELEPHONES** Portable telephones can weigh as little as 8 ounces. How many pounds is this?
5. RECIPE A recipe for ice cream calls for 56 fluid ounces of milk. How many cups of milk is this?	**6. STATUE** The Statue of Liberty weighs 450,000 pounds. How many tons is this?
7. TUNNEL The Ted Williams Tunnel under Boston Harbor is 8,448 feet long. How many yards is this?	**8. COAL** The United States exports over 200 billion pounds of coal. How many tons is this?

NAME _____ DATE _____ PERIOD _____

6-5 Word Problem Practice

Measurement: Changing Metric Units

1. RUNNING Each morning Carlos runs 1.5 kilometers. How many meters did he run?	**2. AVIATION** A helicopter was flying 800 meters above the ground. How many kilometers above the ground was it flying?
3. SODA A soda can contains 355 milliliters of liquid. How many liters of liquid does it contain?	**4. CONSTRUCTION** The ceilings of most classrooms are about 2.5 meters above the floor. How many centimeters high is the ceiling?
5. FENCING Gerri's garden is 1,270 centimeters around the edges. How many meters of fencing material does she need to enclose her garden?	**6. GARDENING** Mr. Chou's lawn sprinker sprays about 150 liters of water each hour. How many kiloliters of water does it spray?
7. NUTRITION For 11- to 14-year-olds, the Recommended Dietary Allowance (RDA) for protein is about 60 grams daily. How many milligrams do they need daily?	**8. MEASUREMENT** A measure of one pound is equivalent to about 454 grams. How many kilograms are in one pound? How many milligrams?

NAME _____ DATE _____ PERIOD _____

6-6 Word Problem Practice

Algebra: Solving Proportions

1. COOKING Theo wants to use a cookie recipe that makes 36 cookies but he wants to reduce the number of cookies to 24. If the recipe specifies using 2 cups of sugar, how much sugar should he use?	**2. MEDICINE** In order to determine her pulse rate, June's nurse counted 18 beats in her pulse in 15 seconds. At this rate, how many beats would she have in 60 seconds?
3. LABOR Ed earned $112 for 8 hours of work. At this rate, how much will he earn for 40 hours of work?	**4. TRAVEL** Rita traveled 1,250 miles in the first 3 days of her trip. At this rate, how long will it take her to travel 1,875 miles?
5. MODELS An architect built a model of a 220-foot tall building he is designing. The model is 25 inches tall and 10 inches wide. How wide is the actual building?	**6. TESTING** Mary is preparing for her college entrance exams. In a practice test, she answered 12 problems in 30 minutes. At this rate, how many questions can she expect to answer in 150 minutes?

NAME _____ DATE _____ PERIOD _____

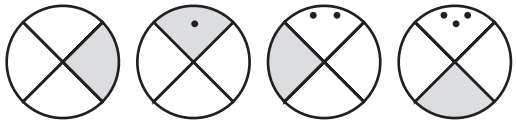
6-7 Word Problem Practice

Problem-Solving Investigation: Draw a Diagram

Solve each problem using any strategy you have learned.

1. MONEY Chantel has $125 left in her checking account after writing checks for $35, $22.50 and $16. What was her balance before she wrote the checks?

2. GEOMETRY Draw the next three figures in the pattern.



3. PIZZA Olivia has eaten $\frac{1}{3}$ of the pizza. If she has eaten 3 pieces, how many pieces were originally in the pizza?

4. EXERCISE Katlyn runs 2 miles after school each day and 3 miles on Saturday and 4 miles on Sunday. How many miles does she run during one week?

5. WORK Jefferson wants to work at least 25 hours this week. If he has already worked 22 hours, how many hours does he need to work on Saturday?

6. TRAVEL The bus to Washington has traveled $\frac{5}{6}$ of the way there. If it has traveled 80 miles, how much farther does it have to go?

7. MUSEUMS The Art Club is planning on attending a museum. The admission cost is $10 for adults and $7.50 for students. If they plan on having 2 adults attend as chaperones and have $150 saved from a fundraiser, what is the maximum number of students who can attend?

8. SPORTS Janean made 50 baskets during the week at practice. The table below shows when she made the baskets. How many baskets did she make on Friday?

Day	Number of Baskets
Monday	5
Tuesday	12
Wednesday	16
Thursday	7
Friday	??

NAME _____ DATE _____ PERIOD _____

6-8 Word Problem Practice

Scale Drawings

1. CARS A scale drawing of an automobile has a scale of 1 inch = $\frac{1}{2}$ foot. The actual width of the car is 8 feet. What is the width on the scale drawing?

2. MODELS A model ship is built to a scale of 1 centimeter:5 meters. The length of the model is 30 centimeters. What is the length of the actual ship?

3. BUILDING Jose wants to build a model of a 180-meter tall building. He will be using a scale of 1.5 centimeters = 3.5 meters. How tall will the model be? Round your answer to the nearest tenth.

4. TRAVEL Susan is driving to Mount Shasta. On her map, she is a distance of $7\frac{3}{4}$ inches away. The scale of the map is $\frac{1}{2}$ inch = 50 miles. How far must Susan travel to reach her destination?

5. MAPS A map of Levi's property is being made with a scale of 2 centimeters: 3 meters. What is the scale factor?

6. LANDSCAPING A pond is being dug according to plans that have a scale of 1 inch = 6.5 feet. The maximum distance across the pond is 9.75 inches on the plans. What will be the actual maximum distance across the pond?

NAME _____ DATE _____ PERIOD _____

6-9 Word Problem Practice

Fractions, Decimals, and Percents

INTERNET For Exercises 1–4, use the table. It shows the percents of online shopping purchases made by all Internet users and the percents made by Internet users over age 55.

Most Popular Online Purchases		
	Internet Users Over 55	All Internet Users
computer software	43%	19%
books	43%	21%
computer hardware	24%	13%
music CDs	29%	22%
clothing	19%	8%

1. What fraction of Internet users over 55 bought clothing online?

2. What fraction of all Internet users bought clothing online?

3. What fraction of all Internet users bought music CDs online?

4. Is the fraction of Internet users over 55 who bought books online greater or less than $\frac{22}{50}$? Explain.

5. FOOTBALL In 2005, Indianapolis quarterback Peyton Manning completed 305 out of 453 passes. What was his pass completion percentage to the nearest tenth?

6. COMPUTERS In Joan's math class, there are 20 computers and 32 students. What percent of students will be able to use a computer without sharing?

7. VEHICLES In the town of Orick, 5 out of 13 vehicles are trucks. What percent of the vehicles are trucks? Round to the nearest tenth.

8. DENTISTRY Dana has fillings in 4 of her 32 teeth. What percent of her teeth have fillings?

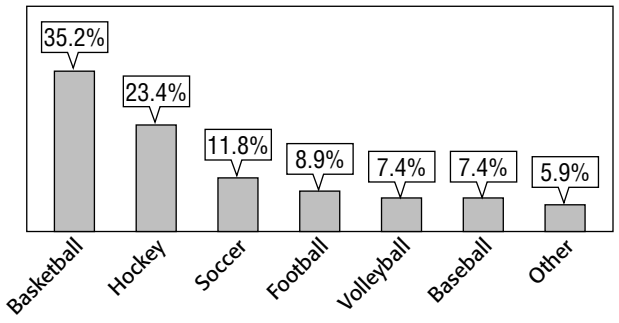
NAME _____ DATE _____ PERIOD _____

7-1 Word Problem Practice

Percent of a Number

SPORTS For Exercises 1 and 2, use the graph below. It shows the results of a poll of 440 ninth grade students. Round answers to the nearest whole number.

Favorite Sports of Students



PETS For Exercises 3 and 4, use the table below. It shows the pet ownership in Los Angeles, California. Assume that the same percents apply to a town of 1,650 households. Round answers to the nearest whole number.

Pets in Household	Percent
at least one dog or cat	26.7
at least one dog	19.9
at least one cat	13
at least one dog and one cat	6.19

1. Write the percent as a fraction to find how many students surveyed chose hockey as their favorite sport. Solve.

2. How many students surveyed chose basketball as their favorite sport?

3. Write the percent as a decimal to find how many households have at least one dog. Solve.

4. How many households have at least one dog or cat?

5. VOTING Going into a recent election, only about 62% of people old enough to vote were registered. In a community of about 55,200 eligible voters, how many people are registered?

6. COLLEGE A local college recently reported that enrollment increased to 108% percent of last year. If enrollment last year was at 17,113, about how many students enrolled this year? Round to the nearest whole number.

Lesson 7-1

NAME _____ DATE _____ PERIOD _____

7-2 Word Problem Practice

The Percent Proportion

1. DRIVING David installed a device on his car that guaranteed to increase his gas mileage by 15%. He currently gets 22 miles per gallon. How much will the gas mileage increase after installing the device?	**2. POPULATION** The number of students at Marita's school decreased to 98% of last year's number. Currently, there are 1,170 students. How many students were there last year? Round to the nearest whole number.
3. VOTING Yolanda's club has 35 members. Its rules require that 60% of them must be present for any vote. At least how many members must be present to have a vote?	**4. GARBAGE** This month, Chun's office produced 690 pounds of garbage. Chun wants to reduce the weight of garbage produced to 85% of the weight produced this month. What is the target weight for the garbage produced next month?
5. SALARIES Alma just received a 6% raise in salary. Before the raise, she was making $52,000 per year. How much more will Alma earn next year?	**6. SPORTS** Sally's soccer team played 25 games and won 17 of them. What percent did the team win?

NAME _____ DATE _____ PERIOD _____

7-3 Word Problem Practice

Percent and Estimation

1. ORCHESTRA The orchestra at Millard Middle School has 120 members. Of these, 17% are eighth-grade students. Estimate the number of eighth-grade students in the orchestra.	**2. RESTAURANTS** In one west coast city, 34% of the restaurants are on the river. The city has 178 restaurants. Estimate the number of restaurants that are on the river.
3. FARMING Rhonda planted green beans on 67% of her farm. Rhonda's farm has 598 acres of land. Estimate the number of acres of green beans on Rhonda's farm.	**4. HOTELS** At the Eastward Inn hotel, 47% of the rooms face the pool. The hotel has 92 rooms. Estimate the number of rooms that face the pool.
5. TREES The students in Leon's seventh grade science class determined that 42% of the trees at a local park are pine trees. If there are 632 trees in the park, about how many of them are pine trees?	**6. BOOKS** Jenna has read 0.7% of a book. If the book has 431 pages, estimate the number of pages Jenna has read.
7. FITNESS At the office where Mika works, 40% of the 18 employees exercise at least three times a week. Estimate the number of people who exercise at least three times a week.	**8. PETS** Of all seventh grade students at Hart Middle School, 0.3% of the students own a pet iguana. If there are 610 seventh grade students at Hart, about how many own pet iguanas?

Lesson 7-3

NAME _____ DATE _____ PERIOD _____

7-4 Word Problem Practice

Algebra: The Percent Equation

1. DINING Jonas and Linda's restaurant bill comes to $23.40. They are planning to tip the waiter 15% of their bill. How much money should they leave for a tip?	**2. CHESS** The Briarwood Middle School chess club has 55 members. 22 of the members are in seventh grade. What percent of the members of the chess club are in seventh grade?
3. TENNIS In the city of Springfield, 75% of the parks have tennis courts. If 15 parks have tennis courts, how many parks does Springfield have altogether?	**4. COLLEGE** There are 225 students in eighth grade at Jefferson Middle School. A survey shows that 64% of them are planning to attend college. How many Jefferson eighth grade students are planning to attend college?
5. BASEBALL In a recent season, the Chicago White Sox won 99 out of 162 games. What percent of games did the White Sox win? Round to the nearest tenth if necessary.	**6. HOUSING** In the Stoneridge apartment complex, 35% of the apartments have one bedroom. If there are 49 one-bedroom apartments, what is the total number of apartments at Stoneridge?
7. SPACE On Mars, an object weighs 38% as much as on Earth. How much would a person who weighs 165 pounds on Earth weigh on Mars?	**8. FOOTBALL** In a recent season, quarterback Jake Plummer of the Denver Broncos had 7 passes intercepted out of 456 attempts. What percent of Jake Plummer's passes were intercepted? Round to the nearest tenth if necessary.

NAME _____ DATE _____ PERIOD _____

7-5 Word Problem Practice

Problem-Solving Investigation: Determine Reasonable Answers

Solve using any method.

1. GYM The 6th graders are running the mile in physical education. Jared finishes the mile 2 minutes before Stacey who finished 1 minute 26 seconds behind Kareem. If Joanna completes the mile 1 minute and 42 seconds after Kareem, and her time is 8 minutes 34 seconds, what is Jared's time?	**2. POLITICS** A candidate receives 62% of the vote in an election and there are 1,603 votes recorded. How many votes did the candidate receive?
3. POPULATION The population of the United States is about 296,000,000. Spanish is the primary language for 10.7% of the population, about how many people speak Spanish as their primary language?	**4. BAKING** Bea has prepared a basic cookie dough to which she will add ingredients to make several types of cookies. She has chocolate chips, raisins, and peanut butter chips. She also has peanuts, pecans, and walnuts. If she wants to put one ingredient from the first group with one type of nut into the dough, how many different types of cookies can she make?
5. COINS Zachary has four different coins that total 41 cents. What coins does he have?	**6. DECORATING** Mr. Chen is planning to wallpaper his family room and dining room. The dining room is 11 feet by 13 feet, while the family room is 20 feet by 10 feet. All of the walls are 8 feet high. How many square feet of wallpaper does he need to wallpaper the two rooms?
7. MOVIES Charis is going to the movies with a friend. The price of admission is $5.50, a small popcorn is $2.39, and a small drink is $2.65. If Charis has a ten dollar bill, does she have enough money for admission, popcorn, and a drink? If not, how much more money would she need?	**8. TRAVELING** Shawn is packing his suitcase for vacation. If he has 2 pairs of shorts, and 5 shirts, how many different outfits can he make?

NAME _____ DATE _____ PERIOD _____

7-6 Word Problem Practice

Percent of Change

1. SHOES A popular brand of running shoes costs a local store $68 for each pair. If the store sells the shoes for $119, what is the percent of increase in the price?	**2. CLUBS** Last year the backgammon club had 30 members. This year the club has 24 members. Find the percent of decrease in the number of members.
3. READING In the seventh grade, Rachel read 15 books. In the eighth grade, she read 18 books. Find the percent of increase in the number of books Rachel read.	**4. VOTES** Last year 762 students voted in the student council election at San Bruno Middle School. This year 721 students voted. To the nearest tenth, what was the percent of change in the number of students that voted?
5. HEIGHT When Hugo was 9 years old he was 56 inches tall. Hugo is now 12 years old and he is 62 inches tall. Find the percent of increase in Hugo's height to the nearest tenth.	**6. PLANTS** Alicia planted 45 tulip bulbs last year. This year she plans to plant 65 bulbs. Find the percent of increase in the number of tulip bulbs to the nearest tenth.
7. PICTURES The 2008 yearbook at Middleton Middle School had 236 candid pictures of students. The 2007 yearbook had 214 candid pictures of students. To the nearest tenth, what was the percent of change in the number of candid student pictures from 2007 to 2008?	**8. POPULATION** In 1990, there were 4,298,000 Mexican immigrants living in the United States. In 2000, this number had increased to 7,858,000. Find the percent of increase to the nearest tenth.

NAME _____ DATE _____ PERIOD _____

7-7 Word Problem Practice

Sales Tax and Discount

1. SKATEBOARDS Ines wants to buy a skateboard but she does not know if she has enough money. The price of the skateboard is $85 and the sales tax is 6%. What will be the total cost of the skateboard?	**2. PRETZELS** The Spanish club sold hot pretzels as a fund-raiser. The pretzels normally sold for $1.50, but near the end of the sale they wanted to sell as many as possible, so they reduced the price by 30%. What was the new price for a hot pretzel?
3. COMPUTERS Andrea ordered a computer on the Internet. The computer cost $1,499 plus $7\frac{1}{2}\%$ sales tax. What was the total amount Andrea paid for her computer?	**4. BOOKS** Nate went shopping at a bookstore. The price of the book he selected was $14.95, but it had a sale sticker on it. When he paid for the book, he was charged $12.71 before sales tax was added. What was the percent of discount to the nearest percent?
5. CELL PHONES Justin is buying a cell phone that has a regular price of $149. The cell phone is on sale for 15% off the regular price. What will be the sale price?	**6. MAGAZINES** Ivan bought two magazines for $4.95 each. If the sales tax was 6.75%, what was the total amount that he paid for the magazines?
7. MOVIES A video store is having a sale in which DVDs are on sale for 20% off. During this sale, what is the cost of three DVDs that regularly cost $16.99?	**8. MODELS** The original price of a collectible model airplane is $115. The discounted price is $99. What is the percent of discount to the nearest percent?

NAME _____ DATE _____ PERIOD _____

7-8 Word Problem Practice

Simple Interest

1. SAVINGS ACCOUNT How much interest will Hannah earn in 4 years if she deposits $630 in a savings account at 6.5% simple interest?	**2. INVESTMENTS** Terry invested $2,200 in the stock market for 2 years. If the investment earned 12% simple interest, how much money did Terry earn in interest in 2 years?
3. SAVINGS ACCOUNT Malik deposited $1,050 in a savings account, and it earned $241.50 in simple interest after four years. Find the interest rate on Malik's savings account.	**4. INHERITANCE** Kelli Rae's inheritance from her great-grandmother was $220,000 after taxes. If Kelli Rae invests this money in a savings account that earns $18,260 in simple interest every year, what is the interest rate on her account?
5. RETIREMENT Mr. Pham has $410,000 in a retirement account that earns 3.85% simple interest each year. Find the amount earned each year by this investment.	**6. COLLEGE FUND** When Melissa was born, her parents put $8,000 into a college fund account that earned 9% simple interest. Find the total amount in the account after 18 years.
7. LOTTERY Raj won $900,000 in a regional lottery. After paying $350,000 in taxes, he invested the remaining money in a savings account at 4.25% simple interest. How much money is in the account if Raj makes no deposits or withdrawals for two years?	**8. SAVINGS** Mona opened a savings account with a $500 deposit and a simple interest rate of 5.6%. If there were no deposits or withdrawals, how much money is in the account after $8\frac{1}{2}$ years?

NAME _____ DATE _____ PERIOD _____

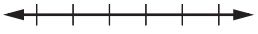
8-1 Word Problem Practice

Line Plots

TELEVISION SETS For Exercises 1–6, use the table below. It shows the number of television sets owned by 30 different families.

Number of TVs					
2	1	2	4	3	0
2	3	2	3	4	2
1	2	2	3	4	0
3	1	3	2	1	2
5	3	4	3	0	0

1. Make a line plot for the data.



2. How many televisions do most families own?

3. What is the greatest number of televisions owned by a family?

4. What is the range of the data?

5. Identify any clusters, gaps, or outliers, if any exist, and explain what they mean.

6. Describe how the range of the data would change if 5 were not part of the data set.

NAME _____ DATE _____ PERIOD _____

8-2 Word Problem Practice

Measures of Central Tendency and Range

SCHOOL For Exercises 1–6, use the table below. It shows the number of times per day that students go to their lockers.

Student Locker Visits							
2	2	0	1	2	2	3	4
0	5	2	5	2	5	2	4
2	4	6	4	5	6	5	6
2	2	0	1	4	6	10	2

1. Make a frequency table of the data.	**2.** What is the range of the data?
3. Find the mean, median, and mode of the data. Round to the nearest tenth if necessary.	**4.** Would the mean, median, or mode best represent the data? Explain.
5. Explain why the mean does not best represent the data.	**6.** If the value 10 were dropped from the data, find the median and the mode of the remaining data.

NAME _____ DATE _____ PERIOD _____

8-3 Word Problem Practice

Stem-and-Leaf Plots

ENDANGERED SPECIES **For Exercises 1–6, use the table below. It shows the number of endangered species in the U.S.**

Endangered Species in U.S.			
Group	**Number of Species**	**Group**	**Number of Species**
mammals	63	clams	61
birds	78	snails	20
reptiles	14	insects	33
amphibians	10	arachnids	12
fishes	70	crustaceans	18

1. Make a stem-and-leaf plot of the data.

2. What group has the greatest number of endangered species in the U.S.?

3. What group has the least number of endangered species in the U.S.?

4. What is the range of the data?

5. Use your stem-and-leaf plot to determine the median and mode.

6. How many groups have less than 30 endangered species in the U.S.?

NAME _____ DATE _____ PERIOD _____

8-4 Word Problem Practice

Bar Graphs and Histograms

PUPPIES For Exercises 1 and 2, use the table below. It shows the results of a survey in which students were asked what name they would most like to give a new pet puppy.

Name	Votes
Max	15
Tiger	5
Lady	13
Shadow	10
Molly	9
Buster	2

EARTH SCIENCE In Exercises 3–6, use the table below. It shows the highest wind speeds in 30 U.S. cities.

Highest Wind Speeds (mph)									
52	75	60	80	55	54	91	60	81	58
53	73	46	76	53	46	73	46	51	49
57	58	56	47	65	49	56	51	54	51

1. Make a bar graph to display the data.

Favorite New Puppy Names

2. Use your bar graph from Exercise 1. Compare the number of votes the name Shadow received to the number of votes the name Tiger received.

3. Make a histogram of the data.

Highest Wind Speeds

4. What is the top wind speed of most of the cities?

5. How many cities recorded wind speeds of 80 miles per hour or more?

6. How many cities recorded their highest wind speeds at 60 miles per hour or more?

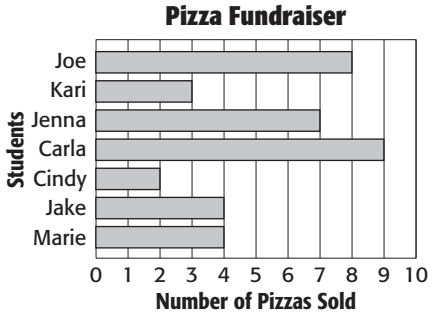
NAME _____ DATE _____ PERIOD _____

8-5 Word Problem Practice

Problem-Solving Investigation: Use a Graph

Solve. Use any strategy.

For Exercises 1–3, use the graph below.
Maria's class is selling pizzas as a fundraiser for their upcoming fieldtrip to the zoo.



1. Which student sold the most pizzas?

2. Did the girls sell more pizzas than the boys?

3. How many pizzas total did the class sell?

4. EXERCISE Robert wants to begin a new exercise program. His goal is to begin by exercising for 20 minutes. He goes to the gym two times a week, increasing his workout by five minutes each time. How long will it take him to work up to an hour?

For Exercises 5 and 6 use the following information.
MONEY Brianna made a $13.82 purchase at the grocery store. She received two bills and five coins in change.

5. What denomination of bill did she pay with?

6. What bills and coins did she receive as change?

7. NUMBER THEORY A number is multiplied by 32 then divided by 14. The square root of the result is 4. What is the number?

8. PIZZA Joelle has her choice of five pizza toppings: onions, sausage, mushrooms, pepperoni, and green pepper. In order to get a special price, she can only choose two toppings. How many combinations of toppings could she choose?

Lesson 8-5

NAME _____ DATE _____ PERIOD _____

8-6 Word Problem Practice

Using Graphs to Predict

For Exercises 1–3, use the table that shows the relationship between the month of the year at the number of Tamika's classmates that have their driving permit.

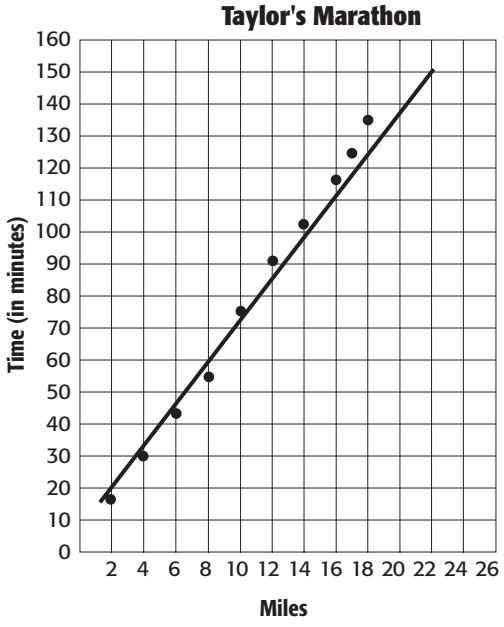
Month	Number of Students
January	1
February	3
March	4
April	5
May	8
June	10
July	11
August	14
September	15
October	15
November	18
December	21

1. Make a scatter plot of the data. Put the months on the horizontal axis and the number of students on the vertical axis.

2. Describe the type of relationship there is between the two types of data.

3. Why do you think this relationship exists?

For Exercises 4–6, use the graph that shows the time it takes Taylor to complete a 26-mile marathon.



4. Predict the time it will take Taylor to reach Mile 22 of the marathon and how long it will take Taylor to complete the marathon.

5. For how many minutes will he have run when he reaches the 8-mile mark?

6. How many miles will he have run in 110 minutes?

NAME _____ DATE _____ PERIOD _____

8-7 Word Problem Practice

Using Data to Predict

1. SHOES The table shows the results of a survey in which seventh graders were asked how many pairs of shoes they own. Predict how many of the 632 seventh graders at Seneca West Middle School own more than 7 pairs of shoes.

Shoes	Percent
3 or less	10%
4	20%
5	21%
6	22%
7	19%
more than 7	8%

2. ACTIVITIES Of the students listed as members of a high school academic team, 75% were involved in sports, speech, music or debate. If 111 students were listed as part of the teams, how many were involved in sports, speech, music, or debate?

3. MOVIEGOERS A research study found that about 63% of people 18 or older who go to the movies at least once a month own a personal computer. Out of 500 people 18 and older who go to the movies once or more a month, how many of them would you expect to own a personal computer?

4. HAIR A survey showed that 37% of people 12 to 17 years old use hair gel. Predict how many of the 30 students in Mr. Avalon's ninth grade class use hair gel.

5. GRADUATION A survey of first-year students at North Carolina State University showed that about 73% expect to complete their degree in 4 years. If there are 3,333 first-year students, how many of them expect to complete their degree in 4 years?

6. INTERNET A recent survey conducted by the Millard school district showed that 87% of households of students have Internet access at home. If there are 19,000 Millard households, how many have Internet access?

Lesson 8-7

NAME _____ DATE _____ PERIOD _____

8-8 Word Problem Practice

Using Sampling to Predict

Use the word problem and table to answer the qustions below.

Miguel is the manager of a clothing store. He wants to find out what are the most popular styles of men's pants and how many of each to order. He decides to survey every 10th man that walks in over a two-week period. Here are his results.

Pant Style	Number of People
Jeans	52
Khakis	31
Slacks	17

1. What type of sample does Miguel use for his survey?

2. What percentage of the customers surveyed prefer khakis?

3. What percentage of the customers surveyed prefer jeans?

4. If Miguel has 1,000 male customers over a two week period, how many pairs of jeans will he predict to sell?

5. If he has 1,300 customers in a two week period, how many pairs of slacks will he predict to sell?

6. Why would Miguel's sample not have been valid if he had decided to survey only the first ten people to walk in?

NAME _____ DATE _____ PERIOD _____

8-9 Word Problem Practice

Misleading Statistics

QUIZ SCORES **For Exercises 1 and 2, use the data shown in the table below. The table shows the quiz grades for Ms. Andrey's and Mr. Luna's classes.**

Quiz Scores	
Ms. Andrey's Class	**Mr. Luna's Class**
10	20
15	20
25	25
25	29
12	26

BOOK SALES **For Exercises 3 and 4, use the table below. It shows the number of books sold each day for 20 days.**

Book Sales Per Day			
23	18	23	15
24	16	0	11
19	10	13	17
12	23	11	16
36	24	12	27

1. Ms. Andrey claims the average score on a quiz in her class was 25. Mr. Luna claims the average score on a quiz in his class is 25. Explain how they arrived at these figures.

2. What additional information could be useful in analyzing the data?

3. Find the mean, median, and mode of the data. Which measure of central tendency would be misleading in describing the book sales? Explain.

4. Which value would most accurately describe the data? Explain.

NAME _____ DATE _____ PERIOD _____

9-1 Word Problem Practice

Simple Events

COINS Susan opened her piggy bank and counted the number of each coin. The table at the right shows the results. For Exercises 1–3, assume that the coins are put in a bag and one is chosen at random.

Coin	Number
quarters	15
dimes	21
nickels	22
pennies	32

1. What is the probability that a quarter is chosen?	**2.** What is the probability that a nickel or a dime is chosen?
3. What is the probability that the chosen coin is worth more than 5 cents?	**4. NUMBER CUBES** Juan has two number cubes, each with faces numbered 1, 2, …6. What is the probability that he can roll the cubes so that the sum of the faces showing equals 11?
5. SKATEBOARDS Carlotta bought a new skateboard for which the probability of having a defective wheel is 0.015. What is the probability of not having a defective wheel?	**6. CALCULATORS** Jake's teacher had 6 calculators for 28 students to use. If the first students to use the calculators are chosen at random, what is the probability that Jake will get one?
7. VEHICLES The rental car company had 14 sedans and 8 minivans available to rent. If the next customer picks a vehicle at random, what is the probability that a minivan is chosen?	**8. MUSIC** Tina has 16 pop CDs, 6 classical, and 2 rock. Tina chooses a CD at random. What is the probability she does not choose a classical CD?

NAME _____ DATE _____ PERIOD _____

9-2 Word Problem Practice

Sample Spaces

1. GASOLINE Craig stops at a gas station to fill his gas tank. He must choose between full-service or self-service and between regular, midgrade, and premium gasoline. Draw a tree diagram or table showing the possible combinations of service and gasoline type. How many possible combinations are there?	**2. COINS** Judy tosses a coin 4 times. Draw a tree diagram or table showing the possible outcomes. What is the probability of getting at least 2 tails?
3. COINS In Exercise 2, what is the probability of getting 2 heads, then 2 tails?	**4. EQUIPMENT** The computer accessory that Joanne is considering selling at her store comes in white, beige, gray, or black and as an optical mouse, mechanical mouse, or trackball. How many combinations of color and model must she stock in order to have at least one of every possible combination?

NAME _____ DATE _____ PERIOD _____

9-3 Word Problem Practice

The Fundamental Counting Principle

1. SURFBOARD Jay owns 3 surfboards and 2 wetsuits. If he takes one surfboard and one wetsuit to the beach, how many different combinations can he choose?	**2. SHOPPING** John is trying to decide which bag of dog food to buy. The brand he wants comes in 4 flavors and 3 sizes. How many choices are there?
3. LOTTERY To purchase a lottery ticket, you must select 4 numbers from 0 to 9. How many possible lottery tickets can be chosen?	**4. RESTAURANTS** Miriam's favorite restaurant has 3 specials every day. Each special has 2 choices of vegetable and 3 choices of dessert. How many different meals could Miriam have?
5. ROUTES When Sunil goes to the building where he works, he can go through 4 different doors into the lobby. Then he can go to the seventh floor by taking 2 different elevators or 2 different stairways. How many different ways can Sunil get from outside the building to the seventh floor?	**6. STEREOS** Jailin went to her local stereo store. Given her budget and the available selection, she can choose between 2 CD players, 5 amplifiers, and 3 pairs of speakers. How many different stereos can Jailin purchase?
7. DESSERT For dessert you can choose apple, cherry, blueberry, or peach pie to eat, and milk or juice to drink. How many different combinations can you choose from?	**8. TESTS** John is taking a true or false quiz. There are six questions on the quiz. How many ways can the quiz be answered?

NAME _____ DATE _____ PERIOD _____

9-4 Word Problem Practice

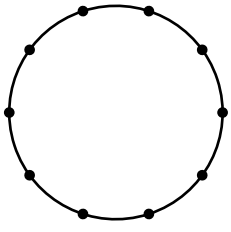
Permutations

1. AREA CODES How many different 3-digit area codes can be created if no digit can be repeated?	**2. CARDS** Jason is dealt five playing cards. In how many different orders could Jason have been dealt the same hand?
3. PASSWORDS How many different 3-letter passwords are possible if no letter may be repeated?	**4. RACING** All 22 students in Amy's class are going to run the 100-meter dash. In how many ways can the students finish in first, second, and third place?
5. LETTERS How many ways can you arrange the letters in the word HISTORY?	**6. PARKING** The parking lot for a company has three parking spaces for compact cars. The company has 8 employees with compact cars. How many ways can the compact parking spaces be filled?
7. SERIAL NUMBERS How many different 6-digit serial numbers are available if no digit can be repeated?	**8. WINNERS** There are 156 ways for 2 cars to win first and second place in a race. How many cars are in the race?

NAME _____ DATE _____ PERIOD _____

9-5 Word Problem Practice

Combinations

1. SNACKS A vending machine can display six snacks. If there are eight different kinds of snacks available, how many 2 groups of six different snacks can be purchased?	**2. MUSIC** Each month, Jose purchases two CDs from a selection of 20 bestselling CDs. How many different pairs of CDs can Jose choose if he chooses two different CDs?
3. TESTS On a math test, you can choose any 20 out of 23 questions. How many different groups of 20 questions can you choose?	**4. RESTAURANTS** The dinner special at a local pizza parlor gives you the choice of two toppings from a selection of six toppings. How many different choices are possible if two different toppings are chosen?
5. TESTING In a science fair experiment, two units are selected for testing from every 500 units produced. How many ways can these two units be selected?	**6. MEETINGS** Linda's teacher divided the class into groups of five and required each member of a group to meet with every other member of that group. How many meetings will each group have?
7. BASEBALL A baseball coach has 13 players to fill nine positions. How many different teams could he put together?	**8. GEOMETRY** Ten points are marked on a circle. How many different triangles can be drawn between any three points? 

NAME _____ DATE _____ PERIOD _____

9-6 Word Problem Practice

Problem-Solving Investigation: Act It Out

Solve each problem using any strategy you have learned.

1. **POLLS** Out of 200 people, 32% said that their favorite animal was a cat and 44% said that their favorite animal was a dog. How many more people chose dog than cat?

2. **PEACHES** Roi is picking peaches; he needs a total of $3\frac{1}{2}$ bushels of peaches. If he has already picked 3 bushels, how many more does he need to pick?

A 2 bushels **C** $3\frac{1}{2}$ bushels

B $\frac{1}{2}$ bushel **D** 3 bushels

3. **BASEBALL** Thirty-two teams are playing in the championship. If a team is eliminated once it loses, how many total games will be played in the championship?

4. **GEOMETRY** Find the next two terms is the sequence.

5. **POOL RENTAL** The table below shows how much Ford Middle School was charged to rent the pool for a party based on the number of hours it was rented. Predict the cost for 5 hours.

# of hours	Cost
1	$120
1.5	$180
2	$240
2.5	$300

6. **GEOMETRY** Use the formula $D = rt$ where D is the distance, r is the rate, and t is the time to determine how far Alyssa drove if she drove 55 miles per hour for 4 hours.

7. **SCHOOL ELECTIONS** How many ways can a president, vice president, secretary and treasurer be elected from a choice of 6 students?

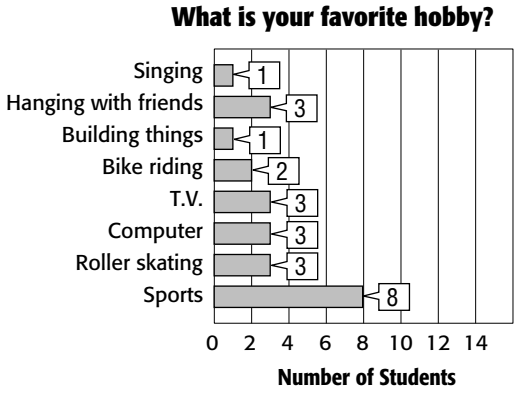
8. **SHOPPING** Morty bought skis. The skis cost $215 and he got $35 in change. How much did Morty pay with?

NAME _____ DATE _____ PERIOD _____

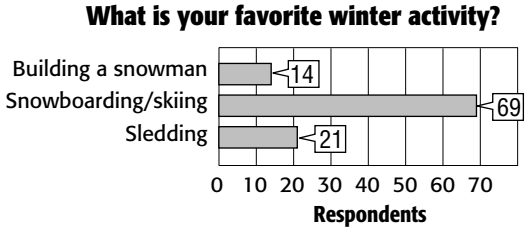
9-7 Word Problem Practice

Theoretical and Experimental Probability

HOBBIES For Exercises 1–3, use the graph of a survey of 24 seventh grade students asked to name their favorite hobby .



WINTER ACTIVITIES For Exercises 5 and 6, use the graph of a survey with 104 responses in which respondents were asked about their favorite winter activities.



1. What is the probability that a student's favorite hobby is roller skating?	**2.** Suppose 200 seventh grade students were surveyed. How many can be expected to say that roller skating is their favorite hobby?
3. Suppose 60 seventh grade students were surveyed. How many can be expected to say that bike riding is their favorite hobby?	**4.** **MARBLES** A bag contains 5 blue, 4 red, 9 white, and 6 green marbles. If a marble is drawn at random and replaced 100 times, how many times would you expect to draw a green marble?
5. What is the probability that someone's favorite winter activity is building a snowman? Write the probability as a fraction.	**6.** If 500 people had responded, how many would have been expected to list sledding as their favorite winter activity? Round to the nearest whole person.

NAME _____ DATE _____ PERIOD _____

9-8 Word Problem Practice

Compound Events

1. SAFETY Eighty percent of all California drivers wear seat belts. If three drivers are pulled over, what is the probability that all would be wearing their seat belts? Write as a percent to the nearest tenth.	**2. VEGETABLES** A nationwide survey showed that 65% of all children in the United States dislike eating vegetables. If three children are chosen at random, what is the probability that all three dislike eating vegetables? Write as a percent to the nearest tenth.
3. QUALITY In a shipment of 50 calculators, 4 are defective. One calculator is randomly selected and tested. What is the probability that it is defective?	**4. MARBLES** A bag contains 6 green marbles, 2 blue marbles, and 3 white marbles. Gwen draws one marble from the jar and replaces it. Jeff then draws one marble from the jar. What is the probability that Gwen draws a blue marble and Jeff draws a white marble?
5. DEMONSTRATION Ms. Morris needs a student to help her with a demonstration for her class of 12 girls and 14 boys. She randomly chooses a student. What is the probability that she chooses a girl?	**6. SURVEY** Ruben surveyed his class and found that 4 out of 22 students walk to school. If one of the 22 students is selected at random, what is the probability that the chosen student DOES NOT walk to school?

Lesson 9-8

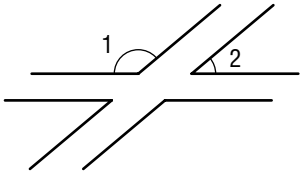
NAME _____ DATE _____ PERIOD _____

10-1 Word Problem Practice

Angle Relationships

1. CLOCKS The time shown on the clock is 11:05. Starting at this time, approximately what time will it be when the hands form an obtuse angle?

2. AIRPORT The runways at a local airport are sketched in the figure. Classify $\angle 1$ and $\angle 2$ as *acute*, *obtuse*, *right*, or *straight*.

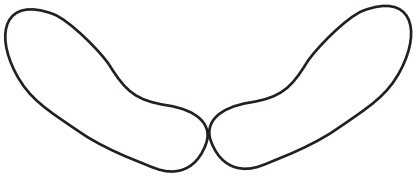


3. FOUR SQUARE Lauren, James, Lisa, and Lauretta were playing four square. Which students are standing at vertical angles from one another?

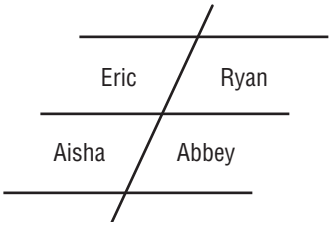
Lauren	James
Lisa	Lauretta

4. CLOCKS The time shown on the clock is 12:07. After 20 minutes have gone by, will the angle formed by the hour and minute hands be *acute*, *obtuse*, *right*, or *straight*?

5. BALLET When a ballet dancer's feet are in first position, the heels are touching, and the feet are turned out. A dancer with excellent technique can position his or her feet so that they are nearly in a straight line. Isabella is practicing her technique. Classify the angle her feet form as *acute*, *obtuse*, or *right*.



6. PARKING LOT Eric, Ryan, Aisha, and Abbey are all parked in the school lot. Who is parked at adjacent angles from one another?

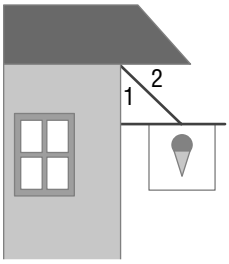


NAME _____ DATE _____ PERIOD _____

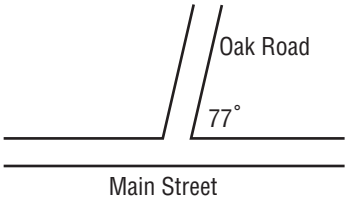
10-2 Word Problem Practice

Complementary and Supplementary Angles

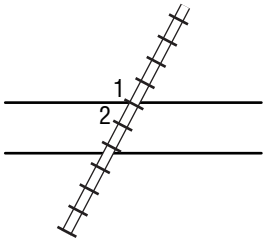
1. SIGN The support wire for a sign meets the wall and the overhang as shown below. If $m\angle 2 = 42°$, find $m\angle 1$. Explain your reasoning



2. STREETS Main Street intersects Oak Road. If a right-hand turn onto Oak Road requires a 77° turn, what degree must a left-hand turn onto Oak Road make?

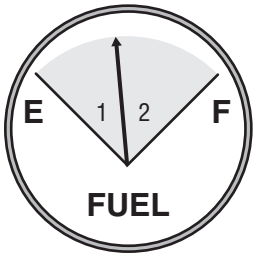


3. RAILROAD East of the town of Rockport, the railroad tracks intersect Highway 67 as shown below. If $m\angle 1 = 133°$, find $m\angle 2$. Explain your reasoning.

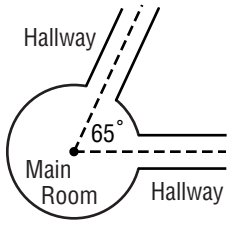


4. CAMPING Jonna and Elizabeth found a level campsite and pitched their tent as shown below. If $m\angle 1 = 120°$, find $m\angle 2$. Explain your reasoning.

5. GAS GAUGE Below is a picture of the gas gauge in Sergio's car. The angles made by the indicator are complementary. If the $m\angle 1 = 42°$, what is the $m\angle 2$?



6. ARCHITECTURE The plans for a new aquarium call for several hallways of exhibits leading out of a circular main room. Because of the size of the tanks that will be used, the angle formed between two adjacent hallways can be no smaller than 65°. What is the maximum number of hallways that can be built leading out of the main room?



Lesson 10-2

NAME _____ DATE _____ PERIOD _____

10-3 Word Problem Practice

Statistics: Display Data in a Circle Graph

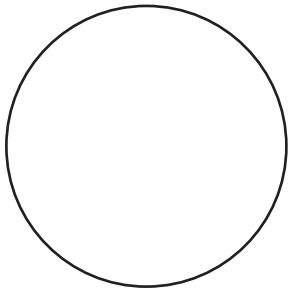
LANGUAGES For Exercises 1 and 2, use the table that shows the number of people that speak the five languages that are spoken by the most people in the world.

Languages Spoken by the Most People	
Language	**Speakers (millions)**
Chinese, Mandarin	874
Hindi	366
English	341
Spanish	322
Bengali	207

1. Find the degrees for each part of a circle graph that shows the data.

2. Make a circle graph of the data. Which three languages account for 41% of the total?

Languages Spoken by the Most People

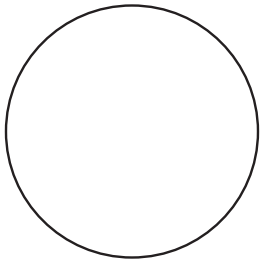


MILITARY For Exercises 3 and 4, use the table that shows the number of people active in the United States military.

United States Military, Active Duty	
Branch	**Personnel (thousands)**
Army	486
Navy	385
Marine Corps	174
Air Force	368
Coast Guard	38

3. Make a circle graph of the data.

United States Military Personnel Active Duty



4. Which two branches taken together account for almost half of the total?

NAME _____ DATE _____ PERIOD _____

10-4 Word Problem Practice

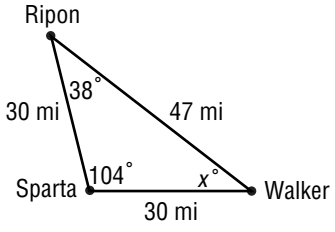
Triangles

1. TAILORING Each lapel on a suit jacket is in the shape of a triangle. The three angles of each triangle measure 47°, 68°, and 65°. Classify the triangle by its angles.

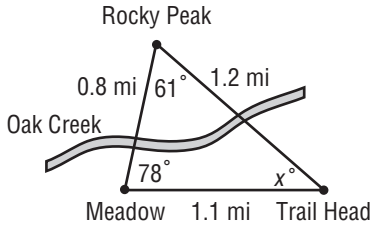
2. FLAGS A naval distress signal flag is in the shape of a triangle. The three sides of the triangle measure 5 feet, 9 feet, and 9 feet. Classify the triangle by its sides.

3. CARPENTRY The supports of a wood table are in the shape of a right triangle. Find the third angle of the triangle if the measure of one of the angles is 23°.

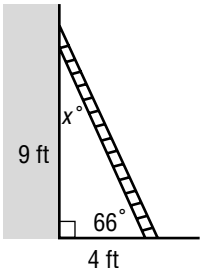
4. MAPS The three towns of Ripon, Sparta, and Walker form a triangle as shown below. Classify the triangle by its angles and by its sides. What is the value of x in the triangle?



5. HIKING The figure shows the Oak Creek trail, which is shaped like a triangle. Classify the triangle by its angles and by its sides. What is the value of x in the figure?



6. LADDER The figure shows a ladder leaning against a wall, forming a triangle. Classify the triangle by its angles and by its sides. What is the value of x in the figure?



NAME _____ DATE _____ PERIOD _____

10-5 Word Problem Practice

Problem-Solving Investigation: Use Logical Reasoning

1. PHYSICS A ball is dropped from a height of 40 feet. If the ball bounces $\frac{1}{2}$ as high on each successive bounce, what is the height on the fourth bounce?

2. RECIPES Shawn is making a cake. He needs a total of $3\frac{1}{4}$ cups of flour. If he has already added $2\frac{1}{2}$ cups, how much more does he need to add?

A 2 cups **C** $\frac{1}{2}$ cup

B 1 cup **D** $\frac{3}{4}$ cup

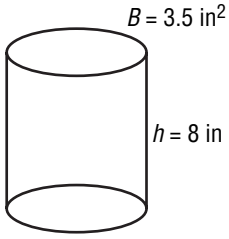
3. GEOMETRY Draw several pentagons and measure their interior angles. What can you conclude about the sum of the measures of the angles of a pentagon? Did you use inductive or deductive reasoning?

4. PATTERNS Find the next three terms is the sequence.
2, 5, 9, 14, …

5. WORK The table below shows how much Lu got paid based on the number of hours she babysat. Predict her pay for 7 hours.

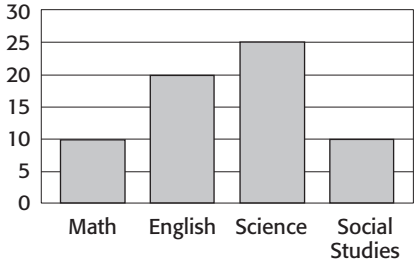
Number of hours	Pay
1	$5
2	$10
3	$15
4	$20

6. GEOMETRY Use the formula $V = Bh$ where V is the volume of a cylinder, B is the area of the base and h is the height of the cylinder to find the volume of the cylinder below.



7. FRAMING A photograph is 8 in. by 10 in. and is to be surrounded by a mat that is 1.5 in. all around. What will be the dimensions of the picture and mat together?

8. SCHOOL Students filled out a survey about their favorite school subjects. The results are shown in the bar graph below. How many more students listed English as their favorite subject than math?

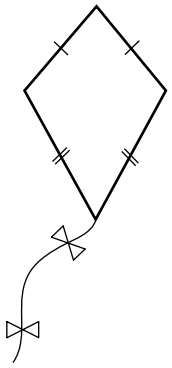


NAME _____ DATE _____ PERIOD _____

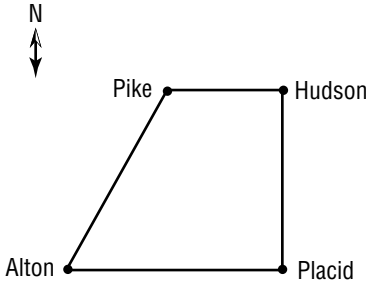
10-6 Word Problem Practice

Quadrilaterals

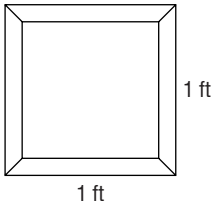
1. KITES A kite is shown below. What is the best name to classify the shape of the kite? Explain.



2. MAPS A map showing the road connecting the towns of Pike, Hudson, Placid, and Alton is shown. The road connecting Pike and Hudson is parallel to the road connecting Alton and Placid. What is the best name to classify the shape of the roads connecting the four towns? Explain.

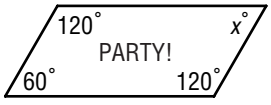


3. ART A picture frame is shown below. What is the *best* name to classify the shape of the frame?

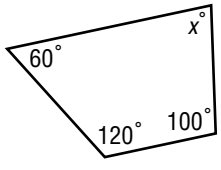


4. SCHOOL SUPPLIES The side view of an eraser is shown below. What is the best name to classify the shape of the eraser?

5. PARTY The front of a birthday party invitation is shown below. Find the measure of the missing angle.



6. TABLE The top of Mr. Bautista's new coffee table is shown below. Find the measure of the missing angle.

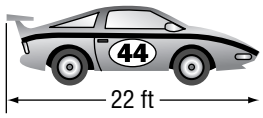


NAME _____ DATE _____ PERIOD _____

10-7 Word Problem Practice

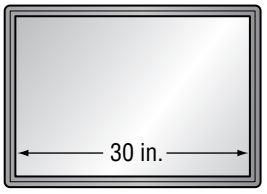
Similar Figures

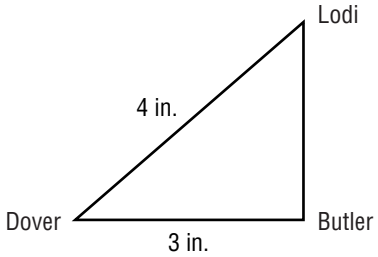
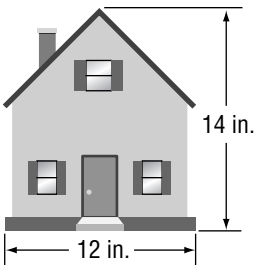
MODEL CARS **For Exercises 1 and 2, use the following information. A scale model racing car is 11 inches long, 3 inches wide, and 2 inches tall. The actual racing car is shown at the right.**



1. How wide is the actual racing car?	**2.** How tall is the actual racing car?

PHOTOGRAPHY **For Exercises 3–4, use the given information. James wants to enlarge a photograph that is 6 inches wide and 4 inches tall so that it fits into the frame shown.**



3. How tall must the frame be for the picture to fit?	**4.** Suppose James cuts 1 inch from the width of the photo, so that it is 5 inches wide, before he makes the enlargement. How tall will the frame have to be for the picture to fit?
5. **MAPS** A map below shows the towns of Dover, Butler, and Lodi. If the actual distance between Dover and Butler is 24 miles, how far is it from Dover to Lodi? 	**6.** **BLUEPRINTS** A blueprint for a house is shown below. If the front of the house is actually 30 feet wide, how tall is the house? 

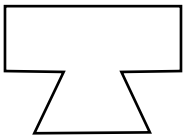
NAME _____ DATE _____ PERIOD _____

10-8 Word Problem Practice

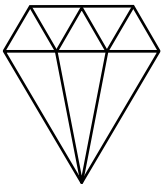
Polygons and Tessellations

1. ROYALTY The outline of a crown worn by a king is shown below. Is the figure a polygon? If it is, classify the polygon and state whether it is regular. If it is *not* a polygon, explain why.

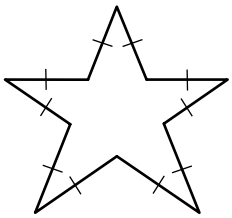
2. ALCHEMY The symbol shown is one of the signs for *salt alkali* used in 17th-century chemistry. Is the symbol a polygon? If it is, classify the polygon and state whether it is regular. If it is *not* a polygon, explain why.



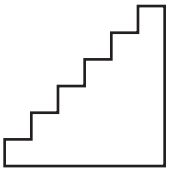
3. JEWELRY The symbol shown is often used to represent gems. Is the symbol a polygon? If it is, classify the polygon and state whether it is regular. If it is *not* a polygon, explain why.



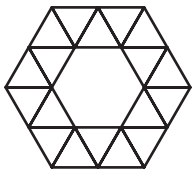
4. SYMBOLS The 5-pointed star shown has sides of equal length. Is the symbol a polygon? If it is, classify the polygon and state whether it is regular. If it is *not* a polygon, explain why.



5. STAIRS The figure shows a side view of a set of stairs. Is the figure a polygon? If it is, classify the polygon and state whether it is regular. If it is *not* a polygon, explain why.



6. TESSELLATIONS Identify the polygons that are used to create the tessellation shown in the figure.

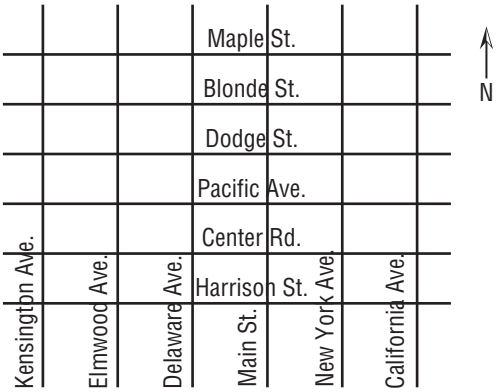


NAME _____ DATE _____ PERIOD _____

10-9 Word Problem Practice

Translations

MAPS For Exercises 1–4, use the map at the right.



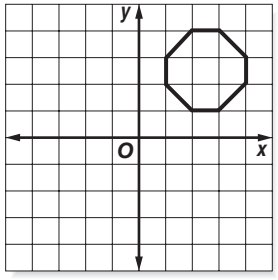
1. Stanley's school is located at the corner of Center and Elmwood. The library is located at the corner of Dodge and Delaware. Describe Stanley's walk from school to the library as an ordered pair of the number of blocks.

2. After he goes to the library, Stanley goes to his Aunt Jeanne's house at the corner of California and Harrison. Describe Stanley's walk from the library to his aunt's house as an ordered pair of the number of blocks.

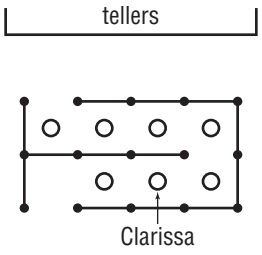
3. If a bus picks up passengers at the corner of New York and Maple and drives 2 blocks south and 3 blocks west, where does the bus end up?

4. Organizers of a walkathon want to map out a route that will lead people from the corner of Center and Kensington to the corner of California and Maple. Write a coordinate pair that describes the most direct route.

5. GEOMETRY The figure shows an octagon plotted on a coordinate system. The figure is to be translated by 5 units left and 5 units down. Graph the translated image of the figure.



6. BANKS Clarissa is waiting in line at the bank. There are several people in line in front of her. Describe the path Clarissa must take to get to the front of the line if each time she moves up in line by one position is considered one unit.

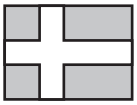


NAME _____ DATE _____ PERIOD _____

10-10 Word Problem Practice

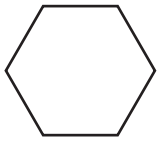
Reflections

1. FLAGS The figure shows a flag similar to the national flag of Denmark. How many lines of symmetry does the flag have? Draw all lines of symmetry.

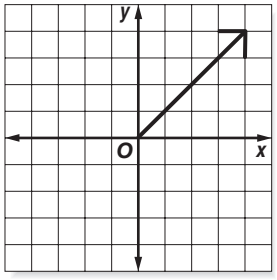


2. FLAGS The figure shows a flag similar to the national flag of Switzerland. How many lines of symmetry does the flag have? Draw all lines of symmetry.

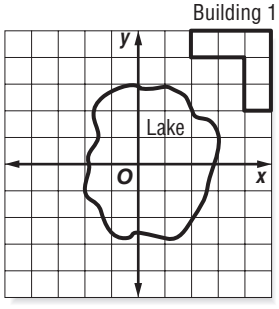
3. INTERIOR DESIGN An interior designer has been hired to decorate a room that has the shape of a regular hexagon. Before beginning work, the designer studies the symmetry of the room. How many lines of symmetry does the room have? Draw all lines of symmetry on the figure.



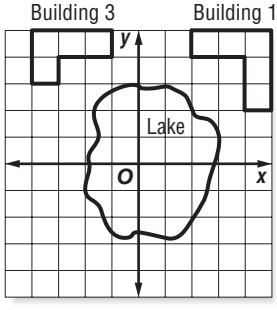
4. ASTROLOGY The figure shows the astrological symbol for Sagittarius plotted on a coordinate system. Reflect the symbol across the x-axis. Graph the reflected image.



5. ARCHITECTURE A corporate plaza is to be built around a small lake. Building 1 has already been built. Suppose there are axes through the lake as shown. Show where Building 2 should be built if it will be a reflection of Building 1 across the y-axis followed by a reflection across the x-axis.



6. ARCHITECTURE Use the information from Exercise 5. Suppose that a third building is to be built as shown. To complete the business park, show where a fourth building should be built if it is a reflection of Building 3 across the x- and y-axis.

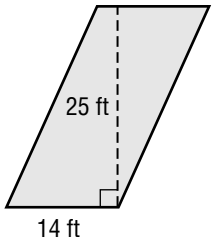


NAME _____ DATE _____ PERIOD _____

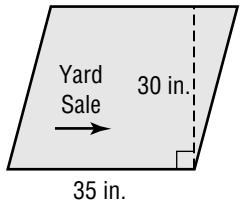
11-1 Word Problem Practice

Area of Parallelograms

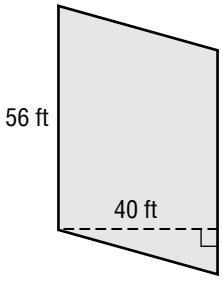
1. SAILS Joyce wants to construct a sail with the dimensions shown. How much material will be used?



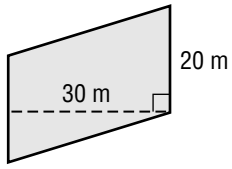
2. SIGNS Pedro wants to make the sign in the shape shown and needs to know how much material will be needed. What is the area of the sign?



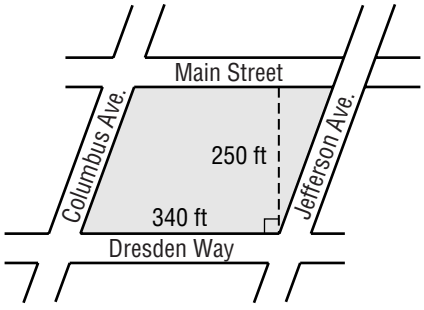
3. SHADING Alma's engineering firm must determine the area of the largest noontime shadow that a proposed building design will create. What is the area of the shadow?



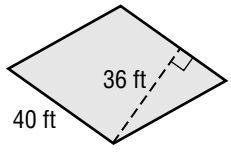
4. POOLS Tamika has designed a pool in the shape shown. What is the area of the bottom of the pool if the surface is perfectly flat?



5. CITY PLANNING Two parallel streets are cut across by two other parallel streets as shown in the figure, cutting off a parcel of land in the shape of a parallelogram. Find the area of the parcel of land.



6. TARPS Neka wants to cut a tarp in the shape shown. What is the minimum amount of canvas cloth that he will need?



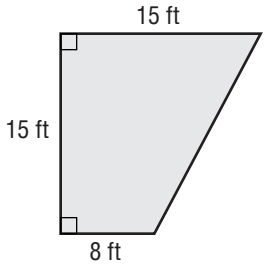
NAME _____ DATE _____ PERIOD _____

11-2 Word Problem Practice

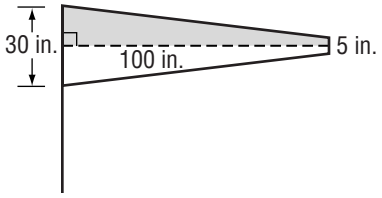
Area of Triangles and Trapezoids

1. GEOGRAPHY Arkansas has a shape that is similar to a trapezoid with bases of about 182 miles and 267 miles and a height of about 254 miles. Estimate the area of the state.

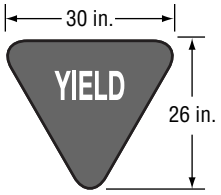
2. PATIOS Greta is making a patio with the dimensions given in the figure. What is the area of the patio?



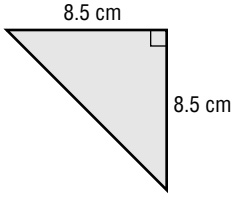
3. FLAGS Malila wants to make the International Marine Signal flag shown which represents the number six. What is the area of the flag?



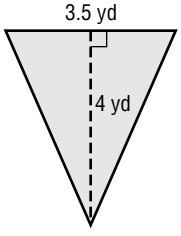
4. SIGNS Estimate the area of the yield sign.



5. TILING A ceramics company wants to produce tiles in the shape shown. What is the area of the surface of each tile?



6. GARDENING Kinu wants to buy topsoil for a section of her garden that has the dimensions shown in the figure. What is the area of this section of Kinu's garden?



Lesson 11-2

NAME _____ DATE _____ PERIOD _____

11-3 Word Problem Practice

Circles and Circumference

1. PLATES A manufacturing company is producing dinner plates with a diameter of 12 inches. They plan to put a gold edge on each plate. Determine how much gold edging they need for each plate by finding the circumference of each plate. Round to the nearest tenth.	**2. MONEY** A dime has a radius of $8\frac{1}{2}$ millimeters. Find the circumference of a dime to the nearest tenth.
3. MERRY-GO-ROUND Mr. Osterhout is putting trim around the edge of a circular merry-go-round that has a diameter of 15 feet. How much trim does he need to buy to the nearest tenth?	**4. PIZZA** Find the circumference of a pizza with a diameter of 10 inches. Round to the nearest tenth.
5. RACING A circular racetrack has a diameter of $\frac{1}{2}$ mile. How far does a car travel in one lap around the track? Round to the nearest tenth.	**6. TIRE** A bicycle tire has a radius of 15 inches. What is the circumference of the tire? Round to the nearest tenth.
7. EQUATOR Earth's diameter at the equator is 7,926 miles. Find the distance around Earth at its equator to the nearest tenth.	**8. SATURN** The ring system around Saturn has a diameter of 170,000 miles. Find the circumference of the ring system.

NAME _____ DATE _____ PERIOD _____

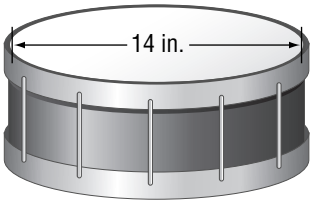
11-4 Word Problem Practice

Area of Circles

1. POOLS Susan designed a circular pool with a diameter of 25 meters. What is the area of the bottom of the pool? Round to the nearest tenth.

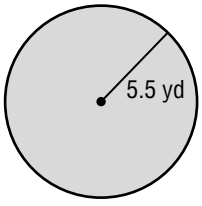
2. MONEY Find the area of the coin to the nearest tenth.

3. DRUMS What is the area of the drumhead on the drum shown below? Round to the nearest tenth.



4. PIZZA Estimate the area of the top of a round pizza that has a diameter of 16 inches. Round to the nearest tenth.

5. GARDENING Jane needs to buy mulch for the garden with the dimensions shown in the figure. For how much area does Jane need to buy mulch? Round to the nearest tenth.



6. UTILITIES What is the area of the top surface of a circular manhole cover that has a radius of 30 centimeters? Use 3.14 for π.

Lesson 11-4

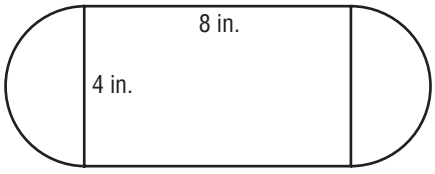
NAME _____ DATE _____ PERIOD _____

11-5 Word Problem Practice

Problem-Solving Investigation: Solve a Simpler Problem

Solve each problem using any strategy you have learned.

1. AREA Find the area of the figure below. Use 3.14 for π.



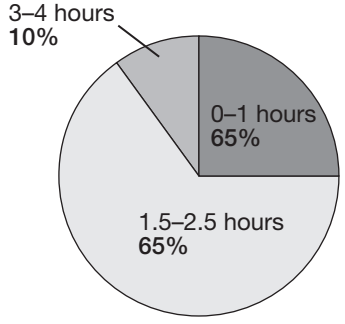
2. MONEY The table below shows the amount of money Shoshi earned for working various hours. Write a rule to represent the amount of pay, P, based on the number of hours worked, h.

Hours	1	2	3
Pay	5.50	11.00	16.50

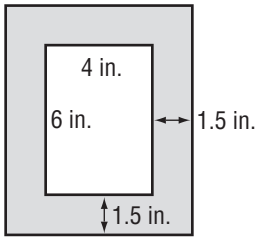
3. SALES For every nickel increase in price, the subscriptions to the Perrysville Paper decreases by 5 people. If 1,256 people currently subscribe to the Paper, how many people will subscribe to it if the price is increased by \$0.25?

4. SCALE DRAWING Shannon is creating a scale drawing of her classroom. If she is using the scale 1 foot = $\frac{1}{2}$ inch and the room model is 10 inches by 15 inches, what are the dimensions of the actual room?

5. STUDY TIME The circle graph below shows the results to a survey asking students how long they study each night. In a school of 400 students, how many students study 1.5 – 2.5 hours per night?



6. PHOTOGRAPHY What is the area of the matte pictured below?



7. TRAVEL How far has Kim traveled if she has driven 45 miles per hour for 4 hours?

8. SISTERS Angela is 3 years older than Susie. Becca is 2 years younger than Susie. If Becca is 10 years old, how old are Susie and Angela?

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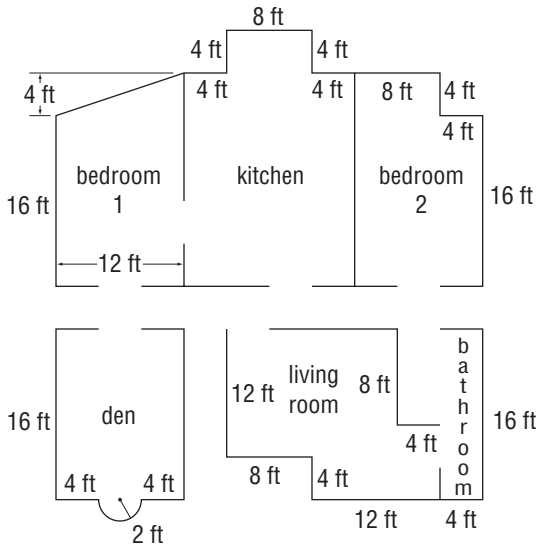
11-6 Word Problem Practice

Area of Composite Figures

ARCHITECTURE For Exercises 1–6 use Jaco's preliminary design of his vacation house at the right. Round to the nearest tenth if necessary.



1. What type of figure is bedroom 1? Find the area of bedroom 1.	**2.** What is the area of the bedroom 2? What figures did you use to find the area?
3. What is the area of the bathroom? What are the dimensions of the figures you used to find this area?	**4.** What is the area of the living room? How many figures did you use to find this area?
5. What is the area of the den? What would the area of the den be if the semicircular window were removed and replaced with a flat window?	**6.** What is the area of the kitchen? If Jaco adds a rectangular cooking island in the middle of the kitchen with dimensions 6 feet by 4 feet, how many square feet of space will be left?

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11-7 Word Problem Practice

Three-Dimensional Figures

1. SPORTS A regulation basketball weighs 20-22 ounces. Classify the shape of a regulation basketball as a three-dimensional figure.	**2. ICE CREAM** The picture shows an ice cream cone with a single scoop on top. What two three-dimensional shapes make up the ice cream and cone? 
3. SHIPPING Jessie bought a box to ship her gifts to her grandmother. Classify the shape of a box as a three-dimensional figure.	**4. LAUNDRY** Classify the shape of a the laundry hamper shown as a three-dimensional figure. 
5. SCHOOL PROJECT Jarnel is creating a diorama for his class project. He plans to use a shoebox to build the diorama. Classify the shape of a shoebox as a three-dimensional figure.	**6. SOUP** Classify the shape of a soup can as a three-dimensional figure.
7. BABY BLOCKS Classify the shape of the baby block as a three-dimensional figure. 	**8. EARTH** Classify the shape of the Earth as a three-dimensional figure.

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11-8 Word Problem Practice

Drawing Three-Dimensional Figures

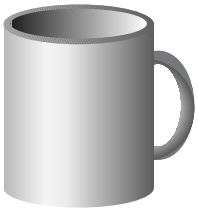
1. ARCHITECTURE The Transamerica Pyramid, built from 1969 to 1972, towers above the San Francisco skyline.

Draw the top, side, and front views of the Transamerica building.

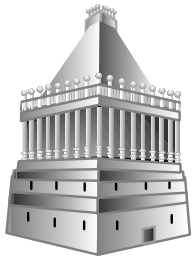
2. MONUMENTS Since its completion in 1965, Eero Saarinen's 630-foot Gateway Arch has stood above St. Louis.

Draw the top, side, and front views of the Gateway Arch.

3. GRAPHICS Dan is creating a computer-generated image of a coffee cup. To do this, he needs to enter the top, side, and front views of the cup. Draw the views that Dan should enter.



4. HISTORY The Mausoleum at Halicarnassus is one of the Seven Wonders of the Ancient World. Draw a top view, a side view, and a front view of the mausoleum without the chariot statue at the top.



NAME _____ DATE _____ PERIOD _____

11-9 Word Problem Practice

Volume of Prisms

1. PACKAGING A cereal box has a length of 8 inches, a width of $1\frac{3}{4}$ inches, and a height of $12\frac{1}{8}$ inches. What is the volume of the cereal box?

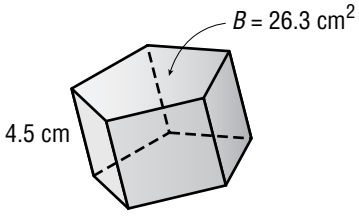
2. FOOD STORAGE Nara wants to determine how much ice it will take to fill her cooler. If the cooler has a length of 22 inches, a width of 12 inches, and a height of $10\frac{1}{2}$ inches, how much ice will her cooler hold?

3. TRANSPORTATION The cargo-carrying part of Billy's truck has a length of 8.3 meters, a width of 3 meters, and a height of 4.2 meters. What is the maximum volume of sand that Billy's truck can carry?

4. PLUMBING Alexia's bathroom has a tub in the shape of a rectangular prism with a length of 1.5 meters, a width of 0.5 meter, and a height of 0.4 meter. How many cubic feet of water can it hold?

5. PACKAGING A box of tissues has a length of 11.2 centimeters, a width of 11.2 centimeters, and a height of 13 centimeters. What is the volume of the tissue box?

6. GEOMETRY A *pentagonal prism* is a prism that has bases that are pentagons. Use $V = Bh$ where B is the area of the base, to find the volume of the pentagonal prism below.



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11-10 Word Problem Practice

Volume of Cylinders

1. WATER STORAGE A cylindrical water tank has a diameter of 5.3 meters and a height of 9 meters. What is the maximum volume that the water tank can hold? Round to the nearest tenth.

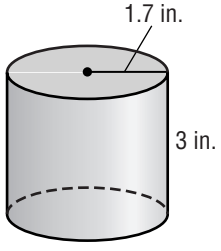
2. PACKAGING A can of corn has a diameter of 6.6 centimeters and a height of 9.9 centimeters. How much corn can the can hold? Round to the nearest tenth.

3. CONTAINERS Tionna wants to determine the maximum capacity of a cylindrical bucket that has a radius of 6 inches and a height of 12 inches. What is the capacity of Tionna's bucket? Round to the nearest tenth.

4. DESIGN Rodolfo is designing a new, cylindrical drinking glass. If the glass has a diameter of 8 centimeters and a height of 12.8 centimeters, what is its volume? Round to the nearest tenth.

5. PAINT A can of paint is 15 centimeters high and has a diameter of 13.6 cm. What is the volume of the can? Round to the nearest tenth.

6. SPICES A spice manufacturer uses a cylindrical dispenser like the one shown. Find the volume of the dispenser to the nearest tenth.



NAME _____ DATE _____ PERIOD _____

12-1 Word Problem Practice

Estimating Square Roots

1. GEOMETRY The diameter d of a circle with area A is given by the formula $d = \sqrt{\frac{4A}{\pi}}$. What is the diameter of a circle with an area of 56 square inches? Use 3.14 for π and round to the nearest tenth.

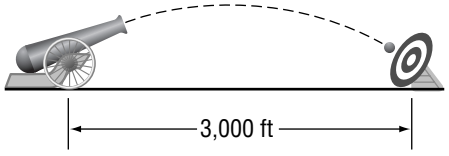
2. FENCING Carmen wants to buy fencing to enclose a square garden with an area of 500 square feet. How much fencing does Carmen need to buy? Round to the nearest tenth.

3. OCEANS The speed v in feet per second of an ocean wave in shallow water of depth d in feet is given by the formula $v = \sqrt{32d}$. What is the speed of an ocean wave at a depth of 10 feet? Round to the nearest tenth.

4. LIGHTING A new flashlight has a beam whose width w at a distance d from the flashlight is given by the formula $w = 1.2\sqrt{d}$. What is the width of the beam at a distance of 30 feet? Round to the nearest tenth.

5. SOUND The speed of sound in air c in meters per second at a temperature T in degrees Celsius is given approximately by the formula $c = \sqrt{402(T + 273)}$. What is the speed of sound in air at a temperature of 25 degrees Celsius? Round to the nearest tenth.

6. PROJECTILES The muzzle velocity v in feet per second necessary for a cannon to hit a target x feet away is estimated by the formula $v = \sqrt{32x}$. What muzzle velocity is required to hit a target 3,000 feet away? Round to the nearest tenth.



NAME _____ DATE _____ PERIOD _____

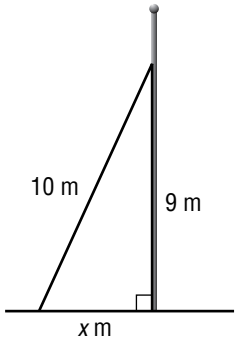
12-2 Word Problem Practice

The Pythagorean Theorem

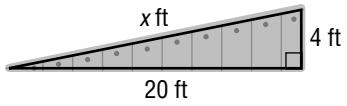
1. ORIGAMI Chee has a piece of paper measuring 8.5 inches by 8.5 inches. If she folds the paper diagonally in half, how long is the folded side? Round to the nearest tenth.

2. COMPUTERS In a computer catalog, a computer monitor is said to be 19 inches. This distance is the diagonal distance across the screen. If the screen is 10 inches high, what is the width of the screen? Round to the nearest tenth.

3. ANTENNAS A wire 10 meters long is supporting a utility pole. The wire is anchored to the ground and is attached to the pole 9 meters above the ground. What is the distance from the bottom of the pole to the point where the wire is attached to the ground? Round to the nearest tenth.



4. RAMPS Crystal wants to build a ramp that will rise 4 feet over a horizontal distance of 20 feet. How long will the ramp be? Round to the nearest tenth.



5. POOLS Salomon swims diagonally across his pool every day. If Salomon's pool is 4 meters wide and 16 meters diagonally across, how long is his pool, to the nearest tenth of a meter?

6. FRAMES Rosa has a picture frame that measures 12 inches by 18 inches. What is the diagonal distance across the frame? Round to the nearest tenth.

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12-3 Word Problem Practice

Problem-Solving Investigation: Make a Model

Solve each problem using any strategy you have learned.

1. **FOOTBALL** Bill, Damon and Steve are the quarterback, center and punter on the football team, not necessarily in that order. The quarterback and Bill go on the bus with Damon after the game. Damon is not the punter. What position does Bill play?

2. **SPORTS** Janelle can walk one mile in 15 minutes. How long will it take her to walk 3 miles?

3. **WEATHER** The Loudonville Times prints the following chart showing the snowfall for each day last week. The reporter estimates that they got 10 inches of snow during the past week. Is this a reasonable estimate?

Day	Snowfall
Monday	1 inch
Tuesday	2 inches
Wednesday	0.5 inches
Thursday	1.5 inches
Friday	3.75 inches
Saturday	0 inches
Sunday	0 inches

4. **GARDENING** The table below shows how many tomatoes Nicholas picked each day during the week. How many does he need to pick on Sunday so that he has picked a total of 20 for the week?

Day	M	T	W	R	F	S	S
Number of tomatoes	2	5	3	1	0	5	

5. **PAINT** If one gallon of paint covers 150 square feet, is one gallon enough for Susie to cover a kitchen wall that is 15 feet by 8 feet? Justify your answer.

6. **SHOPPING** Avery bought a DVD for $22.99 and got $2.01 back in change. How much did Avery give the cashier?

7. **MONEY** The amount in Carly's checkbook is $750 after writing a check for $65 and making a deposit of $100 and a deposit of $75. How much did she start with in her checkbook?

8. **VEHICLES** Jim has 15 vehicles at his garage. Some are cars and some are motorcycles. If he counts 58 wheels, how many of each type of vehicle does he have?

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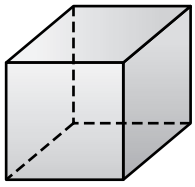
12-4 Word Problem Practice

Surface Area of Rectangular Prisms

1. PACKAGING A packaging company needs to know how much cardboard will be required to make boxes 18 inches long, 12 inches wide, and 10 inches high. How much cardboard will be needed for each box if there is no overlap in the construction?

2. INSULATION Jane needs to buy insulation for the inside of a truck container. The container is a rectangular prism 15 feet long, 8 feet wide, and $7\frac{1}{2}$ feet high. How much insulation should Jane buy if all inside surfaces except the floor are to be insulated?

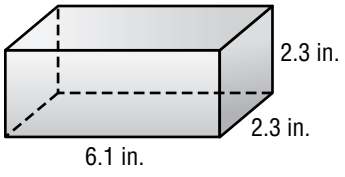
3. ICE Suppose the length of each edge of a cube of ice is 4 centimeters. Find the surface area of the cube.



4. ICE Suppose you cut the ice cube from Exercise 3 in half horizontally into two smaller rectangular prisms. Find the surface area of one of the two smaller prisms.

5. CONTAINERS What is the total surface area of the inside and outside of a container in the shape of a rectangular prism with length of 5 meters, width of 3 meters, and height of 2.2 meters?

6. TOYS Oscar is making a play block for his baby sister by gluing fabric over the entire surface of a foam block. How much fabric will Oscar need?



Lesson 12-4

NAME _____ DATE _____ PERIOD _____

12-5 Word Problem Practice

Surface Area of Cylinders

1. PACKAGING What is the area of the label on a box of oatmeal with a radius of 9.3 centimeters and a height of 16.5 centimeters? Round to the nearest tenth.	**2. TIRES** Betty wants to know the total surface area of the tread on one of her tires. If the diameter of the tire is 18 inches and the width of the tire is 5 inches, what is the total surface area of the tire's tread? Round to the nearest tenth.
3. CANS A cylindrical can has a diameter of 6 inches and a height of 7.3 inches. What is the surface area of the can? Round to the nearest tenth.	**4. CANS** A cylindrical can has a height of 14 centimeters and a radius of 4.2 centimeters. Find the surface area of the can. Round to the nearest tenth.
5. MANUFACTURING How much sheet metal is required to make a cylindrical trash can with a diameter of 2 feet and height of $4\frac{1}{4}$ feet? Round to the nearest tenth. (*Hint*: Do not include the top.)	**6. PLUMBING** How much steel is needed to make a hollow pipe with a radius of 3 inches and a height of 15 inches? Round to the nearest tenth.