Glencoe McGraw-Hill

Math Connects

Course 3

Word Problem Practice Workbook

Mc Graw Hill Glencoe

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 3*.

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 3*. 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.

Mc Graw Hill Glencoe

The McGraw-Hill Companies

Send all inquiries to:
Glencoe/McGraw-Hill
8787 Orion Place
Columbus, OH 43240

ISBN: 978-0-07-881077-0
MHID: 0-07-881077-9

Word Problem Practice Workbook, Course 3

Printed in the United States of America
1 2 3 4 5 6 7 8 9 10 045 14 13 12 11 10 09 08 07

CONTENTS

NAME _____ DATE _____ PERIOD _____

1-1 Word Problem Practice

A Plan for Problem Solving

Use the four-step plan to solve each problem.

SKATEBOARDING For Exercises 1 and 2, use the table at the right. It shows the results of a recent survey in which teenagers were asked who the best professional skateboarder is.

Skater	Votes
Bob Burnquist	18
Danny Way	15
Bam Margera	11
Arto Saari	9

1. Estimate the total number of teenagers who voted.

2. How many more teenagers preferred Burnquist to Saari?

3. HISTORY The area of Manhattan Island is 641,000,000 square feet. According to legend, the Native Americans sold it to the Dutch for $24. Estimate the area that was purchased for one cent.

4. TRAVEL Britney's flight to Rome leaves New York City at 5:15 P.M. on Wednesday. The flight time is 7.5 hours. If Rome is 6 hours ahead of New York City, use Rome time to determine when she is scheduled to arrive.

5. OFFICE SUPPLIES At an office supply store, pens are $1.69 per dozen and note pads are $4.59 per dozen. Can Shirley buy 108 pens and 108 note pads for $50? Explain your reasoning.

6. SHOPPING Yoshi bought two pairs of shoes. The regular price of each pair was $108. With the purchase of one pair of shoes at regular price, the second pair was half price. How much did Yoshi pay altogether for the two pairs of shoes?

NAME _____ DATE _____ PERIOD _____

1-2 Word Problem Practice

Variables, Expressions, and Properties

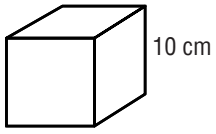
FOOTBALL For Exercises 1 and 2, use the table that shows statistics from the 2006 Super Bowl.

Team	Touchdowns	Extra Points	Field Goals
Pittsburgh	3	3	0
Seattle	1	1	1

1. Each team's final score for a football game can be found using the expression $6t + e + 3f$, where t is the number of touchdowns, e is the number of extra points, and f is the number of field goals. Find Pittsburgh's final score in the 2006 Super Bowl.

2. Use the expression $6t + e + 3f$ to find Seattle's final score in the 2006 Super Bowl.

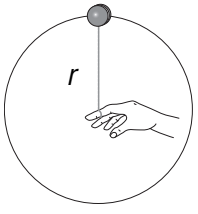
3. GEOMETRY The expression $6s^2$ can be used to find the surface area of a cube, where s is the length of an edge of the cube. Find the surface area of a cube with an edge of length 10 centimeters.



4. VERTICAL MOTION The height of an object dropped from the top of a 300-foot tall building can be described by the expression $300 - 16t^2$, where t is the time, in seconds, after the ball is dropped. Find the height of the object 3 seconds after it is dropped.

5. MOVIE RENTALS Mario intends to rent 10 movies for his birthday party. He can rent new releases for \$4 each, while older ones are \$2 each. If he rents n new releases, the total cost, in dollars, of the 10 movies is represented by the expression $4n + 2(10 - n)$. Evaluate the expression to find the total cost if he rents 7 new releases.

6. CIRCULAR MOTION Pelipa is able to spin her yo-yo along a circular path. The yo-yo is kept in this path by a force which can be described by the expression $\frac{mv^2}{r}$. Evaluate the expression to find the force when $m = 12$, $v = 4$, and $r = 8$.



NAME _____ DATE _____ PERIOD _____

1-3 Word Problem Practice

Integers and Absolute Value

GOLF For Exercises 1 and 2, use the table that lists ten players and their scores in Round 3 of the 2005 60th U.S. Women's Open.

Player	Score	Player	Score
Gulbis, Natalie	0	Kim, Birdie	−2
Icher, Karine	+1	Kung, Candie	0
Jo, Young	−1	Lang, Brittany	+1
Kane, Lorie	+5	Pressel, Morgan	−1
Kerr, Cristie	+1	Ochoa, Lorena	+6

1. Order the scores in the table from least to greatest.

2. Who had the lowest score?

3. LONGITUDE London, England, is located at 0° longitude. Write integers for the locations of New York City whose longitude is 74° west and Tokyo whose longitude is 140° east. Assume that east is the positive direction.

4. STOCK MARKET Your stock loses 53 points on Monday and 23 points on Tuesday, but gains 67 points on Wednesday. Write an integer for each day's change.

5. SOLAR SYSTEM The average temperature of Saturn is −218°F, while the average temperature of Jupiter is −162°F. Which planet has the lower average temperature?

6. OCEAN TRENCHES The elevation of the Puerto Rican Trench in the Atlantic Ocean is −8,605 meters, the elevation of the Mariana Trench in the Pacific Ocean is −10,924 meters, and the elevation of the Java Trench in the Indian Ocean is −7,125 meters. Which trench has the the lowest elevation?

Lesson 1-3

NAME _____ DATE _____ PERIOD _____

1-4 Word Problem Practice

Adding Integers

1. FOOTBALL A football team loses 5 yards on one play and then loses 8 yards on the next play. Write an addition expression that represents the change in position of the team for the two plays. Then find the sum.	**2. ELEVATOR** You park in a garage 3 floors below ground level. Then you get in the elevator and go up 12 floors. Write an addition expression to represent this situation. Then find the sum.
3. GOLF In 2005, Tiger Woods won the Masters Tournament. His scores were $+2$, -6, -7, and -1 for four rounds. Write an addition expression that represents his final score. Then find the sum.	**4. INVENTORY** A local bookstore has 30 copies of a bestseller when it opens Monday morning. On Monday, it sells 6 copies of the book. On Tuesday, it sells 3 copies. On Wednesday, it receives a shipment containing 24 copies of the book and also sells 8 copies. Write an addition expression that represents the number of copies of the book that store has at the end of the day on Wednesday. Then find the sum.
5. OCEANOGRAPHY A research team aboard an underwater research vessel descends 1,500 feet beneath the surface of the water. They then rise 525 feet and descend again 350 feet. Write an addition expression to represent this situation. Then find the sum.	**6. SPORTS** Peter weighs 156 pounds, but he would like to wrestle in a lower weight class. He loses 4 pounds one week, gains back 2 pounds the next week, loses 5 pounds the third week, and loses 3 pounds the fourth week. Write an addition expression to represent this situation. Then find the sum.

NAME _____ DATE _____ PERIOD _____

1-5 Word Problem Practice

Subtracting Integers

GEOGRAPHY For Exercises 1 and 2, use the table. The table shows the elevations of several places on Earth.

Place	Elevation (feet)
Mt. McKinley	+20,320
Puerto Rican Trench	−28,232
Mt. Everest	+29,035
Dead Sea	−1,348
Death Valley	−282

1. Find the difference in elevation between the top of Mt. McKinley and and the top of Mt. Everest.

2. Find the difference in elevation between Death Valley and the Dead Sea.

3. TEMPERATURE The highest recorded temperature on Earth was recorded in Africa at 136°F, while the lowest was −129°F in Antarctica. What is the range of temperatures recorded on Earth?

4. WEATHER If the overnight temperature at the Arctic Circle was −14°F, but the temperature rose to 8°F during the day, what was the difference between these high and low temperatures?

5. WATER The boiling point of water is 212°F, while −460°F is its absolute lowest temperature. Find the difference between these two temperatures.

6. STOCK MARKET During the course of one day, the price of a stock fluctuated between a high of $3 above the previous day's closing price and a low of $2 below the previous day's closing price. What was the difference between the high and low prices for that day?

Lesson 1-5

NAME _____ DATE _____ PERIOD _____

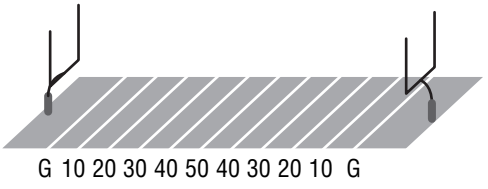
1-6 Word Problem Practice

Multiplying and Dividing Integers

1. STOCK MARKET The price of a stock decreased $2 per day for four consecutive days. What was the total change in value of the stock over the four-day period?

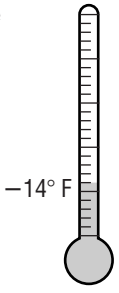
2. EVAPORATION The height of the water in a tank decreases 3 inches each week due to evaporation. What is the change in the height of the water over a five-week period due to evaporation?

3. FOOTBALL A football team lost 9 yards on each of three consecutive plays. What was the team's total change in position for the three plays?



4. HIKING A group of hikers is descending a mountain at a rate of 400 feet per hour. What is the change in the elevation of the hikers after 6 hours?

5. WEATHER On a certain day, the temperature changed at a rate of −2°F per hour. How long did it take for the change in temperature to be −14°F?



6. GEOLOGY The length of an island is changing at the rate of −17 inches per year. How long will it take for the change in the length of the island to be −255 inches?

7. DEPRECIATION The value of a piece of office equipment is changing at a rate of −$175 per year. How long will it take for the change in value to be −$1,050?

8. POPULATION The population of a small town is changing at a rate of −255 people per year. How long will it take for the change in population to be −2,040 people?

NAME _____ DATE _____ PERIOD _____

1-7 Word Problem Practice

Writing Equations

1. AGE Julia is 3 years younger than Kevin. Kevin is 13. Define a variable and write an equation to find Julia's age.	**2. CIVICS** In the 2004 presidential election, Texas had 23 more electoral votes than Tennessee. Define a variable and write an equation to find the number of Tennessee's electoral votes if Texas had 34 votes.
3. ENERGY One year, China consumed 4 times as much energy as Brazil. Define a variable and write an equation to find the amount of energy Brazil used that year if China used 12,000 kilowatt-hours.	**4. CHEMISTRY** The atomic number of cadmium is half the atomic number of curium. The atomic number for cadmium is 48. Define a variable and write an equation to find the atomic number of curium.
5. LIBRARIES The San Diego Public Library has 44 fewer branches than the Chicago Public Library. Define a variable and write an equation for the number of branches in the San Diego Public Library if Chicago has 79 branches.	**6. ASTRONOMY** Saturn is 6 times farther from the Sun than Mars. Define a variable and write an equation to find the distance of Mars from the Sun if Saturn is about 1,429,400,000 km from the sun.
7. POPULATION The population of Oakland, California, is 9,477 more than the population of Omaha, Nebraska. Omaha has a population of 390,007. Define a variable and write an equation to find the population of Oakland.	**8. GEOGRAPHY** Kings Peak in Utah is 8,667 feet taller than Spruce Knob in West Virginia. Spruce Knob is 4,861 feet tall. Define a variable and write an equation to find the height of Kings Peak.

NAME _____ DATE _____ PERIOD _____

1-8 Word Problem Practice

Problem-Solving Investigation: Work Backward

Use the work backward strategy to solve each problem.

CLARINET PRACTICE For Exercises 1 and 2, use the table at the right. It is a record of the amount of time Elena practiced her clarinet in a week.

Monday	Tuesday	Thursday	Saturday	Sunday
?	20 minutes more than Monday	10 minutes less than Tuesday	Twice as long as Thursday	15 minutes less than Saturday– 45 minutes

1. How many minutes did Elena practice the clarinet on Thursday?

2. How many minutes did Elena practice on Monday?

3. HOCKEY During a hockey game, Brandon played 7 less minutes than Nick. Zach played 12 minutes more than Brandon. Hunter played twice as long as Zach. Hunter played for 44 minutes. How many minutes did Nick play in the hockey game?

4. PACKAGES In the morning, a delivery truck delivers 24 of it packages to a factory. It then goes to a distribution lot, where the remaining packages are separated into 4 equal groups and put on other trucks. There were 18 packages in each of the groups. How many packages were on the delivery truck to begin with?

5. WEATHER On Monday, Eliza read her book. On Tuesday, she read three times as long as she read on Monday. On Wednesday she read 20 minutes less than Tuesday. On Thursday she read for 20 minutes, which was half as long as she read on Wednesday How many minutes did Eliza read over the 4-day period?

6. STAMPS Zoe added 23 stamps to her collection. Three months later her collection had tripled in number to a total of 159 stamps. How many stamp did Zoe have to start her collection?

NAME _____ DATE _____ PERIOD _____

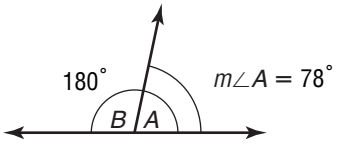
1-9 Word Problem Practice

Solving Addition and Subtraction Equations

1. AGE Walter lived 2 years longer than his brother Martin. Walter was 79 at the time of his death. Write and solve an addition equation to find Martin's age at the time of his death.

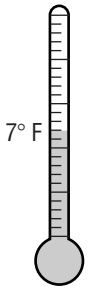
2. CIVICS New York has 24 fewer members in the House of Representatives than California. New York has 29 representatives. Write and solve a subtraction equation to find the number of California representatives.

3. GEOMETRY Two angles are supplementary if the sum of their measures is 180°. Angles A and B are supplementary. If the measure of angle A is 78°, write and solve an addition equation to find the measure of angle B.



4. BANKING After you withdraw $40 from your checking account, the balance is $287. Write and solve a subtraction equation to find your balance before this withdrawal.

5. WEATHER After the temperature had risen 12°F, the temperature was 7°F. Write and solve an addition equation to find the starting temperature.



6. CHEMISTRY The atomic number of mercury is the sum of the atomic number of aluminum and 67. The atomic number of mercury is 80. Write and solve an addition equation to find the atomic number of aluminum.

7. ELEVATION The lowest point in Louisiana is 543 feet lower than the highest point in Louisiana. The elevation of the lowest point is −8 feet. Write and solve a subtraction equation to find the elevation of the highest point in Louisiana.

8. POPULATION In 2005, the population of Honduras is the population of Haiti decreased by 832,598. The population of Honduras is 6,823,568. Write and solve a subtraction equation to find the population of Haiti.

NAME _____ DATE _____ PERIOD _____

1-10 Word Problem Practice

Solving Multiplication and Division Equations

1. WAGES Felipe earns $9 per hour for helping his grandmother with her yard work. Write and solve a multiplication equation to find how many hours he must help his grandmother in order to earn $54.	**2. SHOPPING** Granola bars are on sale for $0.50 each. If Brad paid $5 for granola bars, write and solve a multiplication equation to find how many bars he bought.
3. EXERCISE Jasmine jogs 3 miles each day. Write and solve a multiplication equation to find how many days it will take her to jog 57 miles.	**4. TRAVEL** On a trip, the Rollins family drove at an average rate of 62 miles per hour. Write and solve a multiplication equation to find how long it took them to drive 558 miles.
5. ROBOTS The smallest robot can travel 20 inches per minute through a pipe. Write and solve a multiplication equation to find how long it will take this robot to travel through 10 *feet* of pipe.	**6. BANKING** Nate withdraws $40 from his checking account each day. Write and solve a multiplication equation to find how long it will take him to withdraw $680.
7. AGE The product of Bart's age and 26 is 338. Write and solve a multiplication equation to find Bart's age.	**8. POPULATION** The population of a small town is increasing at a rate of 325 people per year. Write and solve a multiplication equation to find how long it will take the population to increase by 6,825.

NAME _____ DATE _____ PERIOD _____

2-1 Word Problem Practice

Rational Numbers

1. ASTRONOMY The pull of gravity on the surface of Mars is 0.38 that of Earth. Write 0.38 as a fraction in simplest form.	**2. ENERGY** Nuclear power provided 78% of the energy used in France in 2005. Write 0.78 as a fraction in simplest form.
3. WEIGHTS AND MEASURES One pint is about 0.55 liter. Write 0.55 liter as a fraction in simplest form.	**4. WEIGHTS AND MEASURES** One inch is 25.4 millimeters. Write 25.4 millimeters as a mixed number in simplest form.
5. EDUCATION A local middle school has 47 computers and 174 students. What is the number of students per computer at the school? Write your answer as both a mixed number in simplest form and a decimal rounded to the nearest tenth.	**6. BASEBALL** In a recent season, the Atlanta Braves won 90 out of 162 games. What was the ratio of wins to total games? Write your answer as both a fraction in simplest form and a decimal rounded to the nearest thousandth.
7. COLLEGES AND UNIVERSITIES Recently, a small college had an enrollment of 1,342 students and a total of 215 faculty. What was the student-faculty ratio for this college? Write your answer as both a mixed number in simplest form and a decimal rounded to the nearest hundredth.	**8. BASKETBALL** In a recent season, Shaquille O'Neal made 658 field goals out of 1,095 attempts. What was Shaquille O'Neal's ratio of successful field goals to attempts? Write your answer as both a fraction in simplest form and a decimal rounded to the nearest thousandth.

NAME _____ DATE _____ PERIOD _____

2-2 Word Problem Practice

Comparing and Ordering Rational Numbers

1. BASKETBALL In the last ten games, Percy made $\frac{7}{12}$ of his free throws. For the same period, Tariq made $\frac{4}{7}$ of his free throws. Which player has the better free throw record?	**2. SPORTS** Central's baseball team won $\frac{53}{78}$ of its games last year, while Southern's team won $\frac{55}{81}$ of its games. Which team had the better record?
3. MEASUREMENT Beaker A contains $4\frac{1}{3}$ fluid ounces of water, while beaker B contains $4\frac{3}{10}$ fluid ounces of water. Which beaker has the smaller amount of water?	**4. NATURE** The two trees in Opal's back yard have circumferences of $12\frac{5}{8}$ inches and $12\frac{3}{5}$ inches. Which circumference is larger?
5. EXERCISE On Monday, Rob averaged 3.75 laps per minute. On Tuesday, he averaged $3\frac{4}{5}$ laps per minute. On which day did Rob run faster?	**6. FOOD** Hector and Carla both gave apples to their teacher. Hector's apple weighed $6\frac{7}{12}$ ounces, while Carla's apple weighed 6.65 ounces. Which apple weighed more?
7. SPORTS Christina ran one lap in 83.86 seconds, while Della's time for one lap was $83\frac{7}{8}$ seconds. Which runner had the faster time?	**8. STATISTICS** The median of a set of numbers can be found by first putting the numbers in order from least to greatest, then choosing the middle number. Find the median of 5.79, $5\frac{3}{4}$, $5\frac{7}{8}$, 5.9, and $5\frac{4}{5}$.

NAME _____ DATE _____ PERIOD _____

2-3 Word Problem Practice

Multiplying Positive and Negative Fractions

1. NUTRITION Maria's favorite granola bar has 230 Calories. The nutrition label states that $\frac{7}{8}$ of the Calories come from fat. How many Calories in the granola bar come from fat?	**2. ELECTIONS** In the last election, $\frac{3}{8}$ of the voters in Afton voted for the incumbent mayor. If 424 people voted in Afton in the last election, how many voted for the incumbent mayor?
3. HOBBIES Jerry is building a $\frac{1}{9}$ scale model of a race car. If the tires on the actual car are 33 inches in diameter, what is the diameter of the tires on the model?	**4. COOKING** Enola's recipe for cookies calls for $2\frac{1}{2}$ cups of flour. If she wants to make $\frac{3}{4}$ of a batch of cookies, how much flour should she use?
5. TRANSPORTATION Hana's car used $\frac{3}{4}$ of a tank of gas to cross Arizona. The gas tank on her car holds $15\frac{1}{2}$ gallons. How many gallons of gas did it take to cross Arizona?	**6. GEOMETRY** The area of a rectangle is found by multiplying its length times its width. What is the area of a rectangle with a length of $2\frac{1}{4}$ inches and a width of $1\frac{5}{9}$ inches?
7. COOKING A recipe for ice cream calls for $3\frac{1}{3}$ cups of heavy cream. If Steve wants to make $2\frac{1}{2}$ times the normal amount, how much heavy cream should he use?	**8. ADVERTISING** A jewelry advertisement shows a bracelet at 6 times its actual size. If the actual length of the bracelet is $5\frac{3}{10}$ inches, what is the length of the bracelet in the photograph?

NAME _____ DATE _____ PERIOD _____

2-4 Word Problem Practice

Dividing Positive and Negative Fractions

1. CONTAINER GARDENING One bag of potting soil contains $8\frac{1}{4}$ quarts of soil. How many clay pots can be filled from one bag of potting soil if each pot holds $\frac{3}{4}$ quart?	**2. MUSIC** Doug has a shelf $9\frac{3}{4}$ inches long for storing CDs. Each CD is $\frac{3}{8}$ inch wide. How many CDs will fit on one shelf?
3. SERVING SIZE A box of cereal contains $15\frac{3}{5}$ ounces of cereal. If a bowl holds $2\frac{2}{5}$ ounces of cereal, how many bowls of cereal are in one box?	**4. HOME IMPROVEMENT** Lori is building a path in her backyard using square paving stones that are $1\frac{3}{4}$ feet on each side. How many paving stones placed end-to-end are needed to make a path that is 21 feet long?
5. GEOMETRY Given the length of a rectangle and its area, you can find the width by dividing the area by the length. A rectangle has an area of $6\frac{2}{3}$ square inches and a length of $2\frac{1}{2}$ inches. What is the width of the rectangle?	**6. GEOMETRY** Given the length of a rectangle and its area, you can find the width by dividing the area by the length. A rectangle has an area of $4\frac{5}{7}$ square feet and a length of $3\frac{2}{3}$ feet. What is the width of the rectangle?
7. HOBBIES Dena has a picture frame that is $13\frac{1}{2}$ inches wide. How many pictures that are $3\frac{3}{8}$ inches wide can be placed beside each other within the frame?	**8. YARD WORK** Leon is mowing his yard, which is $21\frac{2}{3}$ feet wide. His lawn mower makes a cut that is $1\frac{2}{3}$ feet wide on each pass. How many passes will Leon need to finish the lawn?

NAME _____ DATE _____ PERIOD _____

2-5 Word Problem Practice

Adding and Subtracting Like Fractions

1. GEOMETRY Find the perimeter of a rectangle with a length of $4\frac{2}{3}$ inches and a width of $3\frac{1}{3}$ inches.	**2. PETS** Pat wants to find out how much her dog Hunter weighs. Pat steps on the scale and reads her weight as $126\frac{3}{8}$ pounds. The combined weight of Pat and Hunter is $137\frac{7}{8}$ pounds. How much does Hunter weigh?
3. MEASUREMENTS Tate fills a $13\frac{1}{3}$ ounce glass from a $21\frac{2}{3}$ ounce bottle of juice. How much juice is left in the bottle?	**4. DECORATING** Jeri has two posters. One is $4\frac{7}{10}$ feet wide and the other is $5\frac{1}{10}$ feet wide. Will the two posters fit beside each other on a wall that is 10 feet wide? Explain.
5. AGE Nida is $11\frac{1}{12}$ years old, while her sister Yoki is $8\frac{5}{12}$ years old. What is the sum of the ages of the sisters?	**6. GEOMETRY** A triangle has sides of $1\frac{1}{8}$ inches, $1\frac{3}{8}$ inches, and $1\frac{5}{8}$ inches. What is the perimeter of the triangle?
7. HUMAN BODY Tom's right foot measures $10\frac{2}{5}$ inches, while Randy's right foot measures $9\frac{4}{5}$ inches. How much longer is Tom's foot than Randy's?	**8. COMPUTERS** Trey has two data files on his computer that he is going to combine. One file is $1\frac{4}{9}$ megabytes, while the other file is $3\frac{8}{9}$ megabytes. What will be the size of the resulting file?

NAME _____ DATE _____ PERIOD _____

2-6 Word Problem Practice

Adding and Subtracting Unlike Fractions

1. GEOMETRY Two line segments have lengths of $3\frac{1}{4}$ inches and $1\frac{1}{3}$ inches. What is the sum of the lengths of the two line segments?	**2. COMPUTERS** The biology class has created two data files on the computer. One file is $2\frac{1}{9}$ megabytes, while the other file is $4\frac{1}{2}$ megabytes. How much larger is the second file than the first?
3. HUMAN BODY The index finger on Pablo's right hand measures $3\frac{3}{8}$ inches, while the index finger on his left hand measures $3\frac{5}{16}$ inches. Which hand has the longer index finger? How much longer is it?	**4. DECORATING** Sugi has two pictures that she wants to put beside each other in a frame. One is $3\frac{1}{2}$ inches wide and the other is $5\frac{1}{8}$ inches wide. How wide must the frame be to fit both pictures?
5. PETS Laura purchased two puppies from a litter. One of the puppies weighs $4\frac{5}{6}$ pounds and the other puppy weighs $5\frac{1}{2}$ pounds. How much more does the second puppy weigh than the first?	**6. AGE** Alma is $6\frac{3}{4}$ years old, while her brother David is $3\frac{5}{6}$ years old. What is the sum of the ages of Alma and David?
7. MEASUREMENT Ned pours $7\frac{2}{5}$ ounces of water from a beaker containing $10\frac{1}{4}$ ounces. How much water is left in the beaker?	**8. GEOMETRY** A triangle has sides of $1\frac{1}{6}$ inches, $1\frac{1}{3}$ inches, and $1\frac{2}{3}$ inches. What is the perimeter of the triangle?

NAME _____ DATE _____ PERIOD _____

2-7 Word Problem Practice

Solving Equations with Rational Numbers

1. NATURE The height of a certain tree is 12.85 meters. The length ℓ of its longest branch can be found using the equation $\ell + 3.23 = 12.85$. Solve the equation.

2. SHOPPING Kristen went shopping and spent \$84.63 on books and CDs. The equation $84.63 = b + 43.22$ can be used to determine the amount b that she spent on books. Solve the equation.

3. ENERGY PRICES Suppose regular unleaded gasoline costs \$2.40 per gallon. The price p of premium gasoline can be found using the equation $\frac{p}{1.2} = 2.40$. What is the price of the premium gasoline?

4. DRIVING TIME Sam went for a drive last Sunday. His average speed was 46 miles per hour and he drove 115 miles. The equation $115 = 46t$ can be used to find the time t that he spent driving. Solve the equation.

5. AUTOMOBILES The bed of Julian's truck is $2\frac{1}{3}$ yards long. The length ℓ of the truck can be found by solving the equation $\ell - 2\frac{4}{9} = 2\frac{1}{3}$. What is the length of the truck?

6. SPORTS Leo and Ted both ran in a race. Leo's time was 9 minutes, which was $\frac{3}{4}$ of Ted's time. Using t for Ted's time, write a multiplication equation to represent the situation.

7. SPEED Ella rode the bus to work today. The distance she traveled was $4\frac{1}{4}$ miles and the ride took $\frac{1}{3}$ of an hour. The equation $\frac{1}{3}s = 4\frac{1}{4}$ can be used to find the average speed s of the bus. What was the average speed of the bus?

8. GEOMETRY A rectangle has area $6\frac{2}{3}$ square inches and length $2\frac{1}{2}$ inches. The equation $6\frac{2}{3} = 2\frac{1}{2}w$ can be used to find the width w of the rectangle. Solve the equation.

Lesson 2-7

NAME _____ DATE _____ PERIOD _____

2-8 Word Problem Practice

Problem-Solving Investigation: Look for a Pattern

Look for a pattern. Then use the pattern to solve each problem.

ENTERTAINMENT For Exercises 1 and 2, use the information at the right, which shows the ticket prices at a skating rink.

Number of People in Group	Total Cost per Group
1	$1.00
2	$2.00
3	$2.90
4	$3.70
5	$4.40

1. Describe the pattern used to calculate the cost for a group after 2 people.

2. If the pattern continues, what would the cost be for a group of 8 skaters?

3. SAVINGS Jordan saved $1 the first week, $2 the second week, $4 the third week, and $8 the fourth week. If this pattern continues, how much will she save the eighth week?

4. AGRICULTURE In a vegetable garden, the second row is 8 inches from the first row, the third row is 10 inches from the second row, the fourth row is 14 inches from the third row, and the fifth row is 20 inches from the fourth row. If the pattern continues, how far will the eighth row be from the seventh row?

5. GARDENING Marial was planting daisies in her garden. She planted 2 white daisies and 5 yellow daisies in the first row, 4 white daisies and 6 yellow daisies in the second row, and 6 white daisies and 7 yellow daisies in the third row. If she continues the pattern, how many white and yellow daisies will she plant in the sixth row?

6. BIOLOGY A newborn seal pup weighs 4 pounds the first week, 8 pounds the second week, 16 pounds the third week, and 32 pounds the fourth week. If this growth pattern continues, how many weeks old will the seal pup be before it weighs over 100 pounds?

NAME _____ DATE _____ PERIOD _____

2-9 Word Problem Practice

Powers and Exponents

1. SPORTS In the first round of a local tennis tournament there are 2^5 matches. Find the number of matches.	**2. GEOMETRY** The volume of a box can be found by multiplying the length, width, and height of the box. If the length, width, and height of the box are all 5 inches, write the volume of the box using an exponent.
3. MONEY An apartment complex has 3 buildings. Each building has 3 apartments. There are 3 people living in each apartment, and each person pays 3 dollars per month for pool maintenance. The expression 3^4 denotes the amount paid each month for pool maintenance. Find this amount.	**4. ACTIVISM** A petition drive is being held in 10 cities. In each city, 10 people have collected 10 signatures each. The expression 10^3 denotes the number of signatures that have been collected altogether. Find this number.
5. MEASUREMENT There are 10^6 millimeters in a kilometer. Write the number of millimeters in a kilometer.	**6. NATURE** Suppose a certain forest fire doubles in size every 12 hours. If the initial size of the fire was 1 acre, how many acres will the fire cover in 2 days?
7. BANKING Suppose that a dollar placed into an account triples every 12 years. How much will be in the account after 60 years?	**8. BIOLOGY** Suppose a bacterium splits into two bacteria every 15 minutes. How many bacteria will there be in 3 hours?

NAME _____ DATE _____ PERIOD _____

2-10 Word Problem Practice

Scientific Notation

1. MEASUREMENT There are about 25.4 millimeters in one inch. Write this number in scientific notation.	**2. POPULATION** In the year 2000, the population of Rahway, New Jersey, was 26,500. Write this number in scientific notation.
3. MEASUREMENT There are 5,280 feet in one mile. Write this number in scientific notation.	**4. PHYSICS** The speed of light is about 1.86×10^5 miles per second. Write this number in standard notation.
5. COMPUTERS A CD can store about 650,000,000 bytes of data. Write this number in scientific notation.	**6. SPACE** The diameter of the Sun is about 1.39×10^9 meters. Write this number in standard notation.
7. ECONOMICS The U.S. Gross Domestic Product in the year 2004 was 1.17×10^{13} dollars. Write this number in standard notation.	**8. MASS** The mass of planet Earth is about 5.98×10^{24} kilograms. Write this number in standard notation.

NAME _____ DATE _____ PERIOD _____

3-1 Word Problem Practice

Square Roots

1. PLANNING Rosy wants a large picture window put in the living room of her new house. The window is to be square with an area of 49 square feet. How long should each side of the window be?	**2. GEOMETRY** If the area of a square is 1 square meter, how many centimeters long is each side?
3. ART A miniature portrait of George Washington is square and has an area of 169 square centimeters. How long is each side of the portrait?	**4. BAKING** Len is baking a square cake for his friend's wedding. When served to the guests, the cake will be cut into square pieces 1 inch on a side. The cake should be large enough so that each of the 121 guests gets one piece. How long should each side of the cake be?
5. ART Cara has 196 marbles that she is using to make a square formation. How many marbles should be in each row?	**6. GARDENING** Tate is planning to put a square garden with an area of 289 square feet in his back yard. What will be the length of each side of the garden?
7. HOME IMPROVEMENT Al has 324 square paving stones that he plans to use to construct a square patio. How many paving stones wide will the patio be?	**8. GEOMETRY** If the area of a square is 529 square inches, what is the length of a side of the square?

NAME _____ DATE _____ PERIOD _____

3-2 Word Problem Practice

Estimating Square Roots

1. GEOMETRY If the area of a square is 29 square inches, estimate the length of each side of the square to the nearest whole number.	**2. DECORATING** Miki has an square rug in her living room that has an area of 19 square yards. Estimate the length of a side of the rug to the nearest whole number.
3. GARDENING Ruby is planning to put a square garden with an area of 200 square feet in her back yard. Estimate the length of each side of the garden to the nearest whole number.	**4. ALGEBRA** Estimate the solution of $c^2 = 40$ to the nearest integer.
5. ALGEBRA Estimate the solution of $x^2 = 138.2$ to the nearest integer.	**6. ARITHMETIC** The **geometric mean** of two numbers a and b can be found by evaluating $\sqrt{a \cdot b}$. Estimate the geometric mean of 5 and 10 to the nearest whole number.
7. GEOMETRY The radius r of a certain circle is given by $r = \sqrt{71}$. Estimate the radius of the circle to the nearest foot.	**8. GEOMETRY** In a triangle whose base and height are equal, the base b is given by the formula $b = \sqrt{2A}$, where A is the area of the triangle. Estimate to the nearest whole number the base of this triangle if the area is 17 square meters.

NAME _____ DATE _____ PERIOD _____

3-3 Word Problem Practice

Problem-Solving Investigation: Use a Venn Diagram

Use a Venn diagram to solve each problem.

NATIONAL PARKS For Exercises 1 and 2, use the information in the box. It shows the number of people who visited two National Parks in one year.

Number of Yearly National Park Passes Sold	Pass Holders Who Visited Yellowstone National Park	Pass Holders Who Visited Yosemite National Park	Pass Holders Who Visited Both Parks
4,250,000	1,420,000	2,560,000	770,000

1. How many yearly pass holders visited ONLY Yellowstone Park?

2. How many yearly pass holders did not visit either Yosemite Park or Yellowstone Park?

3. PIZZA At a skating party, 10 skaters said they like pepperoni on their pizza, 12 said they like sausage. Seven skaters said they like both, and the rest like plain cheese. If there were 20 skaters having pizza, how many like plain cheese?

4. FIELD TRIP Of the 24 students on a fieldtrip to the local ski hill, 13 ski and 11 snowboard. Four of the students ski and snowboard. How many students do not ski or snowboard?

5. BOOKS Of the 420 people who visited the library, 140 people checked out a nonfiction book, 270 checked out a fiction book. Ninety-five of the visitors checked out both fiction and nonfiction. How many visitors did not check out a book?

6. SIBLINGS Of the 18 girls on a soccer team, 10 have a sister, 14 have a brother, and 8 have both a brother and a sister. How many of the girls do not have a brother or a sister?

NAME _____ DATE _____ PERIOD _____

3-4 Word Problem Practice

The Real Number System

1. GEOMETRY If the area of a square is 33 square inches, estimate the length of a side of the square to the nearest tenth of an inch.	**2. GARDENING** Hal has a square garden in his back yard with an area of 210 square feet. Estimate the length of a side of the garden to the nearest tenth of a foot.
3. ALGEBRA Estimate the solution of $a^2 = 21$ to the nearest tenth.	**4. ALGEBRA** Estimate the solution of $b^2 = 67.5$ to the nearest tenth.
5. ARITHMETIC The **geometric mean** of two numbers a and b can be found by evaluating $\sqrt{a \cdot b}$. Estimate the geometric mean of 4 and 11 to the nearest tenth.	**6. ELECTRICITY** In a certain electrical circuit, the voltage V across a 20 ohm resistor is given by the formula $V = \sqrt{20P}$, where P is the power dissipated in the resistor, in watts. Estimate to the nearest tenth the voltage across the resistor if the power P is 4 watts.
7. GEOMETRY The length s of a side of a cube is related to the surface area A of the cube by the formula $s = \sqrt{\frac{A}{6}}$. If the surface area is 27 square inches, what is the length of a side of the cube to the nearest tenth of an inch?	**8. PETS** Alicia and Ella are comparing the weights of their pet dogs. Alicia reports that her dog weighs $11\frac{1}{5}$ pounds, while Ella says that her dog weighs $\sqrt{125}$ pounds. Whose dog weighs more?

NAME _____ DATE _____ PERIOD _____

3-5 Word Problem Practice

The Pythagorean Theorem

1. ART What is the length of a diagonal of a rectangular picture whose sides are 12 inches by 17 inches? Round to the nearest tenth of an inch.	**2. GARDENING** Ross has a rectangular garden in his back yard. He measures one side of the garden as 22 feet and the diagonal as 33 feet. What is the length of the other side of his garden? Round to the nearest tenth of a foot.
3. TRAVEL Troy drove 8 miles due east and then 5 miles due north. How far is Troy from his starting point? Round the answer to the nearest tenth of a mile.	**4. GEOMETRY** What is the perimeter of a right triangle if the hypotenuse is 15 centimeters and one of the legs is 9 centimeters?
5. ART Anna is building a rectangular picture frame. If the sides of the frame are 20 inches by 30 inches, what should the diagonal measure? Round to the nearest tenth of an inch.	**6. CONSTRUCTION** A 20-foot ladder leaning against a wall is used to reach a window that is 17 feet above the ground. How far from the wall is the bottom of the ladder? Round to the nearest tenth of a foot.
7. CONSTRUCTION A door frame is 80 inches tall and 36 inches wide. What is the length of a diagonal of the door frame? Round to the nearest tenth of an inch.	**8. TRAVEL** Tina measures the distances between three cities on a map. The distances between the three cities are 45 miles, 56 miles, and 72 miles. Do the positions of the three cities form a right triangle?

NAME _____ DATE _____ PERIOD _____

3-6 Word Problem Practice

Using the Pythagorean Theorem

1. RECREATION A pool table is 8 feet long and 4 feet wide. How far is it from one corner pocket to the diagonally opposite corner pocket? Round to the nearest tenth.	**2. TRIATHLON** The course for a local triathlon has the shape of a right triangle. The legs of the triangle consist of a 4-mile swim and a 10-mile run. The hypotenuse of the triangle is the biking portion of the event. How far is the biking part of the triathlon? Round to the nearest tenth if necessary.
3. LADDER A ladder 17 feet long is leaning against a wall. The bottom of the ladder is 8 feet from the base of the wall. How far up the wall is the top of the ladder? Round to the nearest tenth if necessary.	**4. TRAVEL** Tara drives due north for 22 miles then east for 11 miles. How far is Tara from her starting point? Round to the nearest tenth if necessary.
5. FLAGPOLE A wire 30 feet long is stretched from the top of a flagpole to the ground at a point 15 feet from the base of the pole. How high is the flagpole? Round to the nearest tenth if necessary.	**6. ENTERTAINMENT** Isaac's television is 25 inches wide and 18 inches high. What is the diagonal size of Isaac's television? Round to the nearest tenth if necessary.

NAME _____ DATE _____ PERIOD _____

3-7 Word Problem Practice

Distance on the Coordinate Plane

1. ARCHAEOLOGY An archaeologist at a dig sets up a coordinate system using string. Two similar artifacts are found—one at position (1, 4) and the other at (5, 2). How far apart were the two artifacts? Round to the nearest tenth of a unit if necessary.	**2. GARDENING** Vega set up a coordinate system with units of feet to locate the position of the vegetables she planted in her garden. She has a tomato plant at (1, 3) and a pepper plant at (5, 6). How far apart are the two plants? Round to the nearest tenth if necessary.
3. CHESS April is an avid chess player. She sets up a coordinate system on her chess board so she can record the position of the pieces during a game. In a recent game, April noted that her king was at (4, 2) at the same time that her opponent's king was at (7, 8). How far apart were the two kings? Round to the nearest tenth of a unit if necessary.	**4. MAPPING** Cory makes a map of his favorite park, using a coordinate system with units of yards. The old oak tree is at position (4, 8) and the granite boulder is at position (−3, 7). How far apart are the old oak tree and the granite boulder? Round to the nearest tenth if necessary.
5. TREASURE HUNTING Taro uses a coordinate system with units of feet to keep track of the locations of any objects he finds with his metal detector. One lucky day he found a ring at (5, 7) and an old coin at (10, 19). How far apart were the ring and coin before Taro found them? Round to the nearest tenth if necessary.	**6. GEOMETRY** The coordinates of points A and B are (−7, 5) and (4, −3), respectively. What is the distance between the points, rounded to the nearest tenth?
7. GEOMETRY The coordinates of points A, B, and C are (5, 4), (−2, 1), and (4, −4), respectively. Which point, B or C, is closer to point A?	**8. THEME PARK** Tom is looking at a map of the theme park. The map is laid out in a coordinate system. Tom is at (2, 3). The roller coaster is at (7, 8), and the water ride is at (9, 1). Is Tom closer to the roller coaster or the water ride?

NAME _____ DATE _____ PERIOD _____

4-1 Word Problem Practice

Ratios and Rates

1. COOKING In a bread dough recipe, there are 3 eggs for every 9 cups of flour. Express this ratio in simplest form.	**2. WILDLIFE** Dena counted 14 robins out of 150 birds. Express this ratio in simplest form.
3. INVESTMENTS Josh earned dividends of $2.16 on 54 shares of stock. Find the dividends per share.	**4. TRANSPORTATION** When Denise bought gasoline, she paid $27.44 for 11.2 gallons. Find the price of gasoline per gallon.
5. WATER FLOW Jacob filled his 60-gallon bathtub in 5 minutes. How fast was the water flowing?	**6. TRAVEL** On her vacation, Charmaine's flight lasted 4.5 hours. She traveled 954 miles. Find the average speed of the plane.
7. HOUSING Mr. and Mrs. Romero bought a 1,200 square-foot house for $111,600. How much did they pay per square foot?	**8. SHOPPING** A breakfast cereal comes in two different sized packages. The 8-ounce box costs $2.88, while the 12-ounce box costs $3.60. Which box is the better buy? Explain your reasoning.

NAME _____ DATE _____ PERIOD _____

4-2 Word Problem Practice

Proportional and Nonproportional Relationships

For Exercises 1–8, use a table of values when appropriate to explain your reasoning.

1. SPORTS A touchdown is worth 6 points. Additionally you score an extra point if you can kick a field goal. Is the total number of points scored equal to the number of touchdowns?	**2. DRIVING** Gasoline costs $2.79 per gallon. Is the number of gallons proportional to the total cost?
3. JOBS Michael earns $3.90 per hour as a server at a restaurant. In addition, he earns an average of 18% tips on his food sales. Is the amount of money that he earns proportional to the number of hours that he works?	**4. RECREATION** A outdoor swimming pool costs $8 per day to visit during the summer. There is also a $25 yearly registration fee. Is the total cost proportional to the total number of days visited?
5. SCHOOL At a certain middle school, there are 26 students per teacher in every homeroom. Is the total number of students proportional to the number of teachers?	**6. TEAMS** A baseball club has 18 players for every team, with the exception of four teams that have 19 players each. Is the number of players proportional to the number of teams?
7. MONEY At the beginning of the summer, Roger had $180 in the bank. Each week he deposits another $64 that he earns mowing lawns. Is his account balance proportional to the number of weeks since he started mowing lawns?	**8. SHELVES** A bookshelf holds 43 books on each shelf. Is the total number of books proportional to the number of shelves in the bookshelf?

NAME _____ DATE _____ PERIOD _____

4-3 Word Problem Practice

Rate of Change

ELECTIONS For Exercises 1–3, use the table that shows the total number of people who had voted in District 5 at various times on election day.

Time	8:00 A.M.	10:00 A.M.	1:00 P.M.	4:30 P.M.	7:00 P.M.
Number of Voters	141	351	798	1,008	1,753

1. Find the rate of change in the number of voters between 8:00 A.M. and 10:00 A.M. Then interpret its meaning.

2. Find the rate of change in the number of voters between 10:00 A.M. and 1:00 P.M. Then interpret its meaning.

3. During which of these two time periods did the number of people who had voted so far increase faster? Explain your reasoning.

4. MUSIC At the end of 2005, Candace had 47 CDs in her music collection. At the end of 2008, she had 134 CDs. Find the rate of change in the number of CDs in Candace's collection between 2005 and 2008.

5. FITNESS In 1998, the price of an annual membership at Mr. Jensen's health club was $225. In 2008, the price of the same membership was $319.50. Find the rate of change in the price of the annual membership between 1998 and 2008.

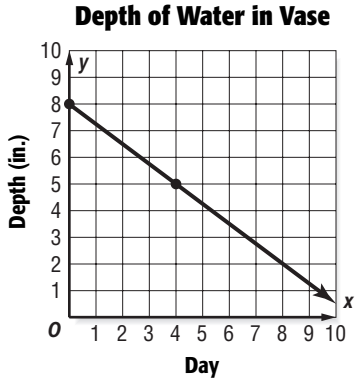
6. HIKING Last Saturday Fumio and Kishi went hiking in the mountains. When they started back at 2:00 P.M., their elevation was 3,560 feet above sea level. At 6:00 P.M., their elevation was 2,390 feet. Find the rate of change of their elevation between 2:00 P.M. and 6:00 P.M. Then interpret its meaning.

NAME _____ DATE _____ PERIOD _____

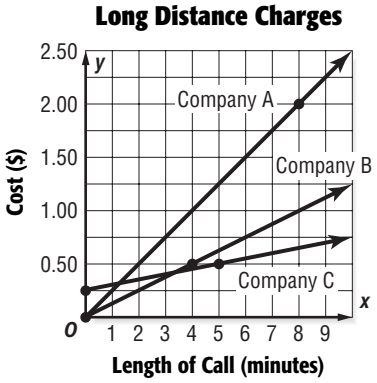
4-4 Word Problem Practice

Constant Rate of Change

FLOWERS For Exercises 1 and 2, use the graph that shows the depth of the water in a vase of flowers over 8 days.



LONG DISTANCE For Exercises 3–6, use the graph that compares the costs of long distance phone calls with three different companies.



1. Find the rate of change for the line.	**2.** Interpret the difference between depth in inches and the day as a rate of change.
3. Interpret the difference between the cost in dollars and the length in minutes for Company A as a rate of change.	**4.** Interpret the difference between the cost in dollars and the length in minutes for Company B as a rate of change.
5. Interpret the difference between the cost in dollars and the length in minutes for Company C as a rate of change.	**6.** Which company charges the least for each additional minute? Explain your reasoning.

NAME _____ DATE _____ PERIOD _____

4-5 Word Problem Practice

Solving Proportions

1. USAGE A 12-ounce bottle of shampoo lasts Enrique 16 weeks. How long would you expect an 18-ounce bottle of the same brand to last him?	**2. COMPUTERS** About 13 out of 20 homes have a personal computer. On a street with 60 homes, how many would you expect to have a personal computer?
3. SNACKS A 6-ounce package of fruit snacks contains 45 pieces. How many pieces would you expect in a 10-ounce package?	**4. TYPING** Ingrid types 3 pages in the same amount of time that Tanya types 4.5 pages. If Ingrid and Tanya start typing at the same time, how many pages will Tanya have typed when Ingrid has typed 11 pages?
5. SCHOOL A grading machine can grade 48 multiple-choice tests in 1 minute. How long will it take the machine to grade 300 tests?	**6. AMUSEMENT PARKS** The waiting time to ride a roller coaster is 20 minutes when 150 people are in line. How long is the waiting time when 240 people are in line?
7. PRODUCTION A shop produces 39 wetsuits every 2 weeks. How long will it take the shop to produce 429 wetsuits?	**8. FISH** Of the 50 fish that Jim caught from the lake, 14 were trout. The estimated population of the lake is 7,500 fish. About how many trout would you expect to be in the lake?

NAME _____ DATE _____ PERIOD _____

4-6 Word Problem Practice

Problem-Solving Investigation: Draw a Diagram

For Exercises 1–6, use the draw a diagram strategy to solve the problem.

1. TILING Kelly is using 3-inch square tiles to cover a 4-foot by 2-foot area. The tiles are 0.5 inches tall. If the tiles were stacked on top of each other to create a tower, how many inches tall would the tower be?	**2. AQUARIUM** An aquarium holds 42 gallons of water. After 2 minutes, the aquarium has 3 gallons of water in it. How many more minutes will it take to completely fill the aquarium?
3. FABRIC It takes Lucy 7 minutes to cut a 20-yard by 1-yard roll of fabric into 14 equal pieces. How many minutes would it take her to cut the fabric into 25 equal pieces?	**4. SPORTS** The width of a soccer field is 12 feet more than $\frac{2}{3}$ of its length. If the field is 96 feet long, what is its perimeter?
5. BEVERAGES It requires 4 gallon jugs of water to fill 104 glasses equally. How many gallons jugs are required to fill 338 glasses equally?	**6. GAS** It takes Richard 48 seconds to fill his gas tank with 3 gallons of gas. If the tank holds 14 gallons, how many more seconds will it take to fill it completely?

NAME _____ DATE _____ PERIOD _____

4-7 Word Problem Practice

Similar Polygons

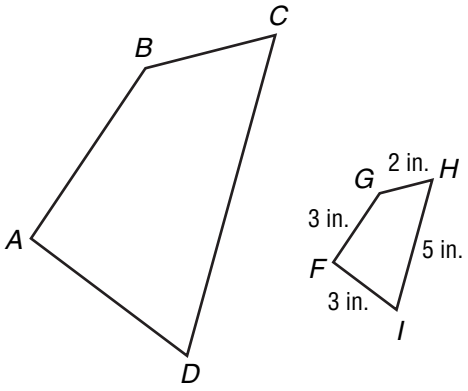
1. JOURNALISM The editor of the school newspaper must reduce the size of a graph to fit in one column. The original graph is 2 inches by 2 inches, and the scale factor from the original to the reduced graph is 8:3. Find the dimensions of the graph as it will appear in one column of the newspaper.

2. PHOTOCOPIES Lydia plans to use a photocopy machine to increase the size of a small chart that she has made as part of her science project. The original chart is 4 inches by 5 inches. If she uses a scale factor of 5:11, will the chart fit on a sheet of paper $8\frac{1}{2}$ inches by 11 inches? Explain.

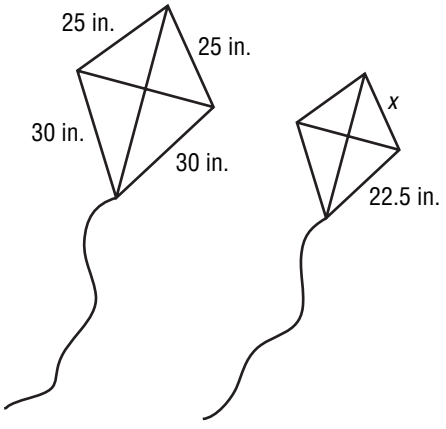
3. MICROCHIPS The image of a microchip in a projection microscope measures 8 inches by 10 inches. The width of the actual chip is 4 millimeters. How long is the chip?

4. PROJECTIONS A drawing on a transparency is 11.25 centimeters wide by 23.5 centimeters tall. The width of the image of the drawing projected onto a screen is 2.7 meters. How tall is the drawing on the screen?

5. GEOMETRY Polygon *ABCD* is similar to polygon *FGHI*. Each side of polygon *ABCD* is $3\frac{1}{4}$ times longer than the corresponding side of polygon *FGHI*. Find the perimeter of polygon *ABCD*.



6. KITES A toy company produces two kites whose shapes are geometrically similar. Find the length of the missing side of the smaller kite.



NAME _____ DATE _____ PERIOD _____

4-8 Word Problem Practice

Dilations

1. EYES Dave's optometrist used medicine to dilate his eyes. Before dilation, his pupils had a diameter of 4.1 millimeters. After dilation, his pupils had a diameter of 8.2 millimeters. What was the scale factor of the dilation?	**2. BIOLOGY** A microscope increases the size of objects by a factor of 8. How large will a 0.006 millimeter paramecium appear?
3. PHOTOGRAPHY A photograph was enlarged to a width of 15 inches. If the scale factor was $\frac{3}{2}$, what was the width of the original photograph?	**4. MOVIES** Film with a width of 35 millimeters is projected onto a screen where the width is 5 meters. What is the scale factor of this enlargement?
5. PHOTOCOPYING A 10-inch long copy of a 2.5-inch long figure needs to be made with a copying machine. What is the appropriate scale factor?	**6. MODELS** A scale model of a boat is going to be made using a scale of $\frac{1}{50}$. If the original length of the boat is 20 meters, what is the length of the model?
7. MODELS An architectural model is 30 inches tall. If the scale used to build the model is $\frac{1}{120}$, what is the height of the actual building?	**8. ADVERTISING** An advertiser needs a 4-inch picture of a 14-foot automobile. What is the scale factor of the reduction?

NAME _____ DATE _____ PERIOD _____

4-9 Word Problem Practice

Indirect Measurement

1. HEIGHT Paco is 6 feet tall and casts a 12-foot shadow. At the same time, Diane casts an 11-foot shadow. How tall is Diane?

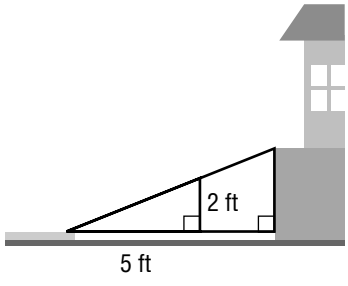
2. LIGHTING If a 25-foot-tall house casts a 75-foot shadow at the same time that a streetlight casts a 60-foot shadow, how tall is the streetlight?

3. FLAGPOLE Lena is $5\frac{1}{2}$ feet tall and casts an 8-foot shadow. At the same time, a flagpole casts a 48-foot shadow. How tall is the flagpole?

4. LANDMARKS A woman who is 5 feet 5 inches tall is standing near the Space Needle in Seattle, Washington. She casts a 13-inch shadow at the same time that the Space Needle casts a 121-foot shadow. How tall is the Space Needle?

5. NATIONAL MONUMENTS A 42-foot flagpole near the Washington Monument casts a shadow that is 14 feet long. At the same time, the Washington Monument casts a shadow that is 185 feet long. How tall is the Washington Monument?

6. ACCESSIBILITY A ramp slopes upward from the sidewalk to the entrance of a building at a constant incline. If the ramp is 2 feet high when it is 5 feet from the sidewalk, how high is the ramp when it is 7 feet from the sidewalk?



NAME _____ DATE _____ PERIOD _____

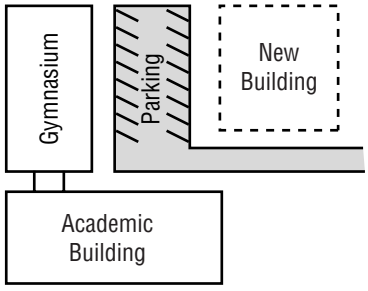
4-10 Word Problem Practice

Scale Drawings and Models

CAMPUS PLANNING For Exercises 1–3, use the following information.

The local school district has made a scale model of the campus of Engels Middle School including a proposed new building. The scale of the model is 1 inch = 3 feet.

View of Campus from Above



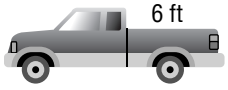
1. An existing gymnasium is 8 inches tall in the model. How tall is the actual gymnasium?

2. The new building is 22.5 inches from the gymnasium in the model. What will be the actual distance from the gymnasium to the new building if it is built?

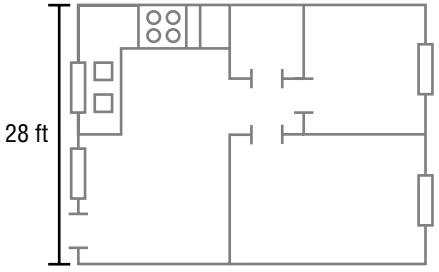
3. What is the scale factor of the model?

4. MAPS On a map, two cities are $5\frac{3}{4}$ inches apart. The scale of the map is $\frac{1}{2}$ inch = 3 miles. What is the actual distance between the towns?

5. TRUCKS The bed of Jerry's pickup truck is 6 feet long. On a scale model of the truck, the bed is 8 inches long. What is the scale of the model?



6. HOUSING Marta is making a scale drawing of her apartment for a school project. The apartment is 28 feet wide. On her drawing, the apartment is 7 inches wide. What is the scale of Marta's drawing?



NAME _____ DATE _____ PERIOD _____

5-1 Word Problem Practice

Ratios and Percents

1. PETS Three out of every 20 dogs in the U.S. are Golden Retrievers. Write this ratio as a percent.	**2. GEOGRAPHY** About 29% of the world's surface is covered by land. Write this percent as a fraction.
3. BASKETBALL Shaquille O'Neal of the L.A. Lakers hit 11 out of 20 free throws in a 5-game series. Write this number as a percent.	**4. EDUCATION** In a recent survey, about 38% of 18- to 24-year-olds in the United States were enrolled in a college or university. Write this percent as a fraction.
5. HEALTH CARE Over 15% of Americans do not have health insurance. Write this percent as a fraction.	**6. ENERGY** Japan accounts for about 5.4% of the world's petroleum consumption. Write this percent as a fraction.
7. GEOGRAPHY The federal government owns about $\frac{13}{20}$ of the land in the state of Utah. Write this fraction as a percent.	**8. POPULATION** In a recent survey, 11 out of every 50 people in the United States were age 65 or older. Write this ratio as a percent.

NAME _____ DATE _____ PERIOD _____

5-2 Word Problem Practice

Comparing Fractions, Decimals, and Percents

1. BASKETBALL In a recent season, Susan Bird of the WNBA team the Seattle Storm made 43% of her 3-point shots. Write this percent as a decimal.	**2. POPULATION** From 2000 to 2005, the population of New York City increased by 2%. Write this percent as a decimal.
3. BASEBALL Recently, the Chicago White Sox had a team batting average of 0.262. Write this decimal as a percent.	**4. HEALTH** In 2004, 15.7% of Americans were without health insurance. Write this percent as a decimal.
5. INTERNET Internet access in the U.S. has increased dramatically in recent years. If 110 out of every 200 households had Internet access, what percent of households had Internet access?	**6. VOTING** The rate of voter turnout in the 1932 U.S. presidential election was 0.524. Write this decimal as a percent.
7. ECONOMICS Consumer prices in the U.S. rose at a rate of 0.033 from 2003 to 2004. Write this decimal as a percent.	**8. SPORTS** In a recent season, the WNBA Indiana Fever won $\frac{21}{34}$ of their games. Write this fraction as a percent.

Lesson 5-2

NAME _____ DATE _____ PERIOD _____

5-3 Word Problem Practice

Algebra: The Percent Proportion

1. COMMUTING On his trip across town, Mark was stopped by a red light at 9 out of 15 intersections. At what percent of intersections was Mark stopped by a red light?	**2. CLIMATE** In Las Vegas, Nevada, the skies are clear on 92% of the days. How many days in the month of June would you expect the skies to be clear in Las Vegas? Round the answer to the nearest day.
3. POLLING A recent poll shows that 65% of adults are in favor of increased funding for education. The number of adults surveyed for the poll was 140. How many of the adults surveyed were in favor of increased funding for education?	**4. FLOWERS** Mika's rosebush had 24 blooms in the first week of May. This was 80% as many blooms as Tammy's rosebush had during the same period. How many blooms did Tammy's rosebush have?
5. SPORTS In a recent season, the San Francisco Giants won 75 out of 162 games. What percent of their games did they win? Round to the nearest tenth if necessary.	**6. GOLF** On a recent round of golf, Shana made par on 15 out of 18 holes. On what percent of holes did Shana make par? Round to the nearest tenth if necessary.
7. DRIVING TEST On the written portion of her driving test, Sara answered 84% of the questions correctly. If Sara answered 42 questions correctly, how many questions were on the driving test?	**8. EDUCATION** In a certain small town, 65% of the adults are college graduates. How many of the 240 adults living in the town are college graduates?

NAME _____ DATE _____ PERIOD _____

5-4 Word Problem Practice

Finding Percents Mentally

1. ELECTIONS In a certain small town, 80% of the adults voted in the last election. How many of the 600 adults living in the town voted in the last election?	**2. FISH POPULATION** Fish and game managers have determined that 10% of the approximately 3,400 fish in Avondale Lake are catfish. How many catfish are there in Avondale Lake?
3. SURVEYS In a recent survey, 1% of the people had no opinion on the topic. How many of the 1,100 people surveyed had no opinion on the topic?	**4. BAND** In a local middle school, $33\frac{1}{3}\%$ of the students are in the band. There are 240 students in the school. How many middle school students are in the band?
5. AIR TRAVEL At one large international airport in the U.S., 20% of the arriving flights are from other countries. On a recent day, 240 flights arrived at the airport. How many of these flights were from other countries?	**6. TELEPHONE** Ramona likes to keep track of her incoming calls. Last month, 25% of the 132 calls Ramona received were from her mother. How many calls did Ramona get from her mother last month?
7. FARMING Jake grows corn and soybeans on his farm. He has corn growing on $66\frac{2}{3}\%$ of his 330 acres. How many acres are being used for corn?	**8. ENERGY** The U.S. has 25% of the nuclear power plants in the world. How many of the world's 416 nuclear power plants are in the U.S.?

Lesson 5-4

NAME _____ DATE _____ PERIOD _____

5-5 Word Problem Practice

Problem-Solving Investigation: Reasonable Answers

For Exercises 1–8, determine a reasonable answer.

1. SHOPPING A coat that normally costs $90 is on sale at 45% off. If Jared brings $45 with him, will he have enough to purchase the coat? Explain.	**2. MONEY** Helen took $100 to the store. She spent $44.56 on a video game. She wants to buy a CD for $18.79 and a book for $32.89. Does she have enough money with her to make these two purchases? Explain.
3. SCHOOL There are 438 students at Newton Middle School. If 38% of the students participate in after-school sports, would the number of students involved in sports be about 110, 170, or 220? Explain.	**4. JOBS** Fredrick is paid $12.35 per hour at his part-time job at a landscaping company. If he is saving to buy a new MP3 player that costs $289, will he have to work 20, 25, or 30 hours? Explain.
5. INTEREST A savings account earns 5.23% interest in one year. If the account holds $4,978 for the entire year, about how much will it earn in interest? Explain.	**6. SURVEY** In a recent survey, 22% of students at Belletown Middle School participate in music programs at the school. If there are 1,417 students in the school, is 280, 420, or 560 a reasonable estimate for the number of students who participate in music programs? Explain.
7. CARS Maryanne is saving to buy a car. She wants to have a down payment of 10% for a car that costs $11,783. So far, she has saved $487. If she saves $125 each week for the down payment, how soon can she buy the car?	**8. GAS** Lucie's car averages about 34.7 miles per gallon. If a full tank holds 14.3 gallons of gas, about how far can she drive on a full tank of gas?

NAME _____ DATE _____ PERIOD _____

5-6 Word Problem Practice

Percent and Estimation

1. FITNESS At the office where Michael works, 8 out of 17 employees work out at least twice a week. Estimate the percent of employees that work out at least twice a week.	**2. PETS** Niki asked 25 of her classmates about what pets they have at home. Eleven of the 25 said they had both a cat and a dog. Estimate the percent of Niki's classmates that have both a cat and a dog.
3. BOOKS Jorge has read 19 novels this year, 4 of which were science fiction. Estimate the percent of novels that were science fiction.	**4. PARKS** The students in Kara's eighth grade science class determined that 9 out of 33 trees at a local park are pine trees. Estimate the percent of pine trees at the park.
5. BAND The marching band at Durango High School has 120 members. Of these, 18% are ninth-grade students. Estimate the number of ninth-grade students in the marching band.	**6. RESTAURANTS** In one east-coast city, 35% of the restaurants in the city are on the bay. The city has 180 restaurants. Estimate the number of restaurants that are on the bay.
7. HOTELS At the Westward Inn hotel, 48% of the rooms face the courtyard. The hotel has 91 rooms. Estimate the number of rooms that face the courtyard.	**8. FARMING** Roy has planted soybeans on 68% of his farm this year. Roy's farm has 598 acres of land. Estimate the number of acres of soybeans that Roy has this year.

NAME _____ DATE _____ PERIOD _____

5-7 Word Problem Practice

Algebra: The Percent Equation

1. DINING OUT Trevor and Michelle's restaurant bill comes to $35.50. They are planning to tip the waiter 20%. How much money should they leave for a tip?	**2. CHESS** The local chess club has 60 members. Twenty-four of the members are younger than twenty. What percent of the members of the chess club are younger than twenty?
3. TENNIS In the city of Bridgeport, 75% of the parks have tennis courts. If 18 parks have tennis courts, how many parks does Bridgeport have altogether?	**4. COLLEGE** There are 175 students in twelfth grade at Silverado High School. A survey shows that 64% of them are planning to attend college. How many Silverado twelfth grade students are planning to attend college?
5. BASEBALL In a recent season, the Chicago Cubs won 79 out of 162 games. What percent of games did the Cubs win? Round to the nearest tenth if necessary.	**6. HOUSING** In the Lakeview apartment complex, 35% of the apartments have one bedroom. If there are 63 one bedroom apartments, what is the total number of apartments at Lakeview?
7. FOOTBALL In the 2005 season, quarterback Aaron Brooks of the New Orleans Saints had 13 passes intercepted out of 328 attempts. What percent of his passes were intercepted? Round to the nearest tenth if necessary.	**8. SPACE** On Mars, an object weighs 38% as much as on Earth. How much would a person who weighs 150 pounds on Earth weigh on Mars?

NAME _____ DATE _____ PERIOD _____

5-8 Word Problem Practice

Percent of Change

1. CLUBS Last year the chess club had 20 members. This year the club has 15 members. Find the percent of change, and state whether the percent of change is an *increase* or a *decrease*.	**2. READING** During Todd's junior year in high school, he read 15 books. In his senior year, he read 18 books. Find the percent of change, and state whether the percent of change is an *increase* or a *decrease*.
3. COMPUTERS The computer store pays $250 each for flat screen monitors. The store uses a 30% markup. Find the selling price for each flat screen monitor.	**4. SHOES** A popular brand of running shoes costs a local store $68 for each pair. Find the selling price for a pair of running shoes if the store has a markup of 75%.
5. CLOTHING Sandy's Clothing Shop has a markup of 45% on dresses. How much will Sandy's charge for a dress that costs the shop $48?	**6. AUDIO** The audio store is having a 20% off sale. What will be the sale price on a pair of speakers that normally sell for $280.00?
7. FURNITURE Leta is planning to buy a new sofa as soon as it goes on sale. The regular price for the sofa is $899.95. How much will the sofa cost if it goes on sale for 40% off? Round to the nearest cent.	**8. AUTO REPAIR** Don is getting a new set of tires for his car. The tires normally sell for $319.96, but they are on sale for 10% off. How much will Don pay for the new tires? Round to the nearest cent.

NAME _____ DATE _____ PERIOD _____

5-9 Word Problem Practice

Simple Interest

1. SAVINGS ACCOUNT How much interest will be earned in 3 years from $730 placed in a savings account at 6.5% simple interest?	**2. INVESTMENTS** Terry's investment of $2,200 in the stock market earned $528 in two years. Find the simple interest rate for this investment.
3. SAVINGS ACCOUNT Lonnie places $950 in a savings account that earns 5.75% simple interest. Find the total amount in the account after four years.	**4. INHERITANCE** William's inheritance from his great uncle came to $225,000 after taxes. If William invests this money in a savings account at 7.3% interest, how much will he earn from the account each year?
5. RETIREMENT Han has $410,000 in a retirement account that earns $15,785 each year. Find the simple interest rate for 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. MONEY Jessica won $800,000 in a state lottery. After paying $320,000 in taxes, she invested the remaining money in a savings account at 4.25% interest. How much interest will she receive from her investment each year?	**8. SAVINGS** Mona has an account with a balance of $738. She originally opened the account with a $500 deposit and a simple interest rate of 5.6%. If there were no deposits or withdrawals, how long ago was the account opened?

NAME _____ DATE _____ PERIOD _____

6-1 Word Problem Practice

Line and Angle Relationships

1. SYMBOLS The symbol below is an equal sign with a slash through it. It is used to represent *not equal to* in math, as in $1 \neq 2$. If $m\angle 1 = 108°$, classify the relationship between $\angle 1$ and $\angle 2$. Then find $m\angle 2$. Explain your reasoning.

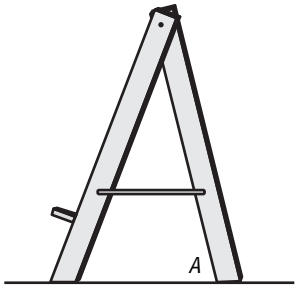
2. SCISSORS Arturo opened a pair of scissors so that the angle between the blades is 38°. What is the angle between the handles?

3. LEG LIFTS Kiara does leg lifts each morning. For each repetition she lifts her legs 35 degrees off the ground. What is the measure of the angle formed by her body and legs in this position?

4. ALGEBRA Angles A and B are complementary. If $m\angle A = 3x - 8$ and $m\angle B = 5x + 10$, what is the measure of each angle?

5. ALGEBRA Angles Q and R are supplementary. If $m\angle Q = 4x + 9$ and $m\angle R = 8x + 3$, what is the measure of each angle?

6. ART The drawing below shows the side view of a drawing easel.



If $m\angle A$ is 82°, what is the measure of its supplementary angle?

NAME _____ DATE _____ PERIOD _____

6-2 Word Problem Practice

Problem-Solving Investigation: Use Logical Reasoning

Solve each problem using logical reasoning.

1. GEOMETRY A solid figure has two triangular faces and three square faces. Is the figure a pyramid, a triangular prism, or a cube? Explain.	**2. MEASUREMENT** Can you use a 4-pint container and a 9-pint container to fill a 10-pint container? Explain.
3. MONEY After a visit to the mall, Ray and Mary counted their money to see how much they had left. Ray said, "If I had $8 more, I would have as much as you." Mary replied, "If I had $8 more, I would have twice as much as you." Explain.	**4. SPORTS** Mark, Rich, Sue, Matt, and Tracey were the first five finishers of a race. From the given clues, state the order in which they finished: Rich finished behind Matt, Sue was fifth, Tracey finished ahead of Mark, and Matt finished behind Mark.
5. NUMBER SENSE The sum of two numbers is equal to 15. The product of the numbers is 44. What are the two numbers?	**6. GEOMETRY** A regular hexagon has 6 hexagons surrounding it. Each of the 6 hexagons shares a side with the middle hexagon and with the hexagon next to it. If each of the hexagons has 2-inch sides, what is the perimeter of the figure?

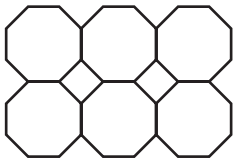
NAME _____ DATE _____ PERIOD _____

6-3 Word Problem Practice

Polygons and Angles

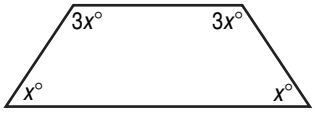
For Exercises 1–6, use the formula $S = (n - 2)180°$ to solve.

1. **FLOORING** Martha's kitchen floor is made from a tessellation of rows of regular octagons. The space between them is filled with square tiles as shown below. Find the measure of one interior angle in both the octagon and the square tiles.

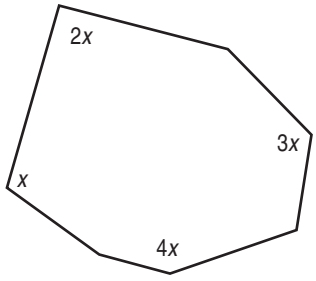


2. **CIRCLES** As the number of sides of a regular polygon increase, the polygon gets closer and closer to a true circle. The interior angles of any regular polygon can never actually reach 180º. How many sides would a polygon have whose interior angles are exactly 179º?

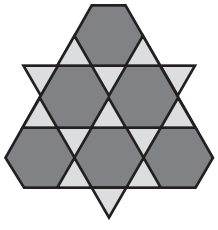
3. **GEOMETRY** A trapezoid has angles that measure $3x°$, $3x°$, $x°$, and $x°$. What is the measure of x?



4. **GEOMETRY** An irregular heptagon has angles that measure $x°$, $x°$, $2x°$, $2x°$, $3x°$, $3x°$, and $4x°$. What is the measure of x?



5. **TILES** A bathroom tile consists of regular hexagons surrounded by regular triangles as shown below. Find the measure of one interior angle in both the hexagon and the triangle tiles.

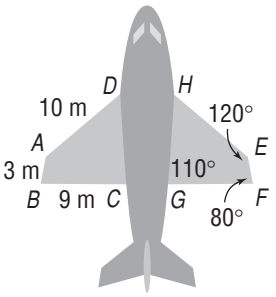


6. **CHALLENGE** How many sides does a regular polygon have if the measure of an interior angle is 171º?

NAME _____ DATE _____ PERIOD _____

6-4 Word Problem Practice

Congruent Polygons

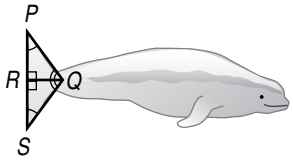


AIRPLANES **The diagram at the right is of an airplane as seen from above. The wings of the airplane form congruent quadrilaterals, so quadrilateral *ABCD* ≅ quadrilateral *EFGH*. Use this figure for Exercises 1 and 2.**

1. Name an unlabeled wing part whose length is 3 meters. Explain your answer.

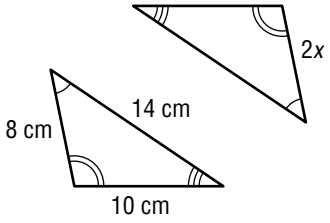
2. Explain how a quality control person could find out if $m\angle DCB$ was correct.

3. WHALES The flukes of the Beluga whale are shaped like triangles. Determine whether these triangles are congruent. If so, name the corresponding parts and write a congruence statement. (*Hint*: $\overline{RQ}$ is a side of each triangle.)

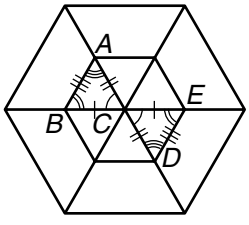


4. PATTERNS Mandy is making name tags in the shape of triangles. They all should be the same size. Explain how she can use a pattern to make 25 name tags. How does she know they are all congruent?

5. ALGEBRA Find the value of x in the two congruent triangles.



6. NATURE Part of a spider's web is shown in the figure. Determine whether the two marked triangles are congruent. If so, name the corresponding parts and write a congruence statement.

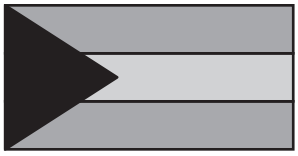


NAME _____ DATE _____ PERIOD _____

6-5 Word Problem Practice

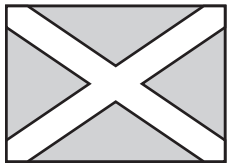
Symmetry

1. FLAGS The flag of the Bahamas is shown below. Determine whether the flag has line symmetry. If it does, draw all lines of symmetry. If not, write *none*.



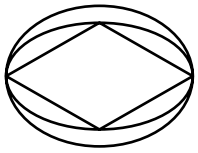
2. FLAGS Refer to the flag in Exercise 1. Determine whether the flag has rotational symmetry. Write *yes* or *no*. If *yes*, name its angles of rotation.

3. FLAGS The flag of Scotland is shown below. Determine whether the flag has line symmetry. If it does, draw all lines of symmetry. If not, write *none*.

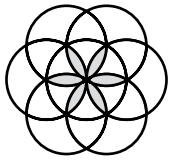


4. FLAGS Refer to the flag in Exercise 3. Determine whether the flag has rotational symmetry. Write *yes* or *no*. If *yes*, name its angles of rotation.

5. LOGOS Discuss all of the properties of symmetry that the logo below has.



6. FLOWER OF LIFE This design has been found on Native American pots, in caves, and on buildings worldwide. Explain how to determine how many lines of symmetry it has. How many lines of symmetry are there?



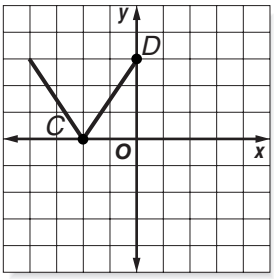
Lesson 6-5

NAME _____ DATE _____ PERIOD _____

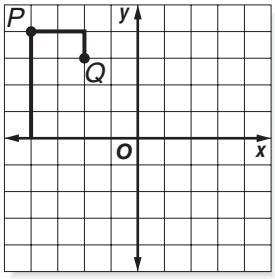
6-6 Word Problem Practice

Reflections

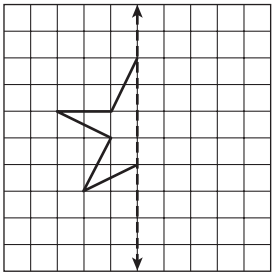
1. ALPHABET The figure shows the letter V plotted on a coordinate system. Find the coordinates of points C and D after the figure is reflected over the y-axis.



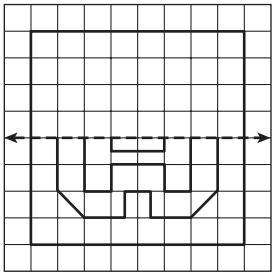
2. GREEK The figure shows the Greek letter gamma plotted on a coordinate system. Find the coordinates of points P and Q after the figure is reflected over the x-axis. Then draw the reflected image.



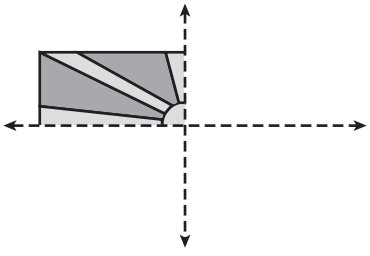
3. CRAFTS Candace is making a pattern for star-shaped ornaments. Complete the pattern shown so that the completed star has a vertical line of symmetry.



4. FLOORING The Turners are replacing the flooring in their dining room. Complete the design shown so that the completed floor has a horizontal line of symmetry.



5. FLAG Macedonia is a country near Greece and Albania. The national flag of Macedonia has both vertical and horizontal symmetry. Complete the flag of Macedonia.



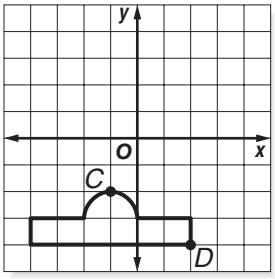
6. COYOTE Dasan is preparing a presentation on animal safety. Finish the drawing of a coyote's footprint so that it has vertical symmetry.

NAME _____ DATE _____ PERIOD _____

6-7 Word Problem Practice

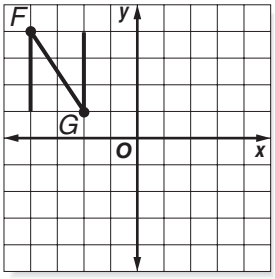
Translations

1. BUILDINGS The figure shows an outline of the White House in Washington, D.C., plotted on a coordinate system. Find the coordinates of points C' and D' after the figure is translated 2 units right and 3 units up.



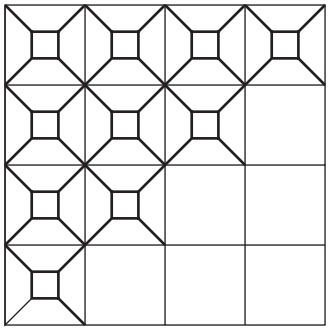
2. BUILDINGS Refer to the figure in Exercise 1. Find the coordinates of points C' and D' after the figure is translated 1 unit left and 4 units up.

3. ALPHABET The figure shows a capital "N" plotted on a coordinate system. Find the coordinates of points F' and G' after the figure is translated 2 units right and 2 units down.



4. ALPHABET Refer to the figure in Exercise 3. Find the coordinates of points F' and G' after the figure is translated 5 units right and 6 units down.

5. QUILT The beginning of a quilt is shown below. Look for a pattern in the quilt. Copy and translate the quilt square to finish the quilt.



6. BEACH Tylia is walking on the beach. Copy and translate her footprints to show her path in the sand.

Lesson 6-7

NAME _____ DATE _____ PERIOD _____

7-1 Word Problem Practice

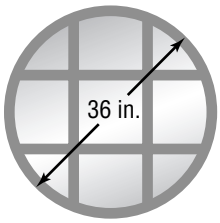
Circumference and Area of Circles

1. FOUNTAINS The circular fountain in front of the courthouse has a radius of 9.4 feet. What is the circumference of the fountain? Round to the nearest tenth.

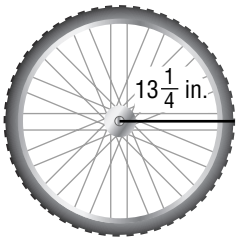
2. PETS A dog is leashed to a point in the center of a large yard, so the area the dog is able to explore is circular. The leash is 20 feet long. What is the area of the region the dog is able to explore? Round to the nearest tenth.

3. GARDENING A flowerpot has a circular base with a diameter of 27 centimeters. Find the circumference of the base of the flowerpot. Round to the nearest tenth.

4. WINDOWS Find the area of the window shown below. Round to the nearest tenth.



5. BICYCLES A bicycle tire has a radius of $13\frac{1}{4}$ inches. How far will the bicycle travel in 40 rotations of the tire? Round to the nearest tenth.



6. LANDSCAPING Joni has a circular garden with a diameter of $14\frac{1}{2}$ feet. If she uses 2 teaspoons of fertilizer for every 25 square feet of garden, how much fertilizer will Joni need for her entire garden? Round to the nearest tenth.

NAME _____ DATE _____ PERIOD _____

7-2 Word Problem Practice

Problem-Solving Investigation: Solve a Simpler Problem

For Exercises 1–6, use the solve a simpler problem strategy.

1. GEOMETRY Mark has a large pizza. What is the maximum number of pieces that can be made by using 12 cuts?

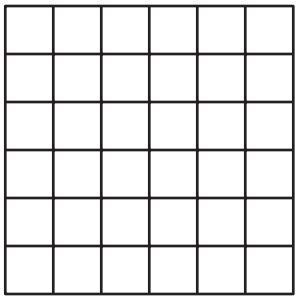
2. TABLES A picnic area has 21 square tables that can be pushed together to form one long table for large group. Each square table can seat 4 people per side. How many people can be seated at the combined tables?

3. PACKAGES Postcards come in packages of 12 and stamps come in packages of 20. How many of each type of package will Jessica need to buy in order to send 300 postcards with no stamps or postcards left over?

4. JOBS Larry can stuff 150 envelopes in one hour. Harold can stuff 225 envelopes in one hour. About how long will it take them to stuff 10,000 envelopes?

5. BUILDING Jason can lay 40 bricks in one hour. Mark can lay 30 bricks in one hour. Jesse can lay 20 bricks in one hour. About how long will it them to build a wall that uses 900 bricks?

6. GEOMETRY How many squares of any size are in the figure?

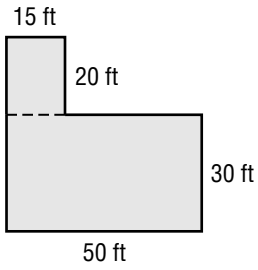


NAME _____ DATE _____ PERIOD _____

7-3 Word Problem Practice

Area of Composite Figures

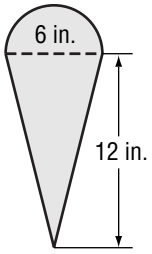
LANDSCAPING For Exercises 1 and 2 use the diagram of a yard and the following information. The figure shows the measurements of Marcus' yard which he intends to sod.



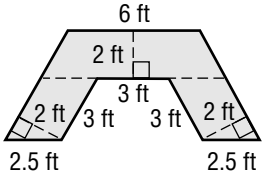
1. Find the area of the yard.

2. One pallet of sod covers 400 square feet. How many full pallets of sod will Marcus need to buy to have enough for his entire yard?

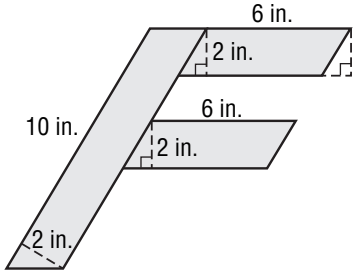
3. ICE CREAM Leeor was asked to repaint the sign for his mother's ice cream shop, so he needs to figure out how much paint he will need. Find the area of the ice cream cone on the sign. Round to the nearest tenth.



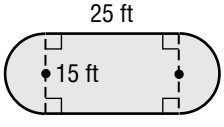
4. HOME IMPROVEMENT Jim is planning to install a new countertop in his kitchen, as shown in the figure. Find the area of the countertop.



5. SCHOOL PRIDE Cindy has a jacket with the first letter of her school's name on it. Find the area of the letter on Cindy's jacket.



6. SWIMMING POOLS The Cruz family is buying a custom-made cover for their swimming pool, shown below. The cover costs $2.95 per square foot. How much will the cover cost? Round to the nearest cent.

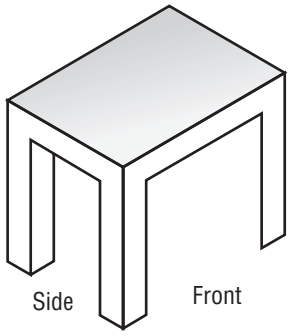


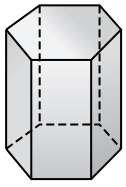
NAME _____ DATE _____ PERIOD _____

7-4 Word Problem Practice

Three-Dimensional Figures

ARCHITECTURE For Exercises 1–3, refer to the architectural drawing of a table.



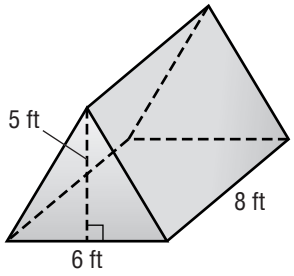
1. Draw and label the top, front, and side views of the table.	**2.** Find the overall height of the table in feet.
3. Find the area of the shaded region.	**4. NAVIGATION** Sailing ships once used deck prisms to allow sunlight to reach below the main deck. One such deck prism is shown below. Identify the solid. Name the number and shapes of the faces. Then name the number of edges and vertices. 
5. PUBLIC SPEAKING A pedestal used in an auditorium is shaped like a rectangular prism that is 1 unit high, 5 units wide, and 5 units long. Sketch the pedestal using isometric dot paper.	**6. PETS** Lisa has four pet fish that she keeps in an aquarium. The aquarium is shaped like a triangular prism that is 4 units high. Sketch what this aquarium might look like using isometric dot paper.

NAME _____ DATE _____ PERIOD _____

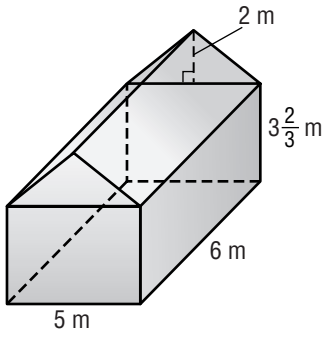
7-5 Word Problem Practice

Volume of Prisms and Cylinders

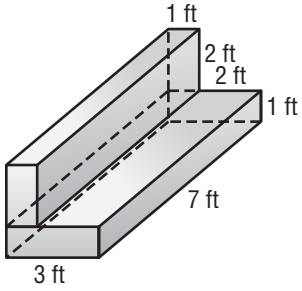
1. **CAMPING** A tent used for camping is shown below. Find the volume of the tent.



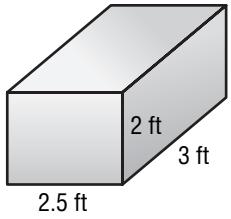
2. **CONSTRUCTION** The dimensions of a new tree house are shown below. How many cubic feet of space will the tree house contain?



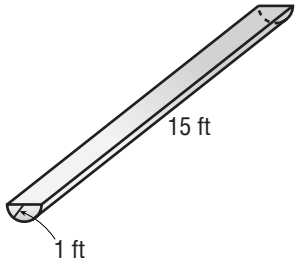
3. **FOAM** The figure below shows a piece of foam packaging. Find the volume of the foam.



4. **DONATIONS** Lawrence is donating some outgrown clothes to charity. The dimensions of the box he is using are shown below. How many cubic feet of clothes will fit in the box?



5. **FARM LIFE** A trough used for watering horses is shown in the figure. The trough is half of a cylinder. How many cubic feet of water will the trough hold? Round to the nearest tenth.



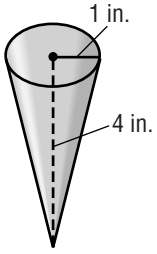
6. **FARM LIFE** If the volume of the water in the trough in Exercise 5 decreases by 5.6 ft^3 per day, after how many days will the trough be empty? Round to the nearest tenth if necessary.

NAME _____ DATE _____ PERIOD _____

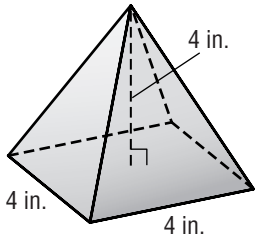
7-6 Word Problem Practice

Volume of Pyramids and Cones

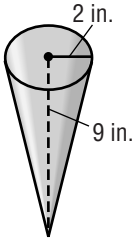
1. DESSERT Find the volume of the ice cream cone shown below. Round to the nearest tenth if necessary.



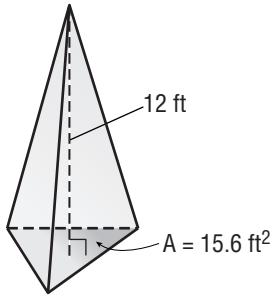
2. SOUVENIRS On a trip to Egypt, Myra bought a small glass pyramid as a souvenir. Find the volume of the glass used to make the pyramid. Round to the nearest tenth.



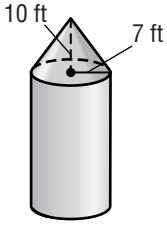
3. AUTO REPAIR A funnel used to fill the transmission on a car is shown below. Find the volume of the funnel. Round to the nearest tenth.



4. ART An artist created a commemorative marker in the shape of a triangular pyramid. Find the volume of the stone used to make the marker. Round to the nearest tenth.



5. FARMING The top of a silo is a cone, as shown in the figure. Find the volume of the cone. Round to the nearest tenth.



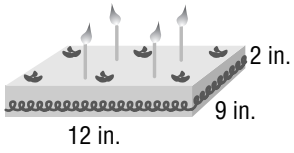
6. LANDSCAPING When mulch was dumped from a truck, it formed a cone-shaped mound with a diameter of 15 feet and a height of 8 feet. What is the volume of the mulch?

NAME _____ DATE _____ PERIOD _____

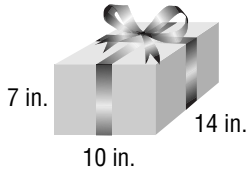
7-7 Word Problem Practice

Surface Area of Prisms and Cylinders

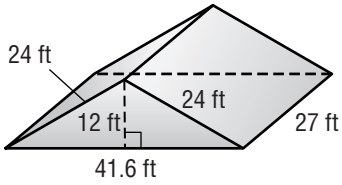
1. BAKING The top and sides of the cake shown below are to be covered in frosting. Calculate the area that will be covered with frosting.



2. GIFTS A birthday gift is placed inside the box shown below. What is the minimum amount of wrapping paper needed to wrap this gift?

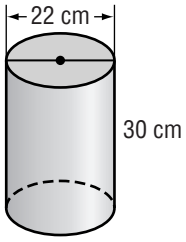


3. FARMING Phil is planning to shingle the roof on his barn shown below. How many square feet will he be shingling?

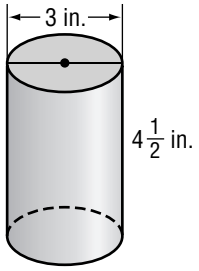


4. FARMING Refer to Exercise 3. If one package of shingles covers 325 square feet, how many packages will Phil need to buy?

5. LIGHT SHOW A mirrored cylinder used in a light show is shown below. Only the curved side of the cylinder is covered with mirrors. Find the area of the cylinder covered in mirrors. Round to the nearest tenth.



6. SOUP Emily has the flu, so she decides to make chicken noodle soup. How many square inches of metal were used to make Emily's can of soup? Round to the nearest tenth.

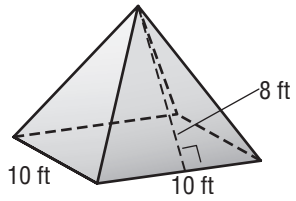


NAME _____ DATE _____ PERIOD _____

7-8 Word Problem Practice

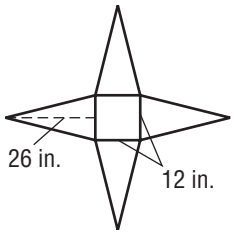
Surface Area of Pyramids

1. **ROOFS** A farmer is planning to put new roofing material on the pyramidal roof of a work shed as shown below. Calculate the number of square feet of roofing material needed. Round to the nearest tenth.

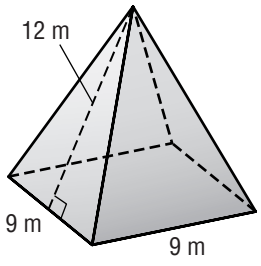


2. **ROOFS** Refer to Exercise 1. If the roofing material costs $1.45 per square foot, how much will it cost to put new roofing material on the shed? Round to the nearest cent.

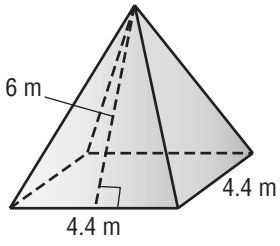
3. **HOBBIES** When the butterfly net shown below is fully extended, it forms the shape of a pyramid with a slant height of 26 inches. The sides of the square base are 12 inches. Calculate the amount of mesh material needed to make the butterfly net.



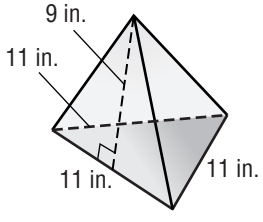
4. **HORTICULTURE** The local college has a greenhouse that is shaped like a square pyramid, as shown below. The lateral faces of the greenhouse are made of glass. Find the surface area of the glass on the greenhouse.



5. **ART** Find the surface area of the sculpture shown below.



6. **COSTUMES** The top of a costume hat is shaped like a triangular pyramid, as shown below. How much black felt is needed to cover the sides of the pyramid?



NAME _____ DATE _____ PERIOD _____

7-9 Word Problem Practice

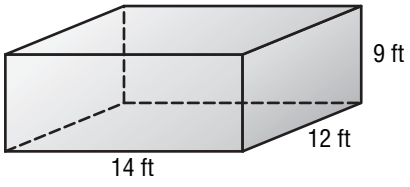
Similar Solids

For Exercises 1–6, find the missing measure for each pair of similar solids. Round to the nearest tenth if necessary.

1. ARCHITECTURE A model of a cylindrical grain silo is 14 inches tall. On the model 2 inches represents 5 feet. What is the height of the actual grain silo?

2. AQUARIUMS A pet store has three sizes of aquariums. The dimensions of the smallest aquarium are 12 in. $\times$ 16 in. $\times$ 10 in. If other sizes of aquariums are 2 times and 2.5 times as large, what are the dimensions of the other aquariums?

3. BUILDING A room has dimensions that are 12 ft $\times$ 14 ft $\times$ 9 ft. A larger room is 1.5 times as large in each dimension. What is the scale factor of the rooms' volumes? (Hint: the scale factor of the three-dimensional volumes is not the same as the scale factor in one dimension)



4. ART Ray takes a photo of a sculpture he has just finished. In the photograph, the sculpture is 4 inches wide. If each inch in the photograph represents 2.5 feet, how wide is the sculpture?

5. MODELS An architectural model of a skyscraper is shaped like a very tall pyramid. The length of the sides of the square base on the model are 6 inches and the slant height is 24 inches. If the scale factor of the model is $\frac{1}{400}$, what is the slant height of the actual building?

6. CARS Sam has a picture of his favorite type of car. In the photo, the car is 12 inches wide by 6 inches tall. If the actual height of the car is 54 inches tall, what is the actual length of the car?

NAME _____ DATE _____ PERIOD _____

8-1 Word Problem Practice

Simplifying Algebraic Expressions

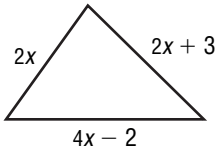
1. GAMES At the Beltway Outlet store, you buy x computer games for \$13 each and a magazine for \$4. Write an expression in simplest form that represents the total amount of money you spend.

2. TENNIS Two weeks ago, James bought 3 cans of tennis balls. Last week, he bought 4 cans of tennis balls. This week, he bought 2 cans of tennis balls. The tennis balls cost d dollars per can. Write an expression in simplest form that represents the total amount that James spent.

3. AMUSEMENT PARKS Sari and her friends are going to play miniature golf. There are p people in the group. Each person pays \$5 for a round of golf and together they spend \$9 on snacks. Write an expression in simplest form that represents the total amount that Sari and her friends spent.

4. BICYCLING The bicycle path at the park is a loop that covers a distance of m miles. Jorge biked 2 loops each on Monday and Wednesday and 3 loops on Friday. On Sunday, Jorge biked 10 miles. Write an expression in simplest form that represents the total distance that Jorge biked this week.

5. GEOMETRY Write an expression in simplest form for the perimeter of the triangle below.



6. SIBLINGS Mala is y years old. Her sister is 4 years older than Mala. Write an expression in simplest form that represents the sum of the ages of the sisters.

Lesson 8-1

NAME _____ DATE _____ PERIOD _____

8-2 Word Problem Practice

Solving Two-Step Equations

1. SHOPPING Jenna bought 5 reams of paper at the store for a total of $21. The tax on her purchase was $1. Solve $5x + 1 = 21$ to find the price for each ream of paper.	**2. CARS** It took Lisa 85 minutes to wash three cars. She spent x minutes on each car and 10 minutes putting everything away. Solve $3x + 10 = 85$ to find how long it took to wash each car.
3. EXERCISE Rick jogged the same distance on Tuesday and Friday, and 8 miles on Sunday, for a total of 20 miles for the week. Solve $2x + 8 = 20$ to find the distance Rick jogged on Tuesday and Friday.	**4. MOVING** Heather has a collection of 26 mugs. When packing to move, she put the same number of mugs in each of the first 4 boxes and 2 mugs in the last box. Solve $4x + 2 = 26$ to find the number of mugs in each of the first four boxes.
5. TELEVISION Burt's parents allow him to watch a total of 10 hours of television per week. This week, Burt is planning to watch several two−hour movies and four hours of sports. Solve $2x + 4 = 10$ to find the number of movies Burt is planning to watch this week.	**6. TRAVEL** Lawrence drives the same distance Monday through Friday commuting to work. Last week, Lawrence drove 25 miles on the weekend, for a total of 60 miles for the week. Solve $5x + 25 = 60$ to find the distance Lawrence drives each day commuting to work.
7. MONEY McKenna had $32 when she got to the carnival. After riding 6 rides, she had $20 left. Solve $32 - 6x = 20$ to find the price for each ride.	**8. GARDENING** Jack has 15 rosebushes. He has the same number of yellow, red, and pink bushes, and 3 multicolored bushes. Solve $3x + 3 = 15$ to find the number of yellow rosebushes Jack has.

NAME _____ DATE _____ PERIOD _____

8-3 Word Problem Practice

Writing Two-Step Equations

Solve each problem by writing and solving an equation.

1. CONSTRUCTION Carlos is building a screen door. The height of the door is 1 foot more than twice its width. What is the width of the door if it is 7 feet high?	**2. GEOMETRY** A rectangle has a width of 6 inches and a perimeter of 26 inches. What is the length of the rectangle?
3. EXERCISE Ella swims four times a week at her club's pool. She swims the same number of laps on Monday, Wednesday, and Friday, and 15 laps on Saturday. She swims a total of 51 laps each week. How many laps does she swim on Monday?	**4. SHOPPING** While at the music store, Drew bought 5 CDs, all at the same price. The tax on his purchase was \$6, and the total was \$61. What was the price of each CD?
5. STUDYING Over the weekend, Koko spent 2 hours on an assignment, and she spent equal amounts of time studying for 4 exams for a total of 16 hours. How much time did she spend studying for each exam?	**6. FOOD** At the market, Meyer buys a bunch of bananas for \$0.35 per pound and a frozen pizza for \$4.99. The total for his purchase was \$6.04, without tax. How many pounds of bananas did Meyer buy?
7. HOME IMPROVEMENT Laura is making a patio in her backyard using paving stones. She buys 44 paving stones and a flowerpot worth \$7 for a total of \$73. How much did each paving stone cost?	**8. TAXI** A taxi service charges you \$1.50 plus \$0.60 per minute for a trip to the airport. The distance to the airport is 10 miles, and the total charge is \$13.50. How many minutes did the ride to the airport take?

NAME _____ DATE _____ PERIOD _____

8-4 Word Problem Practice

Solving Equations with Variables on Each Side

Solve each problem by writing and solving an equation.

1. PLUMBING A1 Plumbing Service charges $35 per hour plus a $25 travel charge for a service call. Good Guys Plumbing Repair charges $40 per hour for a service call with no travel charge. How long must a service call be for the two companies to charge the same amount?	**2. EXERCISE** Mike's Fitness Center charges $30 per month for a membership. All-Day Fitness Club charges $22 per month plus an $80 initiation fee for a membership. After how many months will the total amount paid to the two fitness clubs be the same?
3. SHIPPING The Lone Star Shipping Company charges $14 plus $2 a pound to ship an overnight package. Discount Shipping Company charges $20 plus $1.50 a pound to ship an overnight package. For what weight is the charge the same for the two companies?	**4. MONEY** Julia and Lise are playing games at the arcade. Julia started with $15, and the machine she is playing costs $0.75 per game. Lise started with $13, and her machine costs $0.50 per game. After how many games will the two girls have the same amount of money remaining?
5. MONEY The Wayside Hotel charges its guests $1 plus $0.80 per minute for long distance calls. Across the street, the Blue Sky Hotel charges its guests $2 plus $0.75 per minute for long distance calls. Find the length of a call for which the two hotels charge the same amount.	**6. COLLEGE** Jeff is a part-time student at Horizon Community College. He currently has 22 credits, and he plans to take 6 credits per semester until he is finished. Jeff's friend Kila is also a student at the college. She has 4 credits and plans to take 12 credits per semester. After how many semesters will Jeff and Kila have the same number of credits?

NAME _____ DATE _____ PERIOD _____

8-5 Word Problem Practice

Problem-Solving Investigation: Guess and Check

Use the guess and check strategy to solve each problem.

SKATES For Exercises 1 and 2, use the information below. It shows the income a sporting goods store received in one week for skate sharpening.

Skate Sharpening Income for Week 6			
Cost to Sharpen Hockey Skates	**Cost to Sharpen Figure Skates**	**Total Pairs of Skates Sharpened**	**Total Income from Skate Sharpening**
$6 a pair	$4 a pair	214	$1,096

1. How many pairs of hockey skates and figure skates were sharpened during the week?

2. How much more did the sporting goods store earn sharpening hockey skates than figure skates?

3. FIELD TRIP At the science museum, the laser light show costs $2 and the aquarium costs $1.50. On a class field trip, each of the 30 students went to either the laser light show or the aquarium. If the teacher spent exactly $51 on tickets for both attractions, how many students went to each attraction?

4. NUMBERS Mr. Wahl is thinking of two numbers. The sum of the numbers is 27. The product of the numbers is 180. What two numbers is Mr. Wahl thinking of?

5. READING MARATHON Mrs. Johnson's class broke the school reading record by reading a total of 9,795 pages in one month. Each student read a book that was either 245 pages or 360 pages. If 32 students participated in the reading marathon, how many students read each book?

6. REWARDS The soccer coaches bought gifts for all their soccer players. Gifts for the girls cost $4 each and gifts for the boys cost $3 each. There were 32 more boy soccer players than girl soccer players. If the coaches spent a total of $411 on gifts for their players, how many boys and girls played soccer?

NAME _____ DATE _____ PERIOD _____

8-6 Word Problem Practice

Inequalities

1. SPORTS Colin's time in the 400-meter run was 62 seconds. Alvin was at least 4 seconds ahead of Colin. Write an inequality for Alvin's time in the 400-meter run.	**2. RESTAURANTS** Before Valerie and her two friends left Mel's Diner, there were more than 25 people seated. Write an inequality for the number of people seated at the diner after Valerie and her two friends left.
3. FARM LIFE Reggie has 4 dogs on his farm. One of his dogs, Lark, is about to have puppies. Write an inequality for the number of dogs Reggie will have if Lark has fewer than 4 puppies.	**4. MONEY** Alicia had \$25 when she arrived at the fair. She spent t dollars on ride tickets and she spent \$6.50 on games. Write an inequality for the amount of money Alicia had when she left the fair.
5. HEALTH Marcus was in the waiting room for 26 minutes before being called. He waited at least another 5 minutes before the doctor entered the examination room. Write an inequality for the amount of time Marcus waited before seeing the doctor.	**6. POPULATION** The population of Ellisville was already less than 250 before Bob and Ann Tyler and their three children moved away. Write an inequality for the population of Ellisville after the Tyler family left.
7. HOMEWORK Nova spent one hour on Thursday, one hour on Saturday, and more than 2 hours on Sunday working on her writing assignment. Write an inequality for the amount of time she worked on the assignment.	**8. YARD WORK** Harold was able to mow more than $\frac{3}{4}$ of his lawn on Saturday night. Write an inequality for the fraction of the lawn that Harold will mow on Sunday.

NAME _____ DATE _____ PERIOD _____

8-7 Word Problem Practice

Solving Inequalities by Adding or Subtracting

1. DRIVING Michael is driving from Lakeview to Dodge City, a distance of more than 250 miles. After driving 60 miles, Michael stops for gas. Write and solve an inequality to find how much farther Michael has to drive to reach Dodge City.	**2. ENTERTAINMENT** David and Marsha are going to dinner and a movie this evening. David wants to have at least $70 cash in his wallet. He currently has $10. Write and solve an inequality to find how much cash David should withdraw from the bank.
3. CLUBS The charter for the Spartan Club limits the membership to 85. Currently, the club has 47 members. Write and solve an inequality to find how many more members can be recruited.	**4. GROWTH** Akira hopes that he will someday be more than 71 inches tall. He is currently 63 inches tall. Write and solve an inequality to find how much more Akira must grow to fulfill his wish.
5. MUSIC Jamie is preparing to burn a music CD. The CD holds at most 70 minutes of music. Jamie has 52 minutes of music already selected. Write and solve an inequality to find how many more minutes of music Jamie can select.	**6. TELEVISION** Dario limits his TV watching to no more than 11 hours a week. This week, he has already watched 6 hours of TV. Write and solve an inequality to find how much more time Dario can spend watching TV this week.
7. CARS At the gas station, Elena bought a quart of oil for $1.50, and she filled her car with gas. Her total was less than $20. Write and solve an inequality to find how much she spent on gas.	**8. HOMEWORK** Peter must write an essay with more than 500 words for his English class. So far, he has written 245 words. Write and solve an inequality to find how many more words Peter needs to write for his essay.

NAME _____ DATE _____ PERIOD _____

8-8 Word Problem Practice

Solving Inequalities by Multiplying or Dividing

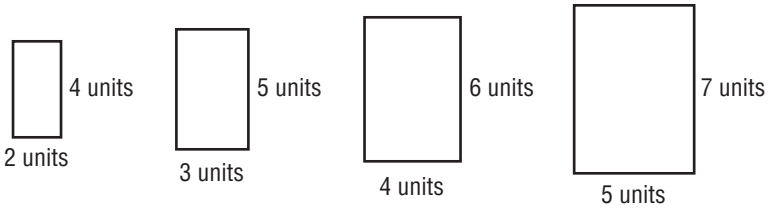
1. PLANTS Monroe needs more than 45 cubic feet of soil to fill the planter he built. Each bag of soil contains 2.5 cubic feet. Write and solve an inequality to find how many bags of soil Monroe will need.	**2. ART** Lois is making a rectangular collage. The area of the rectangle is 255 square inches, and the area of each photo is 15 square inches. She will overlap the photos so the total area of the photos is more than 255 square inches. Write and solve an inequality to find how many photos Lois will need.
3. CAR WASH Jason's class is having a car wash to raise money for a project. They want to raise at least \$120, and they are charging \$5 to wash a car. Write and solve an inequality to find how many cars must be washed to raise \$120.	**4. PETS** Kendra wants to buy some goldfish for her fish tank. She can spend no more than \$18, and the fish cost \$3 each. Write and solve an inequality to find how many goldfish Kendra can buy.
5. PIZZA Trent and three of his friends are ordering a pizza. They plan to split the cost, and they want to spend at most \$3.50 per person. Write and solve an inequality to find the cost of the pizza they should order.	**6. GEOMETRY** You are asked to draw a rectangle with a length of 6 inches and an area less than 30 square inches. Write and solve an inequality to find the width of the rectangle.
7. CONSTRUCTION Melinda wants to have a picture window in the shape of a regular hexagon in her new home. She wants the perimeter of the hexagon to be at least 9 feet. Write and solve an inequality to find the length of each side of the hexagon.	**8. COOKING** Len wants to make several batches of cookies. He is starting with less than 2 cups of raisins, and each batch takes $\frac{1}{3}$ of a cup. Write and solve an inequality to find how many batches of cookies Len can make.

NAME _____ DATE _____ PERIOD _____

9-1 Word Problem Practice

Sequences

GEOMETRY For Exercises 1 and 2, use the sequence of rectangles below.



1. Write a sequence for the perimeters of the rectangles. Is the sequence arithmetic? Explain how you know. If it is, state the common difference or common ratio and find the next four terms of the sequence.

2. Write a sequence for the areas of the rectangles. Is the sequence arithmetic? If it is, state the common difference. Explain how to find the next four terms of the sequence. Then find the next four terms.

3. PIZZA A large pizza at Joe's Pizza Shack costs $7 plus $0.80 per topping. Write a sequence of pizza prices consisting of pizzas with no toppings, pizzas with one topping, pizzas with two toppings, and pizzas with three toppings. Is the sequence arithmetic? How do you know?

4. SAVINGS The ending balances in Carissa's savings account for each of the past four years form the sequence $1,000, $1,100, $1,200, $1,300, ... Is the sequence arithmetic? Explain how you know. Find the next two terms of the sequence.

5. PAYMENT PLAN A family purchased furniture on an interest-free payment plan with a fixed monthly payment. Their balances after each of the first four payments were $1,925, $1,750, $1,575, and $1,400. Is the sequence of the balances arithmetic? Explain how you know. If it is, state the common difference.

6. MONEY Continue to find the terms of the sequence of balances in Exercise 5 until you get a term of 0. After how many payments will the balance be $0?

NAME _____ DATE _____ PERIOD _____

9-2 Word Problem Practice

Functions

1. JOBS Strom works as a valet at the Westside Mall. He makes $48 per day plus $1 for each car that he parks. The total amount that Strom earns in one day can be found using the function $f(x) = x + 48$, where x represents the number of cars that Strom parked. Make a function table to show the total amount that Strom makes in one day if he parks 25 cars, 30 cars, 35 cars, and 40 cars.	**2. PLUMBING** Rico's Plumbing Service charges $40 for a service call plus $30 per hour for labor. The total charge can be found using the function $f(x) = 30x + 40$, where x represents the number of hours of labor. Make a function table to show the total amount that Rico's Plumbing Service charges if a job takes 1 hour, 2 hours, 3 hours, and 4 hours.
3. GEOMETRY The perimeter of an equilateral triangle equals 3 times the length of one side. Write a function using two variables for this situation.	**4. GEOMETRY** Explain how to use the function that you wrote in Exercise 3 to find the perimeter of an equilateral triangle with sides 18 inches long. Then find the perimeter.
5. LIBRARY FINES The amount that Sunrise Library charges for an overdue book is $0.25 per day plus a $1 service charge. Write a function using two variables for this situation.	**6. LIBRARY FINES** Explain how to find the amount of the fine the library in Exercise 5 will charge for a book that is overdue by 12 days. Then find the amount.

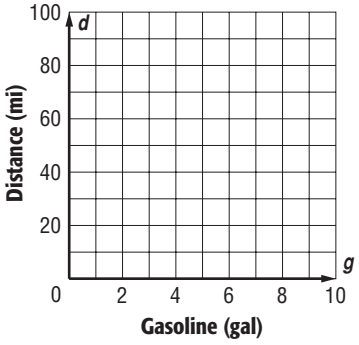
NAME _____ DATE _____ PERIOD _____

9-3 Word Problem Practice

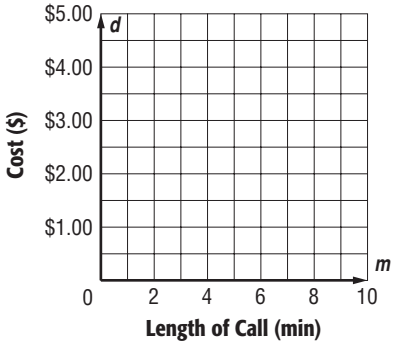
Representing Linear Functions

Lesson 9-3

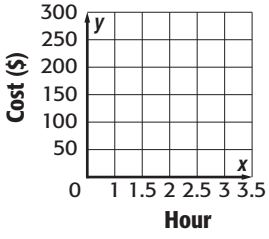
1. FUEL CONSUMPTION The function $d = 18g$ describes the distance d that Rick can drive his truck on g gallons of gasoline. Graph this function. Why is it sufficient to graph this function in the upper right quadrant only. How far can Rick drive on 2.5 gallons of gasoline?



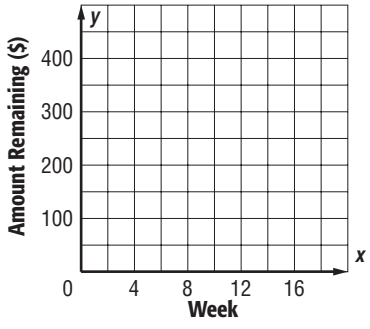
2. HOTELS The function $c = 0.5m + 1$ describes the cost c in dollars of a phone call that lasts m minutes made from a room at the Shady Tree Hotel. Graph the function. Use the graph to determine how much a 7-minute call will cost.



3. A computer store charges \$45 for materials and \$50 an hour for service to install two new programs and an e-mail connection. The cost $C(h)$ is a function of the number of hours h it takes to do the job. Graph the function. $C(h) = 45 + 50h$. How much will a 3-hour installation cost?

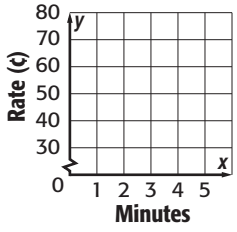


4. GIFTS Jonah received \$300 in cash gifts for his fourteenth birthday. The function $y = 300 - 25x$ describes the amount y remaining after x weeks if Jonah spends \$25 each week. Graph the function and determine the amount remaining after 9 weeks.



5. GIFTS Explain how you can use your graph in Exercise 4 to determine during which week the amount remaining will fall below \$190. Then find the week.

6. Ron got a cell phone rate of $C(a) = 0.22 + 0.10a$. Graph the costs per minute. How much will a five-minute call cost?

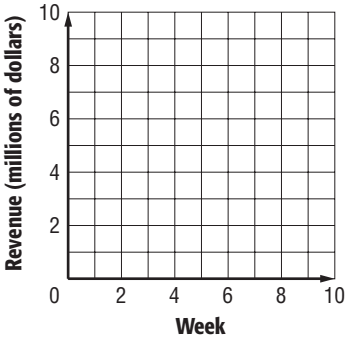


NAME _____ DATE _____ PERIOD _____

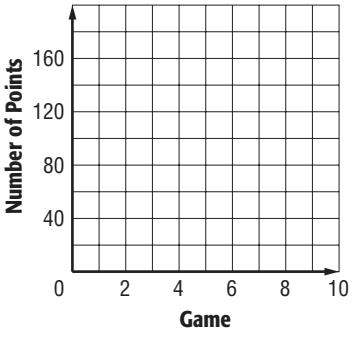
9-4 Word Problem Practice

Slope

1. **MOVIES** By the end of its first week, a movie had grossed \$2.3 million. By the end of its sixth week, it had grossed \$6.8 million. Graph the data with the week on the horizontal axis and the revenue on the vertical axis, and draw a line through the points. Then find and interpret the slope of the line.

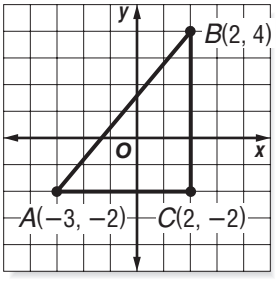


2. **BASKETBALL** After Game 1, Felicia had scored 14 points. After Game 5, she had scored a total of 82 points for the season. After Game 10, she had scored 129 points. Graph the data with the game number on the horizontal axis and the number of points on the vertical axis. Connect the points using two different line segments.



3. **BASKETBALL** Find the slope of each line segment in your graph from Exercise 2 and interpret it. Which part of the graph shows the greater rate of change? Explain.

4. **GEOMETRY** The figure shows triangle ABC plotted on a coordinate system. Explain how to find the slope of the line through points A and B. Then find the slope.



5. Use the figure in Exercise 4. What is the slope of the line through points A and C? How do you know?

6. Use the figure in Exercise 4. What is the slope of the line through points B and C? How do you know?

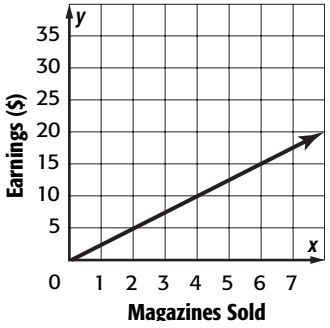
NAME _____ DATE _____ PERIOD _____

9-5 Word Problem Practice

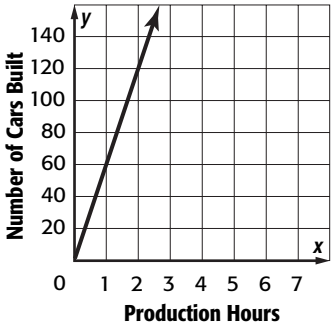
Direct Variation

For Exercises 1–6, describe a model that can be used to simulate the given situation.

1. JOBS The amount Candice earns is directly proportional to the number of magazines she sells. How much does Candice earn for each magazine sale?



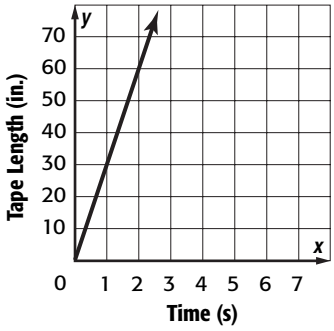
2. MANUFACTURING The number of cars built varies directly as the number of hours the production line operates. What is the ratio of cars built to hours of production?



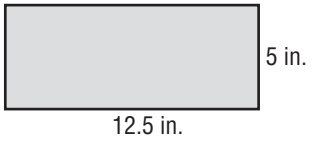
3. DRIVING A car drives 283.5 miles in 4.5 hours. Assuming that the distance traveled is directly proportional to the time traveled, how far will the car travel in 7 hours?

4. MEASUREMENT The number of kilograms that an object weighs varies directly as does the number of pounds. If an object that weighs 45 kilograms weighs about 100 pounds, how many kilograms is an object that weighs 70 pounds?

5. RECORDING The amount of tape that passes through a recording machine varies directly with the amount of time that passes. Determine the speed at which the tape moves.



6. GEOMETRY The width of a rectangle varies directly as its length. What is the area of a rectangle that is 15 feet long?



Lesson 9-5

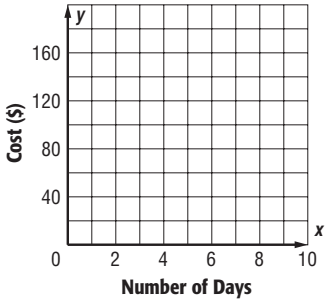
NAME _____ DATE _____ PERIOD _____

9-6 Word Problem Practice

Slope-Intercept Form

CAR RENTAL For Exercises 1 and 2, use the following information.
Ace Car Rentals charges $20 per day plus a $10 service charge to rent one of its compact cars. The total cost can be represented by the equation $y = 20x + 10$, where x is the number of days and y is the total cost.

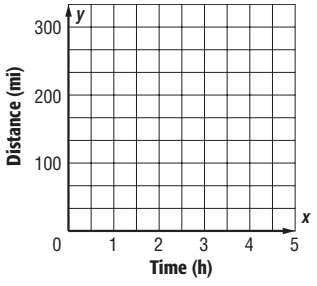
1. Graph the equation. What do the slope and y-intercept represent?



2. Explain how to use your graph to find the total cost of renting a compact car for 7 days. Then find this cost.

TRAVEL For Exercises 3 and 4, use the following information.
Thomas is driving from Oak Ridge to Lakeview, a distance of 300 miles. He drives at a constant 60 miles per hour. The equation for the distance yet to go is $y = 300 - 60x$, where x is the number of hours since he left.

3. What is the slope and y-intercept? Explain how to use the slope and y-intercept to graph the equation. Then graph the equation.



4. What is the x-intercept? What does it represent?

5. WEATHER The equation $y = 0.2x + 3.5$ can be used to find the amount of accumulated snow y in inches x hours after 5 P.M. on a certain day. Identify the slope and y-intercept of the graph of the equation and explain what each represents.

6. SALARY Janette's weekly salary can be represented by the equation $y = 500 + 0.4x$, where x is the dollar total of her sales for the week. Identify the slope and y-intercept of the graph of the equation and explain what each represents.

NAME _____ DATE _____ PERIOD _____

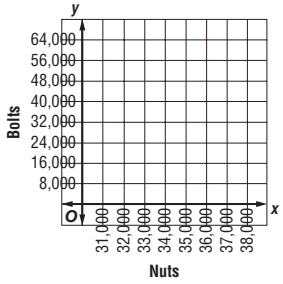
9-7 Word Problem Practice

Systems of Equations

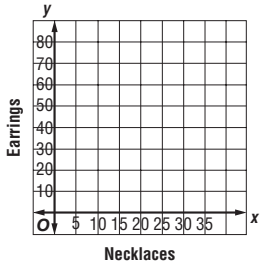
Write and solve a system of equations to represent each situation.

1. PROFIT Mr. Blackwell's company produces nuts and bolts. The total monthly profit for his company was \$76,378. The profit earned from nuts was \$3,428 more than the profit earned from bolts.

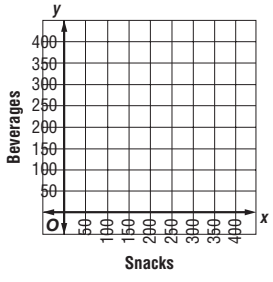
\$36,475 and \$39,903



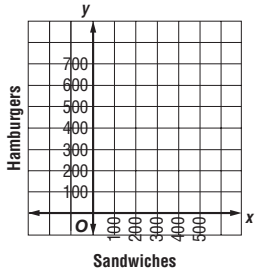
2. JEWELRY Julie has 81 pieces of jewelry. She has twice as many earrings as she has necklaces.



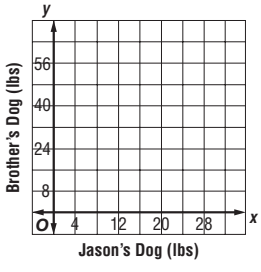
3. REFRESHMENTS The seventh grade class supplied bags of snacks and beverages for the school dance. They supplied 19 more beverages than bags of snacks. The dance was supplied with a total of 371 items.



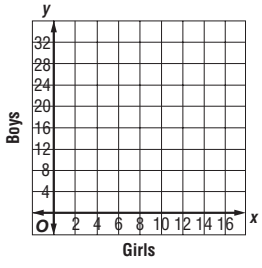
4. SANDWICHES The hamburger shop sells 500 sandwiches each day. They sell 100 more hamburgers than they do chicken sandwiches.



5. DOGS Jason's dog weighs 10 pounds less than twice his brother's dog. The dogs' combined weight is 50 pounds.



6. STUDENTS There are 26 students in Mrs. Ortlieb's class. There are two more boys than girls.



Lesson 9-7

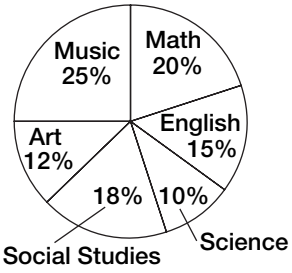
NAME _____ DATE _____ PERIOD _____

9-8 Word Problem Practice

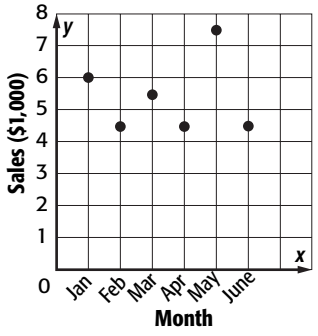
Problem-Solving Investigation: Use a Graph

For Exercises 1–6, use a graph to solve.

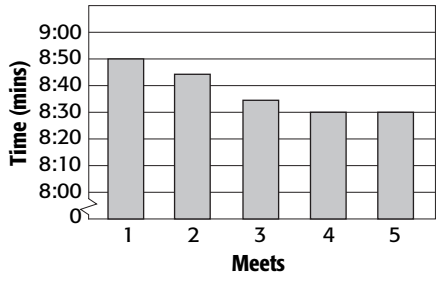
1. SURVEY A group of students were asked to name their favorite subject in school. The circle graph shows the results of the survey. If 45 students choose math as their favorite subject, how many students were surveyed?



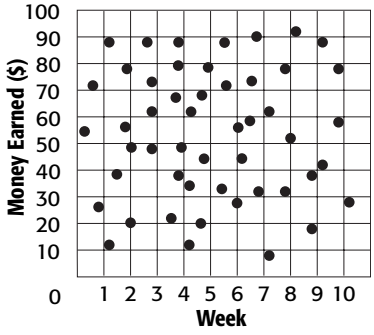
2. SALES The graph shows the monthly sales of George's Comic Book Shop. Between which two months did sales decrease the most?



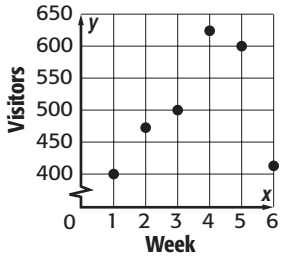
3. EXERCISING Mark runs the mile race at every track meet. The graph shows his times, in minutes, for each meet. Did Mark's time improve each time that he ran the mile race?



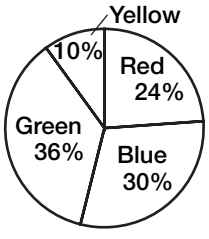
4. JOBS Jerry and four friends mow lawns during summer vacation to earn money. The graph shows how much each earned during each week of vacation. Is there any relationship between the amount that the friends earn each week and the number of the week?



5. ART EXHIBIT The graph shows the number of weekly visitors at an art exhibit. How many more people visited the art exhibit during the week with the most visitors than the week with the least visitors?



6. SURVEY A group of students were asked to name their favorite color out of four colors. The circle graph shows the results of the survey. If 150 students choose blue as their favorite color, how many students chose green?



NAME _____ DATE _____ PERIOD _____

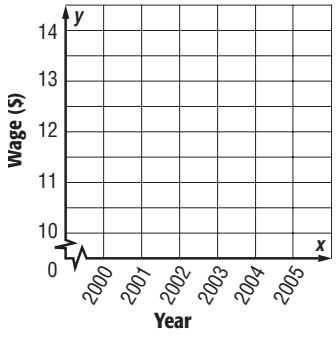
9-9 Word Problem Practice

Scatter Plots

WAGES For Exercises 1 and 2, use the table at the right.

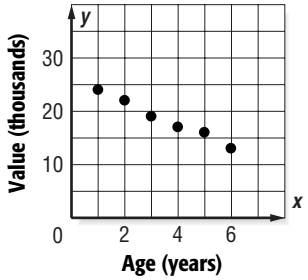
Year	Average Hourly Wage
2000	$11.28
2001	$11.78
2002	$12.24
2003	$12.75
2004	$12.83
2005	$13.05

1. Explain how to draw a scatter plot for the data. Then draw one.



2. Does the scatter plot show a *positive*, *negative*, or *no* relationship? Explain.

RESALE VALUE For Exercises 3–6, use the scatter plot at the right. It shows the resale value of 6 SUVs plotted against the age of the vehicle.



3. Does the scatter plot show a *positive*, *negative*, or *no* relationship? Explain what this means in terms of the resale value of a SUV.

4. The equation $y = -2{,}000x + 25{,}000$ is an equation of a line of fit for the data. Explain what a line of fit is.

5. Find the slope and y-intercept of the line of fit and explain what each represents.

6. Explain how to use the equation in Exercise 4 to estimate the resale value of an 8-year-old SUV. Find the value.

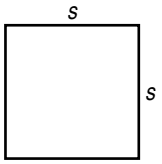
NAME _____ DATE _____ PERIOD _____

10-1 Word Problem Practice

Linear and Nonlinear Functions

GEOMETRY For Exercises 1 and 2, use the following information.

Recall that the perimeter of a square is equal to 4 times the length of one of its sides, and the area of a square is equal to the square of one of its sides.



1. Write a function for the perimeter of the square. Is the perimeter of a square a linear or nonlinear function of the length of one of its sides? Explain.

2. Write a function for the area of the square. Is the area of a square a linear or nonlinear function of the length of one of its sides? Explain.

3. BUSINESS The Devon Tool Company uses the equation $p = 150t$ to calculate the gross profit p the company makes, in dollars, when it sells t tools. Is the gross profit a linear or nonlinear function of the number of tools sold? Explain.

4. GRAVITY A camera is accidentally dropped from a balloon at a height of 300 feet. The height of the camera after falling for t seconds is given by $h = 300 - 16t^2$. Is the height of the camera a linear or nonlinear function of the time it takes to fall? Explain.

5. LONG DISTANCE The table shows the charge for a long distance call as a function of the number of minutes the call lasts. Is the charge a linear or nonlinear function of the number of minutes? Explain.

Minutes	1	2	3	4
Cost (cents)	5	10	15	20

6. DRIVING The table shows the cost of a speeding ticket as a function of the speed of the car. Is the cost a linear or nonlinear function of the car's speed? Explain.

Speed (mph)	70	80	90	100
Cost (dollars)	25	50	150	300

NAME _____ DATE _____ PERIOD _____

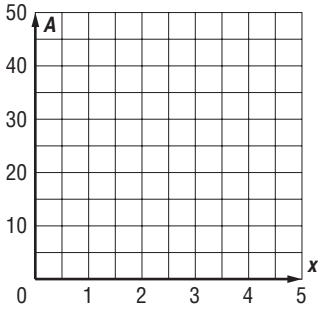
10-2 Word Problem Practice

Graphing Quadratic Functions

GEOMETRY For Exercises 1–3, use the following information.

The quadratic equation $A = 6x^2$ models the area of a triangle with base $3x$ and height $4x$.

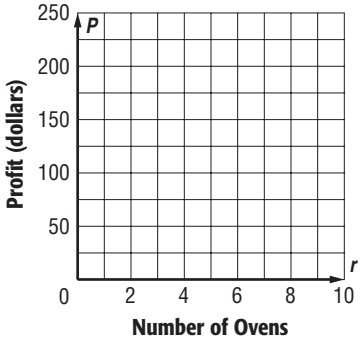
1. Graph the equation. Explain why you only need to graph the function in the upper right quadrant.



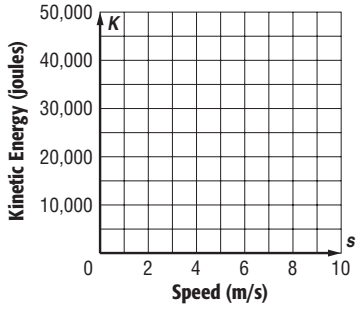
2. Explain how to find the area of the triangle when $x = 3$ inches. Then find the area.

3. Explain how to use your graph to determine the value of x when the area is 24 square inches. Then find the base and height of the triangle when its area is 24 square inches.

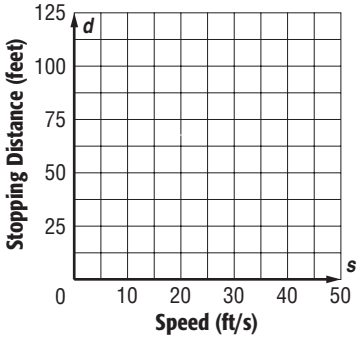
4. BUSINESS The quadratic equation $p = 50 + 2r^2$ models the gross profit made by a factory that produces r ovens. Graph the equation.



5. PHYSICS The quadratic equation $K = 500s^2$ models the kinetic energy in joules of a 1,000-kilogram car moving at speed s meters per second. Graph the equation.



6. CARS The quadratic equation $d = \frac{s^2}{20}$ models the stopping distance in feet of a car moving at a speed s feet per second. Graph the equation.



Lesson 10-2

NAME _____ DATE _____ PERIOD _____

10-3 Word Problem Practice

Problem-Solving Investigation: Make a Model

Make a model to solve each problem.

SHIPPING COCOA For Exercises 1 and 2, use the information at the right. This table gives information about cocoa tins that a distributor needs to box up and ship to various stores around the country.

Sure-Safe Cocoa Tins	
dimensions	diameter: 4”, height: 8”
quantity to be shipped	153 tins
dimensions of large shipping boxes	18” × 18” × 24” high

1. How many large shipping boxes can be filled with cocoa tins? How many cocoa tins will be left over?

2. What are the dimensions of the smallest box that could be used to ship the remaining cocoa tins?

3. GAMES A hollow tower is built of 1-inch cubes with dimensions of 4 inches wide by 4 inches long by 15 inches high. How many 1-inch cubes would it take to fill the tower?

4. STAMPS Angie wants to display her stamp collection on a poster. Each stamp is a 1-inch square. She wants to arrange the stamps in a 24 by 48 array with one-half inch between each stamp and leave a 2-inch border around the outer edges of the array. What should the length and width of the poster board be?

5. TILING A wooden box is to be covered with 1-inch square tiles. The dimensions of the box are 10 inches by 6 inches by 4 inches. There is an opening in the top of the box that measures 8 inches by 4 inches. How many 1-inch tiles are needed to cover the sides and the top of the box?

6. PICTURE DISPLAY Julia is arranging pictures of her mother, her father, her brother, and herself on a shelf. If she wants to keep the pictures of her parents next to each other, how many different ways can she arrange the four pictures?

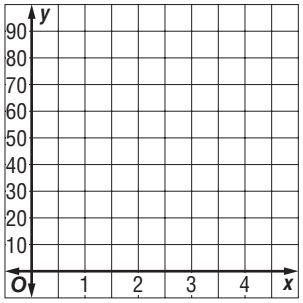
NAME _____ DATE _____ PERIOD _____

10-4 Word Problem Practice

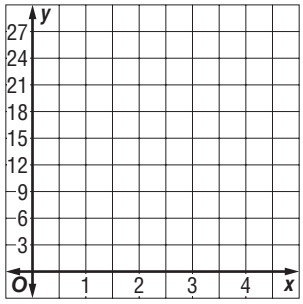
Graphing Cubic Functions

Graph each function.

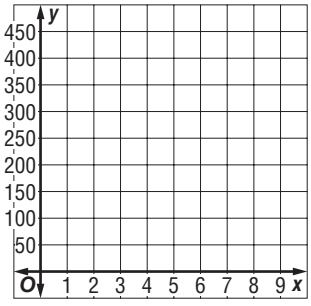
1. MEASUREMENT A rectangular prism with a square base of side length x inches has a height of $(x + 2)$ centimeters. Write the function for the volume V of the prism. Graph the function. Then estimate the dimensions of the box that would give a volume of approximately 96 cubic centimeters.



2. MEASUREMENT A pyramid with a square base of side length x inches has a height of $(x + 4)$ inches. Write the function for the volume V of the pyramid. Graph the function. Then estimate the length of one side of the square base of the pyramid if the volume is approximately 21 cubic inches.



3. MEASUREMENT The formula for the volume V of a baseball is given by the equation $V = \frac{4}{3}\pi r^3$ where r represents the radius of the ball. Graph this function. Use 3.14 for π. Then estimate the length of the radius if the volume of the basketball is approximately 463 cubic inches.



4. MEASUREMENT Explain why only quadrant I is used when creating a table or graph involving volume.

NAME _____ DATE _____ PERIOD _____

10-5 Word Problem Practice

Multiplying Monomials

1. MONEY The number 10,000 is equal to 10^4. There are 100 or 10^2 pennies in each dollar. How many pennies are there in \$10,000? Write the answer using exponents.

2. RABBITS Randall has 2^3 pairs of rabbits on his farm. Each pair of rabbits can be expected to produce 2^5 baby rabbits in a year. How many baby rabbits will there be on Randall's farm each year? Write the answer using exponents.

3. GEOMETRY Express the area of a square with sides of length $5ab$ as a monomial.

4. BOOKS A publisher sells 1,000,000 or 10^6 copies of a new book. Each book has 100 or 10^2 pages. How many pages total are there in all of the books sold? Write the answer using exponents.

5. GEOMETRY Find the area of the rectangle in the figure.

6. CATERING A gourmet meal catering company is planning an event for 3^4 people. One week before the event, they find out that the number of people has tripled. Will there be 3^5 or 3^8 people at the event? Explain.

NAME _____ DATE _____ PERIOD _____

10-6 Word Problem Practice

Dividing Monomials

1. SOUND Decibels are units to measure sound. The softest sound that can be heard is rated at 0 decibels (or a relative loudness of 1). Ordinary conversation is rated at about 60 decibels (or a relative loudness of 10^6). Thunder is rated at about 120 decibels (or a relative loudness of 10^{12}). How many times greater is the relative loudness of thunder than the relative loudness of ordinary conversation?

2. FOLDING PAPER If you fold a sheet of paper in half, you have a thickness of 2 sheets. Folding again, you have a thickness of 4 sheets. If you fold the paper in half one more time, how many times thicker is a sheet that has been folded 3 times than a sheet that has not been folded?

3. DEBT The U.S. national debt is about 10^{13} dollars. If the debt was divided evenly among the roughly 10^8 adults, how much would each adult owe? Write the answer using exponents.

4. COMPUTERS The byte is the fundamental unit of computer processing; almost all aspects of a computer's performance and specifications are measured in bytes or multiples of bytes. The byte is based on powers of 2, as shown in the table. How many times greater is a gigabyte than a megabyte?

Memory Term	Number of Bytes
byte	2^0 or 1
kilobyte	2^{10}
megabyte	2^{20}
gigabyte	2^{30}

5. HOMEWORK Anthony and Julio are trying to simplify the expression $9^{-5} \div 9^3$. Their answers are different.

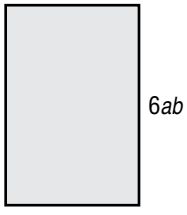
Anthony's work:

$$9^{-5} \div 9^3 = 9^{-5+3} = 9^{-2} = \frac{0}{9^2}$$

Julio's work: $9^{-5} \div 9^3 = 9^{-5-3} = 9^{-8} = \frac{1}{9^8}$

Which student is correct? Identify the mistake made by the other student.

6. GEOMETRY The area of the rectangle in the figure is $24ab^3$ square units. Find the width of the rectangle.



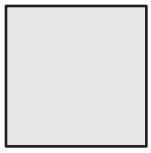
NAME _____ DATE _____ PERIOD _____

10-7 Word Problem Practice

Powers of Monomials

1. Jessica and Ramon are having an argument. Jessica thinks the answer to their math homework is $(4^2)^4$, but Ramon says the answer is $(4^4)^2$. Explain how both Jessica and Ramon can be correct.

2. Kate was given a square plot of land in which to build. If one side of the plot was $(3a)^3$ feet long, find the area of her plot when $a = 2$.



3. Jeanie loves candy and wants to know which amount would be more, a thousand pieces of candy or $(6^2)^3$ pieces of candy?

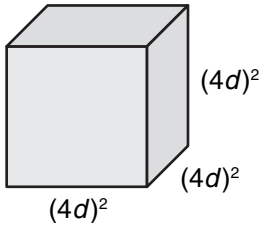
4. The teacher marked Jeff's problem wrong on his test.

$$(4^5)^4 = 4^9$$

Explain what he did wrong and give the correct answer.

5. Use the power of a power rule to write two different expressions that are equivalent to 5^{75}.

6. Find the volume of the following cube if $d = 4$ meters.



NAME _____ DATE _____ PERIOD _____

10-8 Word Problem Practice

Roots of Monomials

1. MEASUREMENT A square garden has an area of $64a^2b^4$ square units. What is the length of one side of the garden?

2. MEASUREMENT A water container that is shaped like a cube can hold up to $729m^3n^9$ cubic units of water. What is the length of one side of the water container?

3. MEASUREMENT The height of a cube is shown by the expression $\sqrt[3]{64x^{12}y^{21}}$. What is the height of the cube?

4. MEASUREMENT Express the length of one side of a square whose area is $1.44d^8e^{10}$ square units as a monomial.

5. MEASUREMENT The area of a square is $\frac{1}{4}g^{12}h^{14}$ square units. Express the length of one side of the square as a monomial.

6. MEASUREMENT Find the length of one side of a cube whose volume is $0.343j^{18}k^{24}$ cubic units.

Lesson 10-8

NAME _____ DATE _____ PERIOD _____

11-1 Word Problem Practice

Problem-Solving Investigation: Make a Table

Make a table to solve each problem.

SURVEY For Exercises 1 and 2, use the information in the box. It shows the results of a survey that asked consumers how many hours of television they watched, on average, each week.

12	0	11	8	5	20	32	2	5	10	12	24	7	5	3	15	18	3
0	32	12	22	3	9	16	1	8	20	4	7	10	12	11	30	6	14

1. Organize the data in a table using intervals 0-10, 11-20, 21-30, and more than 30. What is the most common interval of hours of television watched?

2. About what percent of the consumers surveyed watch 10 hours or less of television in a week?

3. SPORTS The number of runs scored per game by a baseball team are shown below. What is most frequent number of runs scored?

3, 3, 5, 7, 8, 7, 0, 1, 7, 6, 1, 1, 3, 4, 3, 5, 6, 6, 3, 3, 5, 1, 2, 0, 3, 2, 8, 7, 3, 0, 3, 4, 3, 5, 3, 2, 1

4. SLEEP SURVEY Thirty ninth graders were asked how many hours of sleep they got the night before. The results of the survey are shown below. What is the most common amount of sleep students got?

6, 8, 7, 8, 9, 6, 10, 8, 7, 8, 9, 9, 8, 6, 10, 8, 9, 7, 9, 8, 9, 6, 11, 7, 8, 9, 9, 7, 9, 10, 9, 7

5. DISTANCES The distances that students live from school are shown below. Organize the data in a table using intervals less than 1 mile, 1–3.9 miles, 4–6.9 miles, 7 miles or more. What is the most common interval of distance from school?

$\frac{1}{2}$, $2\frac{1}{2}$, 4, 3, 2, 1, $1\frac{1}{2}$, 2, 3, $5\frac{1}{2}$, 7, 6, 5, $2\frac{1}{4}$,

1, 2, 1, 3, $4\frac{1}{2}$, $\frac{1}{2}$, $\frac{1}{4}$, $6\frac{1}{2}$, $2\frac{1}{2}$, $3\frac{1}{2}$, 4, $2\frac{1}{4}$, 1

6. TEST SCORES The scores on a recent math test are shown below. Organize the data in a table using intervals less than 70, 70–79, 80–89, 90–100. What is the most common score interval?

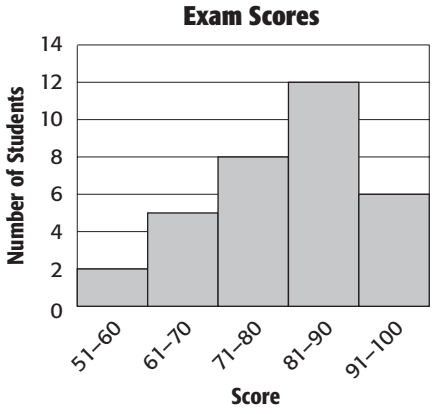
47, 71, 75, 70, 59, 78, 88, 82, 89, 92, 99, 78, 88, 82, 92, 70, 85, 80, 90, 100

NAME _____ DATE _____ PERIOD _____

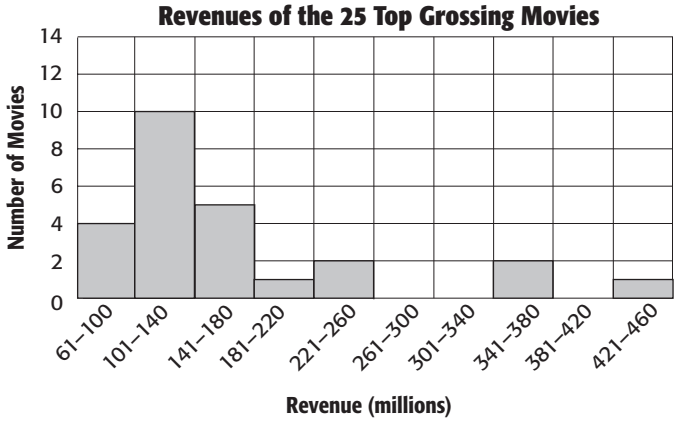
11-2 Word Problem Practice

Histograms

EXAMS For Exercises 1–3, use the histogram below that shows data about scores on a history test.



MOVIES For Exercises 4–6, use the histogram below that shows data about movie revenues in a recent year.



1. How many students scored at least 81 on the test? Explain how you found your answer.	**2.** How many students scored less than 81 on the exam? Explain how you found your answer.
3. Can you determine the highest grade from the histogram? Explain.	**4.** How many movies grossed at least \$141 million? Explain how you found your answer.
5. How many movies grossed between \$61 million and \$180 million? Explain how you found your answer.	**6.** Can you determine how many movies grossed between \$121 and \$140 million from the histogram? Explain.

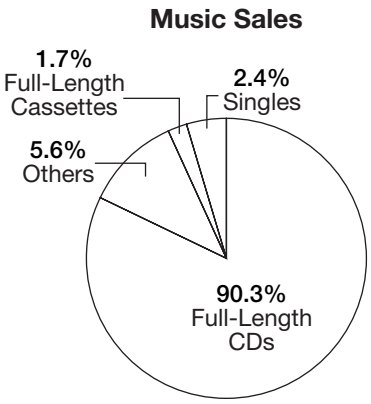
Lesson 11-2

NAME _____ DATE _____ PERIOD _____

11-3 Word Problem Practice

Circle Graphs

MUSIC For Exercises 1 and 2, use the circle graph below that shows data about music sales.



INVESTMENTS For Exercises 3–6, use the table below that shows how Mr. Broussard has invested his money.

Investments	
Savings Account	$60,000
Money Market Account	$100,000
Mutual Funds	$140,000
Stocks	$500,000
Bonds	$200,000

1. What angle corresponds to the sector labeled "Others" in the circle graph? Explain how you found your answer.

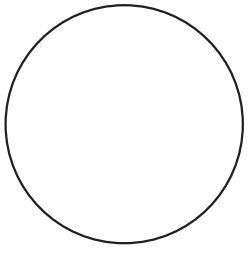
2. Use the circle graph to describe music sales.

3. Explain how a circle graph could help you visualize the data in the table.

4. Determine the percent of Mr. Broussard's total investments that each type of investment represents.

5. Draw a circle graph to represent the data.

Mr. Broussard's Investments



6. Use the circle graph you made in Exercise 5 to describe Mr. Broussard's investments.

NAME _____ DATE _____ PERIOD _____

11-4 Word Problem Practice

Measures of Central Tendency and Range

ANIMALS For Exercises 1–4, use the information in the table below that shows the lifespan of selected mammals. Round to the nearest tenth if necessary.

Average Lifespan for Mammals	
Mammal	**Average Lifespan**
Baboon	20 yr
Camel	12 yr
Chimpanzee	20 yr
Cow	15 yr
Goat	8 yr
Gorilla	20 yr
Moose	12 yr
Pig	10 yr

FOOTBALL For Exercises 5 and 6, use the information in the table below. Round to the nearest tenth if necessary.

2006 NFL Season, Games Won	
Team	**Games Won**
Atlanta	7
Carolina	8
Denver	9
Kansas City	9
New Orleans	10
Oakland	2
St. Louis	8
San Diego	14
San Francisco	7
Seattle	9

1. Explain how to find the mean of the lifespans listed in the table. Then find the mean.

2. Explain how to find the median of the set of data. Then find the median.

3. Explain how to find the mode of the set of data. Then find the mode.

4. Which measure of central tendency is most representative of the data? Explain.

5. What are the mean, median, mode, and range of the number of games won by the teams in the table?

6. Which measure of central tendency is most representative of the data? Explain.

NAME _____ DATE _____ PERIOD _____

11-5 Word Problem Practice

Measures of Variation

FOOTBALL For Exercises 1–4, use the table below that shows the winning scores in the Super Bowl from 1995 through 2006.

Winning Super Bowl Scores, 1995–2006											
1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
49	27	35	31	34	23	34	20	48	32	24	21

1. Explain how to find the range of the data. Then find the range.

2. Find the median, the upper and lower quartiles, and the interquartile range of the winning scores.

3. Describe how to find the limits for outliers. Then find the limits.

4. Are there any outliers among the winning Super Bowl scores? If so, what are they? Explain your reasoning.

GRADES For Exercises 5 and 6, use the table at the right showing the scores on the midterm exam in English.

84	86	77	97	88
89	94	89	81	90
80	75	91	83	85

5. Find the range, median, upper and lower quartiles, and the interquartile range of the exam scores.

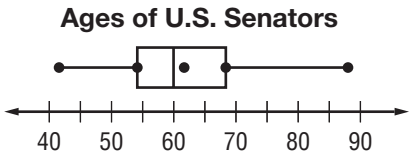
6. Are there any outliers in this data? Explain your reasoning.

NAME _____ DATE _____ PERIOD _____

11-6 Word Problem Practice

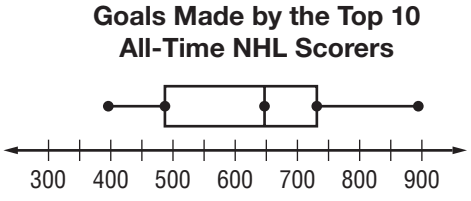
Box-and-Whisker Plots

U.S. SENATE For Exercises 1–4, use the box-and-whisker plot at the right.



1. Explain how to determine from the box-and-whisker plot whether there are any outliers in the data. Then identify any outliers.	**2.** Describe the distribution of the data. What can you say about the ages of U.S. senators?
3. What percent of U.S. senators are at least 54 years old? Explain how you found your answer.	**4.** Can you determine from the box-and-whisker plot whether there are any U.S. Senators exactly 65 years old? Explain.

HOCKEY For Exercises 5 and 6, use the box-and-whisker plot at the right.



5. Identify any outliers in the data.	**6.** Describe the distribution of the data. What can you say about the number of goals made by the top 10 all-time leading NHL scorers?

NAME _____ DATE _____ PERIOD _____

11-7 Word Problem Practice

Stem-and-Leaf Plots

1. CUSTOMER SERVICE A restaurant owner recorded the average time in minutes customers waited to be seated each night. His data are shown in the table below. To organize the data into a stem-and-leaf plot, how many stems would you need?

Week 1	15	8	10	5	20	35	45
Week 2	9	3	7	8	25	38	43

2. PHONE Allison's mother makes a stem-and-leaf plot to track the time in minutes that Allison spends talking on the phone each night. In which interval are most of the Allison's calls?

Stem	Leaf
1	0 5
2	3 4 5 8 9
3	0 5 8
4	1 3 5

1|5 =15 minutes

3. ELECTRIC BILLS Jenny's family is selling their house. Jenny's mother wants to put together a table of monthly electricity costs. Below is a list of their electric bills for the past twelve months. Organize the data in a stem-and-leaf plot. In which interval are most of the electric bills?

$95, $99, $85, $79, $82, $88,

$98, $95, $94, $87, $89, $90

4. TEST SCORES The scores from the most recent test in Mr. James' biology class are shown in the stem-and-leaf plot below. Find the highest and lowest scores, and then write a statement that describes the data.

Stem	Leaf
5	4 5
6	3 7 8
7	0 1 5 5 8 9
8	0 2 3 7 9
9	0 3 5 8 8

5|4 =54%

SPORTS For Exercises 5–7, use the following information.

Tamara and LaDawn have recorded their times in seconds in the 100-meter dash from the past six track meets in the table below.

LaDawn	16.5	16.6	17.0	16.8	17.2	17.1
Tamara	16.7	16.4	16.1	17.0	16.5	16.8

5. Organize the times in a back-to-back stem-and-leaf plot.

6. What are the median times for LaDawn and for Tamara?

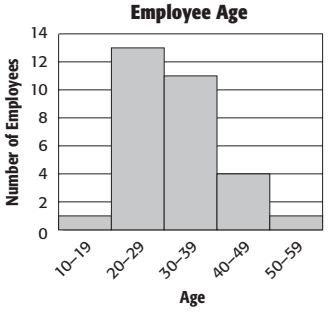
7. If you were the coach, who would you choose to represent the team at the next competition? Explain.

NAME _____ DATE _____ PERIOD _____

11-8 Word Problem Practice

Select an Appropriate Display

AGE For Exercises 1–4, use the following information. Cosmic, Inc. is a software company with 30 employees. The ages of the employees are displayed below using both a histogram and a stem-and-leaf plot.



Stem	Leaf
1	9
2	1 2 2 4 4 4 4 5 5 6 6 8 9
3	0 0 0 1 2 3 3 7 8 8 9
4	2 5 7 7
5	3

1|9 = 19

1. Can you tell from the stem-and-leaf plot how many employees are between the ages of 20 and 29? If so, how many are there? If not, explain your reasoning.

2. Can you tell from the histogram how many employees are between the ages of 30 and 39? If so, how many are there? If not, explain your reasoning.

3. Can you tell from the stem-and-leaf plot how many employees are between the ages of 36 and 43? If so, how many are there? If not, explain your reasoning.

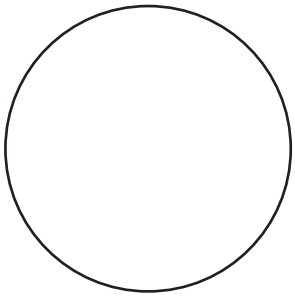
4. Can you tell from the histogram how many employees are between the ages of 36 and 43? If so, how many are there? If not, explain your reasoning.

5. CARS What percent of cars sold were small, medium or large? Explain how you found your answer.

Type/Size of Cars Sold in the U.S.			
Type/Size	**Percent**	**Type/Size**	**Percent**
Small	37%	Large	13%
Medium	33%	Premium	17%

6. CARS Construct a circle graph using the data in the table in question 5. What benefit does the circle graph have?

Type/Size of Cars Sold in the U.S.



Lesson 11-8

NAME _____ DATE _____ PERIOD _____

12-1 Word Problem Practice

Counting Outcomes

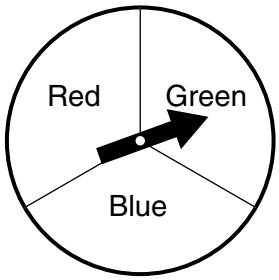
1. RESTAURANT An Italian restaurant offers mozzarella cheese, swiss cheese, sausage, ham, onions, and mushrooms for pizza toppings. For this week's special, you must choose one cheese, one meat, and one vegetable topping. On a separate sheet of paper, draw a tree diagram to find the number of possible outcomes.

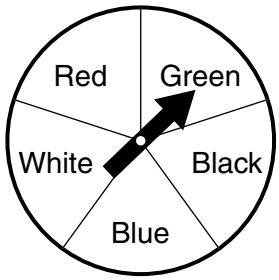
2. TOYS Audra has a black and a white teddy bear. Cindy has a black, a white, a brown, and a pink teddy bear. Each girl picks a teddy bear at random to bring to a sleepover party. How many different combinations can the girls bring?

3. FOOD A smoothie company offers strawberry, banana, or peach smoothies with fruit, granola, or nuts added in. How many different smoothies can they make? Explain how you found your answer.

4. LOTTERY In a lottery game, balls numbered 0 to 9 are placed in each of four chambers of a drawing machine. One ball is drawn from each chamber. How many four-number combinations are possible?

GAMES Each of the spinners at the right is spun once to determine how a player's piece is moved in a board game.





5. Jason needs to spin a red and a blue to move to the last square and win the game. What is the probability that Jason will win? Explain how you found your answer.

6. If Jason spins a green or a white on either spinner, he will land on a "take an extra turn" square. What is the probability that Jason will get an extra turn?

NAME _____ DATE _____ PERIOD _____

12-2 Word Problem Practice

Probability of Compound Events

1. CHECKERS In a game of checkers, there are 12 red game pieces and 12 black game pieces. Julio is setting up the board to begin playing. What is the probability that the first two checkers he pulls from the box at random will be two red checkers?	**2. CHECKERS** What is the probability that the first two pieces are a red followed by a black? Explain how you found your answer.

CHESS For Exercises 3–5, use the following information.

Ingrid keeps her white and black chess pieces in separate bags. For each color, there are 8 pawns, 2 rooks, 2 bishops, 2 knights, 1 queen, and 1 king.

3. Are the events of drawing a knight from the bag of white pieces and drawing a pawn from the bag of black pieces *dependent* or *independent* events? Explain. Find the probability of this compound event.	**4.** Are the events of drawing a bishop from the bag of white pieces and then drawing the queen from the same bag *dependent* or *independent* events? Explain. Find the probability of this compound event.
5. Find the probability of drawing a pawn, a knight, and another pawn from the bag of white pieces.	**6. SOCCER** During a soccer season, Mario made approximately 2 goal points for every 5 of his shots on goal. What is the probability that Mario would make 2 goal points on two shots in a row during the season?

NAME _____ DATE _____ PERIOD _____

12-3 Word Problem Practice

Experimental and Theoretical Probability

ENTERTAINMENT For Exercises 1 and 2, use the results of a survey of 120 eighth-grade students shown at the right.

Video Game Playing Time Per Week	
Hours	**Number of Participants**
0	18
1–3	43
3–6	35
more than 6	24

1. Explain how to find the probability that a student plays video games more than 6 hours per week. Then find the probability.

2. Out of 400 students, how many would you expect to play video games more than 6 hours per week?

3. DINING Only 6 out of 100 Americans say they leave a tip of more than 20% for satisfactory service in a restaurant. Out of 1,500 restaurant customers, how many would you expect to leave a tip of more than 20%?

4. PLANTS Jason has a packet of tomato seeds left over from last year. He plants 36 of the seeds and only 8 sprout. What is the experimental probability that a tomato seed from this packet will sprout?

SPORTS For Exercises 5 and 6, use the results in the table at the right. In a survey, 102 people were asked to pick their favorite spectator sport.

Favorite Spectator Sport	
Sport	**Number**
professional football	42
professional baseball	27
professional basketball	21
college football	12

5. What is the probability that a person's favorite spectator sport is professional baseball? Is this an *experimental* or a *theoretical* probability? Explain.

6. Out of 10,000 people, how many would you expect to say that professional baseball is their favorite spectator sport? Round to the nearest person.

NAME _____ DATE _____ PERIOD _____

12-4 Word Problem Practice

Problem-Solving Investigation: Act It Out

For Exercises 1–6, use the act it out strategy to solve.

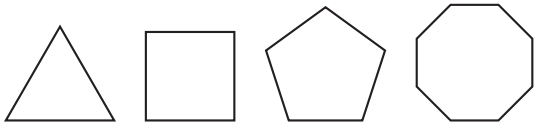
1. PHOTOGRAPHY Julie has six photos that she has taken framed and hanging in a row on the wall. If she wants to rearrange them so that the middle two photos stay in place, how many different ways can she arrange the photos?

2. TEAMS There are 5 players on a basketball team. If Melvin always plays in the point guard position, and Kevin always plays in the power forward position, how many different ways can the coach arrange Rick, Mark, and Joey in the center, small forward, and off-guard positions?

3. MONEY Elaine wants to buy an apple that costs \$0.55. How many different combinations of quarters, nickels, and dimes can be used to make \$0.55?

4. AGES Melissa is older than Susan, who is older than Meg, who is older than Julie, who is older than Vicky, who is older than Zoe. How many different ways can they stand in line so that the youngest person is always first, and the oldest person is always last?

5. GEOMETRY How many different sets of four different polygons can be made from 20 toothpicks by using all 20 with none left over? One set is shown below.



6. MONEY Brian wants to buy a muffin that costs \$0.80. How many different combinations of nickels and dimes can be used to make \$0.80?

Lesson 12-4

NAME _____ DATE _____ PERIOD _____

12-5 Word Problem Practice

Using Sampling to Predict

FUNDRAISING For Exercises 1 and 2, use the survey results in the table at the right. Members of the Drama Club plan to sell popcorn as a fundraiser for their Shakespeare production. They survey 75 students at random about their favorite flavors of popcorn.

Flavor	Number
butter	33
cheese	15
caramel	27

1. What percent of the students prefer caramel popcorn?

2. If the club orders 400 boxes of popcorn to sell, how many boxes of caramel popcorn should they order? Explain how you found your answer.

DINING OUT For Exercises 3 and 4, use the following information. As people leave a restaurant one evening, 20 people are surveyed at random. Eight people say they usually order dessert when they eat out.

3. What percent of those surveyed say they usually order dessert when they eat out?

4. If 130 people dine at the restaurant tomorrow, how many would you expect to order dessert?

RECREATION For Exercises 5 and 6, use the table at the right which shows the responses of 50 people who expect to purchase a bicycle next year.

Bicycle Type	Number
mountain	11
touring	8
comfort	9
juvenile	19
other	3

5. What percent of those planning to buy a bicycle next year think they will buy a mountain bike?

6. If Mike's Bike Shop plans to order 1,200 bicycles to sell next year, how many mountain bikes should be ordered?