Name: _____ Date: _____

CHAPTER 1

Whole Numbers

PROBLEM SOLVING

Thinking Skills

Solve.

1. A bag contains a yellow ball and a red ball.

a. Megan picked the yellow ball with a 4-digit number written on it. When she rounded the number to the nearest thousand, she got 7,000.

Write the least and greatest possible number that could be on the yellow ball.

Least possible number: _____

Greatest possible number: _____

b. Erik picked the red ball with a 5-digit number written on it. When he rounded the number to the nearest thousand, he got 38,000.

Write the least and greatest possible number that could be on the red ball.

Least possible number: _____

Greatest possible number: _____

Name: _____ Date: _____

2. A thief left a secret code at the crime scene for the police to break. These were the clues that the police found:

> There is a 4 in the thousands place.
>
> The digit in the tens place is 2 times the digit in the thousands place.
>
> The digit in the ten thousands place is 7 less than the digit in the ones place.
>
> The digit in the ones place is 3 more than 6.
>
> Multiply the digit in the ten thousands place by 3 to find the digit in the millions place.
>
> The digit in the hundreds place is 5 less than the digit in the tens place.
>
> The difference between the digit in the thousands place and the digit in the tens place is the digit in the hundred thousands place.

Help the police to find the code.

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

3. Find the actual sum. Then find the estimated sum using front-end estimation. Which sum is greater?

111 + 1,111 + 11,111 + 111,111 + 1,111,111

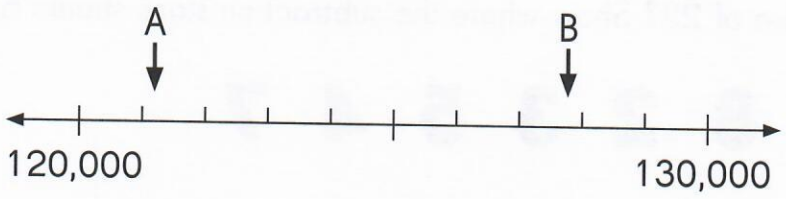
Name: _____ Date: _____

Solve. Show your work.

4. Estimate the sum of these numbers using front-end estimation with adjustment. Find the difference between the actual sum and the estimated sum.

2,354 4,563 4,343

5. Look at the number line.



Round the numbers represented by A and B to the nearest thousand. Then estimate the difference between the numbers.

Name: _____ Date: _____

PROBLEM SOLVING

Strategies

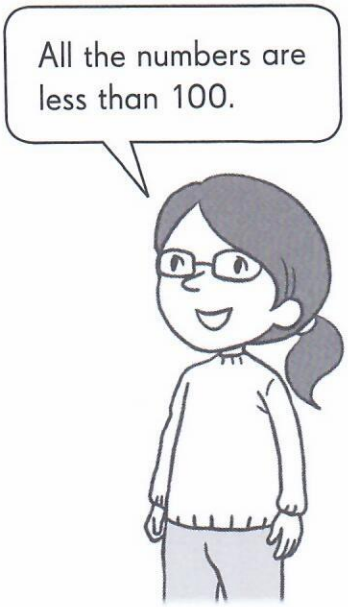
Solve. Show your work.

6. Complete the number pattern.

454,546	479,546	504,546	

7. How many subtraction signs should be placed between these digits to get a value of 23? Show where the subtraction signs should be placed.

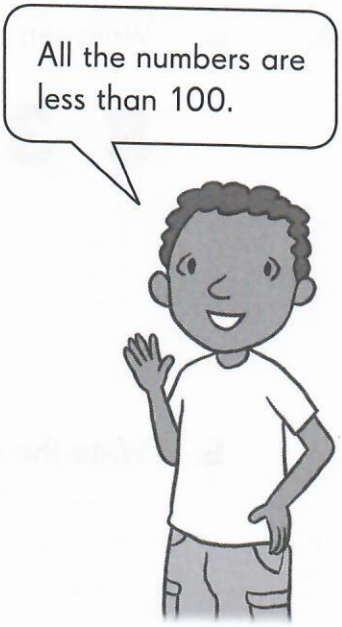
9 8 2 3 5 4 7



Name: _____ Date: _____

8. How many addition and subtraction signs should be placed between these digits to get a value of 34? Show where the addition and subtraction signs should be placed.

1 3 4 6 2 9 4



Name: _____ Date: _____

PROBLEM SOLVING

Exploration

Solve. Show your work.

9. **a.** Write ten 6-digit numbers formed by the given digits.

8 3 0 5 9 1

b. Write the greatest 6-digit number using the given digits.

c. Write the least 6-digit number using the given digits.

d. Find the difference between your answers in Exercises **b** and **c**. Is this the greatest difference between two 6-digit numbers formed by the digits 8, 3, 0, 5, 9 and 1?

Name: _____ Date: _____

10. These numbers are arranged in a pattern.

739,406 742,416 745,426 748,436 751,446

Change any two digits in each number and keep the numbers in the same pattern.

Name: _____ Date: _____

Journal Writing

Explain.

11. Sean and Jack rounded 256,537 to the nearest thousand.

Sean's answer: 256,500

Jack's answer: 256,000

Explain the mistakes made by Sean and Jack.

Name: _____ Date: _____

CHAPTER 2

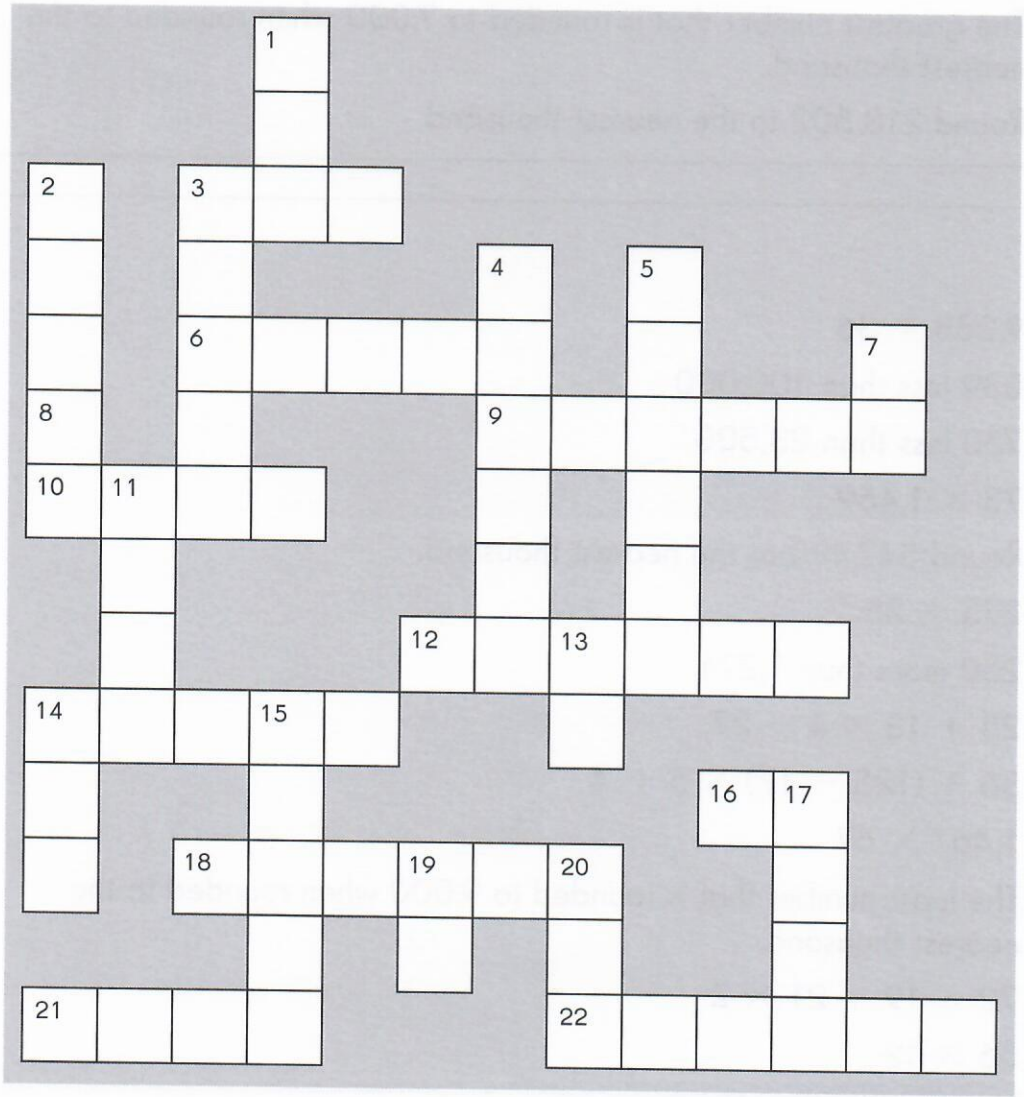
Whole Number Multiplication and Division

PROBLEM SOLVING

Thinking Skills

Complete the cross-number puzzle. Use the clues on page 10.

1.



Name: _____ Date: _____

Across

3. $4{,}275 \div 15$
6. $1{,}495 \times 48$
8. $84 \div 14$
9. Estimate $5{,}829 \times 99$. Then add 147,821 to the result.
10. 48×23
12. $475 \times 1{,}000$
14. 237×62
16. $24 + 6 \times 12 - 8$
18. 4,756 more than 621,240
21. The greatest number that is rounded to 7,000 when rounded to the nearest thousand.
22. Round 218,502 to the nearest thousand.

Down

1. $9{,}288 \div 36$
2. 839 less than 100,000
3. 750 less than 23,500
4. $73 \times 1{,}469$
5. Round 347,490 to the nearest thousand.
7. $275 \div 25$
11. 250 more than 1,274
13. $25 + 13 \times 4 - 27$
14. $56 + (125 - 17) \times 5 \div 4$
15. $1{,}467 \times 67$
17. The least number that is rounded to 9,000 when rounded to the nearest thousand.
19. $72 - 19 + 21 \times 2$
20. 56×12

Name: _____ Date: _____

Fill in the blanks.

2. $(7 - 2 \times 10 + 16) \times 10 =$ _____

3. $(6 \times 7 + 8) \times 10 - (10 \times 7 - 12) =$ _____

4. $53 + 28 \times (21 - 9) \div 3 =$ _____

Name: _____ Date: _____

Solve. Show your work.

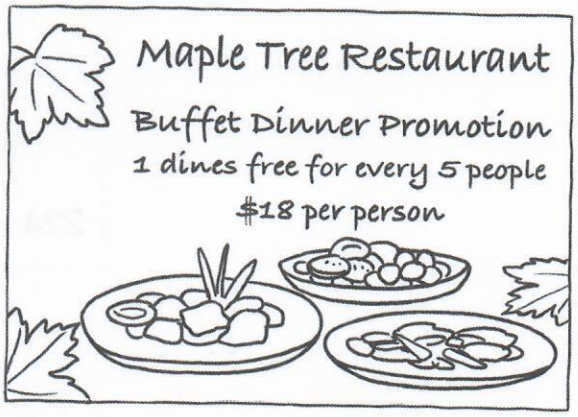
5. Sixty girls were scheduled to paint flower pots for the school's annual fair. When 3 of the girls became sick, the rest of the girls had to paint 8 more flower pots each. How many flower pots did they have to paint altogether?

6. José's heart beats an average of 94 beats per minute. Estimate the number of beats his heart beats in a day.

Name: _____ Date: _____

7. A number is added to 435. The sum is then multiplied by 4. The final result is 9,772. Find the number.

8. Julia and her friends went to a restaurant for a buffet dinner. How many people were there if they paid a total of $378 for their dinner?



Name: _____ Date: _____

PROBLEM SOLVING

Strategies

Solve.

9. This is a magic square. The sum of the numbers horizontally, vertically, and diagonally is always 15.

2	7	6
9	5	1
4	3	8

This is another magic square. Use a similar pattern to fill in the missing numbers.

		336
	280	56
224		

Name: _____ Date: _____

Solve. Show your work.

10. Haley has $24 and Maria has $20. How much money must Maria give to Haley so that Haley will have 3 times the amount of money that Maria has?

11. Britney earned $4 for every T-shirt she sold. She also earned an extra $20 for every 16 T-shirts sold. She earned $364 from the sales. How many T-shirts did Britney sell in all?

Name: _____ **Date:** _____

12. At a science competition, 25 problems were given. Each correct answer earned 4 points, and 2 points were deducted for each incorrect answer. No points were deducted for any unanswered problem. Logan answered all but one of the problems, receiving a score of 66. How many correct answers did Logan have?

Name: _____ Date: _____

13. A farmer had twice as many chickens as ducks on his farm. After he sold 166 chickens and 29 ducks, he had half as many chickens as ducks left. How many chickens did the farmer have at first?

14. The total cost of 8 English textbooks and 12 science textbooks is $480. Each science textbook costs twice as much as an English textbook. How much does each English textbook cost?

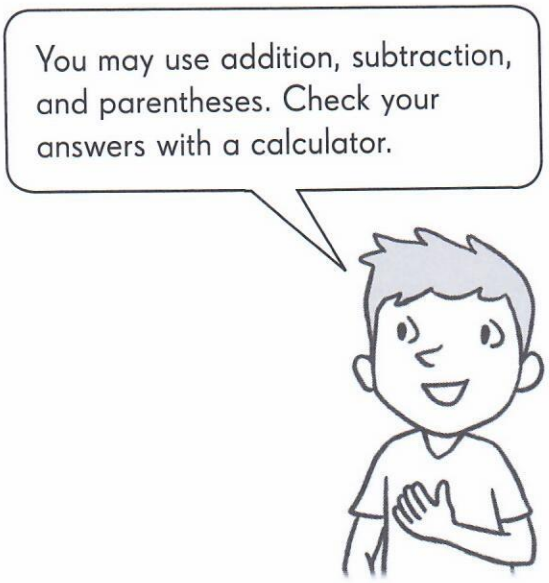
Name: _____ Date: _____

PROBLEM SOLVING

Exploration

Solve. Show your work.

15. Multiply 2,179 by 48.
Write 3 different expressions that give the same product.



Name: _____ Date: _____

16. Divide 18 by 5. Use a calculator to find an easy way to get the quotient and the remainder. Then use the calculator to find the quotient and the remainder of these numbers.

a. Divide 5,213 by 17.

b. Divide 7,158 by 23.

Name: _____ Date: _____

Journal Writing

Write a problem and solve.

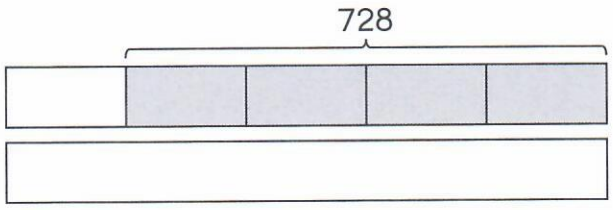
17. Write a problem for this bar model. Then solve the problem.

Before

Green apples

Red apples

After



Name: _____ Date: _____

Fractions and Mixed Numbers

PROBLEM SOLVING

Thinking Skills

Solve. Show your work.

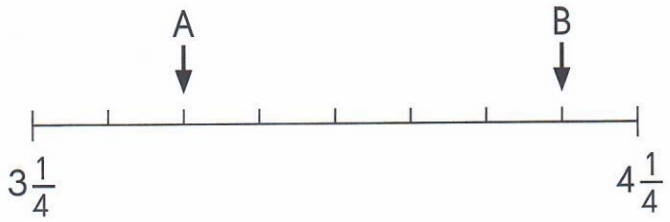
1. Find the difference between 3 more than $\frac{1}{3}$ and 3.

2. Find the sum of $3\frac{2}{3}$ and $4 \div 9$.

3. Find the value of $2\frac{1}{3} + 3\frac{5}{6} - 5\frac{3}{4}$.

Name: _____ **Date:** _____

4. Look at the number line.

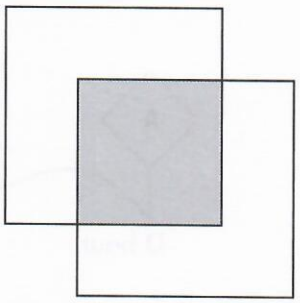


Find the difference between the numbers represented by A and B.

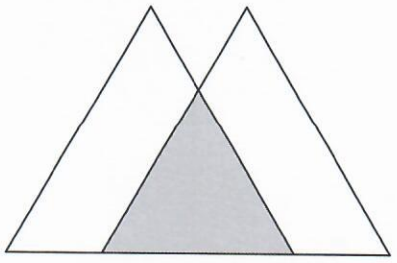
5. Anna walked $2\frac{2}{5}$ kilometers from her house to school. She then walked another $\frac{1}{4}$ kilometer from the school to the library. She walked an additional $1\frac{1}{5}$ kilometers from the library back to her house. How far did Anna walk in all?

Name: _____ **Date:** _____

6. The figure shows two identical overlapping squares. $\frac{4}{7}$ of each square is shaded. Express the shaded area as a fraction of the area of the whole figure.

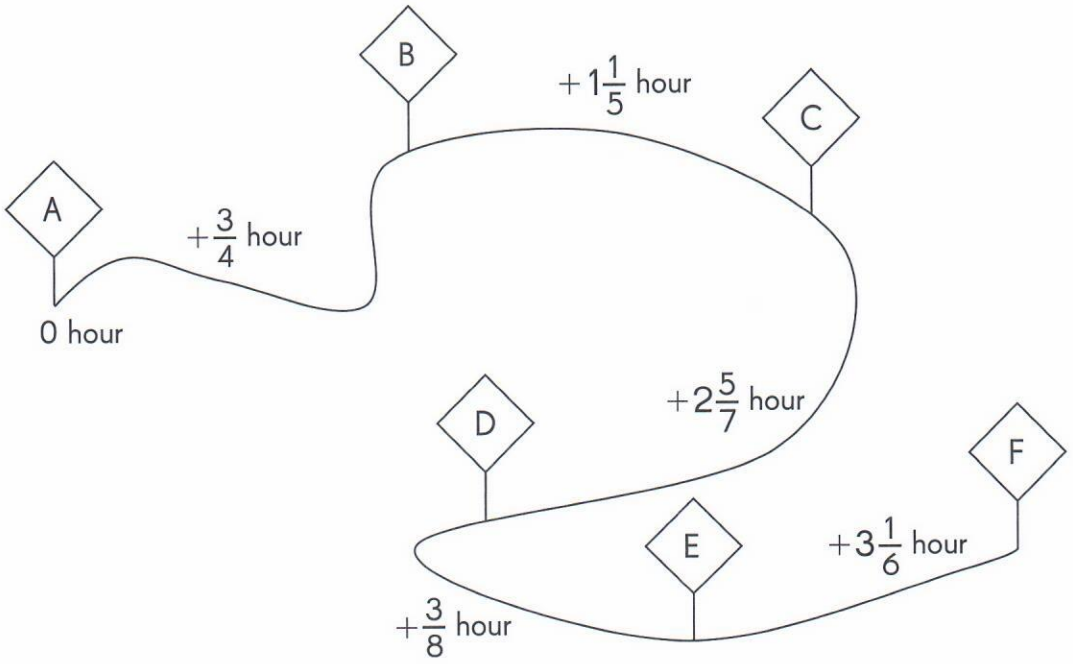


7. The figure shows two identical overlapping triangles. $\frac{4}{9}$ of each triangle is shaded. Express the shaded area as a fraction of the unshaded area.



Name: _____ **Date:** _____

8. Luke went on a cycling trip with his friends. Estimate the time he took, to the nearest hour or half hour, to cycle from point A to point F.



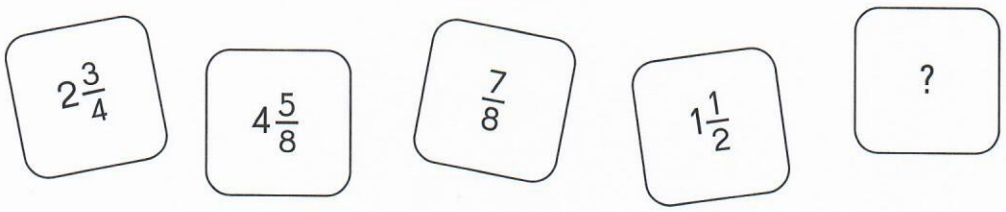
Name: _____ Date: _____

PROBLEM SOLVING

Strategies

Solve. Show your work.

9. Five fractions and mixed numbers are to be arranged in a pattern. Four of them are shown below.



The missing mixed number is the greatest of the five fractions and mixed numbers.

Find the missing mixed number.

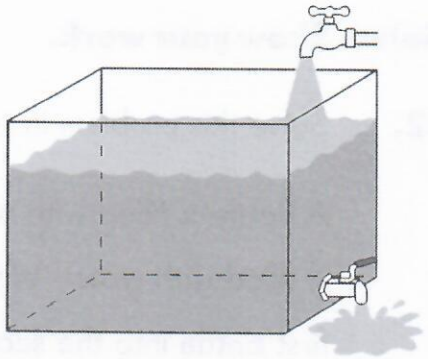
Then write the five fractions and mixed numbers in order from least to greatest.

Name: _____ Date: _____

10. Aiden's age is $\frac{1}{7}$ of his father's age. His father will be 61 years old in 5 years. In how many years will Aiden's age be $\frac{1}{5}$ of his father's age?

Name: _____ Date: _____

11. It takes 3 minutes to fill an empty tank with water from a tap. When the tap is turned off, and the drain is opened, it takes 4 minutes for the tank to empty. How long will it take to fill the empty tank when the tap is running and the drain is opened?



Name: _____ Date: _____

PROBLEM SOLVING

Exploration

Solve. Show your work.

12. Solve this problem in two ways.

A bottle is filled with water. A second bottle, of the same size, is $\frac{3}{7}$ filled with water. What fraction of water must be poured from the first bottle into the second bottle so that both bottles contain the same amount of water?

Name: _____ Date: _____

13. Use a calculator to find the values of these fractions in decimal form.

$\frac{1}{2} =$ _____

$\frac{2}{3} =$ _____

$\frac{3}{4} =$ _____

$\frac{2}{5} =$ _____

$\frac{5}{6} =$ _____

$\frac{2}{7} =$ _____

$\frac{7}{8} =$ _____

$\frac{2}{9} =$ _____

$\frac{3}{10} =$ _____

$\frac{6}{11} =$ _____

$\frac{11}{12} =$ _____

Compare the decimals. Then put the fractions into two groups.
How did you group them?

Name: _____ Date: _____

Journal Writing

List the steps.

14. List the steps you use to estimate the sum of $2\frac{3}{7}$ and $3\frac{5}{9}$.

Step 1

Step 2

15. List the steps you use to estimate the difference of $5\frac{8}{9}$ and $2\frac{1}{10}$.

Step 1

Step 2

Name: _____ Date: _____

Multiplying and Dividing Fractions and Mixed Numbers

PROBLEM SOLVING

Thinking Skills

Solve. Show your work.

1. Find the fraction that is exactly halfway between $\frac{1}{6}$ and $1\frac{1}{3}$.

2. A tiger is $\frac{7}{8}$ meter tall. A koala bear is $\frac{4}{7}$ as tall as the tiger. A penguin is $\frac{7}{8}$ as tall as the koala bear. What is the height of the penguin? Write your answer as a fraction.

Name: _____ Date: _____

3. A rectangular tank is $\frac{5}{9}$ full of water. If $6\frac{3}{4}$ liters of water are poured into the tank, it will be $\frac{2}{3}$ full. What is the capacity of the tank?

4. A class was given a mathematics test. $\frac{1}{4}$ of the students did not complete the test. Of the students who did complete the test, $\frac{3}{5}$ of them were boys. Of the students who did not complete the test, $\frac{2}{5}$ of them were girls. What fraction of the class were girls?

Name: _____ Date: _____

PROBLEM SOLVING

Strategies

Solve. Show your work.

5. Chantel read $\frac{1}{4}$ of the pages of a book on Saturday and another $\frac{2}{3}$ of the pages on Sunday. She read the last 5 pages on Monday. How many pages were in the book?

6. Mrs. Wright spent $\frac{2}{9}$ of her paycheck on food and $\frac{1}{3}$ on rent. She spent $\frac{1}{4}$ of the remainder on transportation. She had $210 left. How much was Mrs. Wright's paycheck?

Name: _____ Date: _____

7. Keith won a cash prize in an art competition. He gave his mother $\frac{2}{5}$ of the money he won. Of the remainder, $\frac{1}{4}$ was given to his sister and $\frac{2}{3}$ was given to his brother. He had $15 left. How much was Keith's cash prize?

Name: _____ Date: _____

8. A generator needs a fixed amount of fuel to keep it running 2 hours a day. After running for 6 days, the generator's fuel tank was $\frac{2}{3}$ full. After 11 more days, $3\frac{1}{2}$ liters of fuel were left in the tank. If the tank was originally full, how much fuel can the tank hold?

Name: _____ Date: _____

9. Rachel used $\frac{2}{3}$ of a string to tie some books together. She used $\frac{1}{3}$ of the remaining string for her art project. She had 30 centimeters of string left. What was the original length of the string? Express your answer in meters.

Name: _____ Date: _____

10. At the butcher's shop, $\frac{1}{3}$ the weight of beef and $\frac{1}{4}$ the weight of chicken make up $54\frac{3}{4}$ pounds of the meat that the butcher has. If he has a total of $194\frac{1}{2}$ pounds of chicken and beef, find the total weight of chicken the butcher has.

Name: _____ Date: _____

PROBLEM SOLVING

Exploration

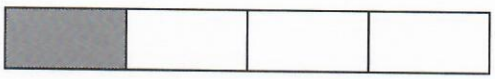
Solve. Show your work.

11. The product of a mixed number and a whole number is $6\frac{2}{3}$.
Find two sets of numbers that result in this product.

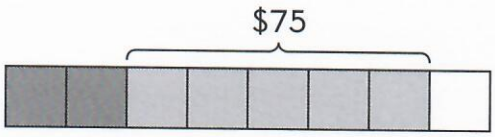
Name: _____ Date: _____

12. Write a fraction problem for this bar model. Then solve the problem.

Before



After



Name: _____ Date: _____

Journal Writing

Find the mistake.

13. Jasmine was given this problem.

$\frac{21}{42} \times 6 = ?$

Jasmine solved the problem this way.

$$\frac{21}{42} \times 6 = \frac{21 \div 21}{42 \div 7} \times 6$$
$$= \frac{1}{6} \times 6$$
$$= 1$$

Circle her mistake. Then show the correct way to solve the problem.

Name: _____ Date: _____

Algebra

PROBLEM SOLVING

Thinking Skills

Evaluate each expression using the given value of the variable.

1. $\frac{3n}{7} - 4$ when $n = 21$

2. $2r + \frac{6r}{5}$ when $r = 5$

Name: _____ Date: _____

3. $\frac{5n + 2}{2}$ when $n = 5$

Complete.

4. Let $y = 2$. Fill in the blanks with the correct letter.

A	$10y + 8 - 7y - 2y + 3$
B	$19y - 3y + 37 - y$
C	$3y + 14y + 7y - 6y + 2$
D	$9y - 2y + 8y - 25$

_____ < _____ < _____ < _____

Name: _____ Date: _____

Solve. Show your work.

5. If n erasers have a weight of 80 grams, what is the total weight of 50 erasers?

Name: _____ Date: _____

6. Six boxes of crackers, each of equal weight, have a total weight of n grams. Each empty box has a weight of 50 grams.

a. Express the weight of crackers in each box in terms of n.

b. If $n = 630$ grams, find the weight of the crackers in each box.

Name: _____ Date: _____

7. Jason is $k - 3$ years old.
His father is $(3 + 2k)$ years older than he is.
If k is 15, how old is Jason's father?

Name: _____ Date: _____

PROBLEM SOLVING

Strategies

Solve. Show your work.

8. Karen has $4h$ storybooks. Karen's storybook collection is $\frac{2}{3}$ of what Mary's collection is. If h is 16, how many storybooks do they have in all?

9. Study the table.
How many squares will there be in the yth pattern?

Pattern	1	2	3	4	.....	y
Number of Squares	3	6	9	12		?

Name: _____ Date: _____

10. Asher gave $2j$ notebooks to Peter,
Another $\frac{2}{3}j$ notebooks to Susan, and he was left with $6\frac{1}{2}j$ notebooks.
If $j = 6$, how many notebooks did Asher have at first?

11. A box can fit $\frac{(y + 2)}{3}$ cubes in it.
If $y = 13$, how many boxes will Luke need to pack away 42 cubes?

Name: _____ **Date:** _____

12. Anita has k dollars, Luke has $(k + 2)$ dollars, and Evan has $(k - 5)$ dollars. If $k = 25$, how much money do they have in all?

13. A calculator and a pen were sold for x dollars. Jason bought 2 calculators and 4 pens for \$16. How much did the 2 calculators cost altogether?

Name: _____ Date: _____

PROBLEM SOLVING

Exploration

Solve. Show your work.

14. Write a problem that relates a to b by the following expression:

$b = 3\frac{a}{2} - 4$

Then solve the problem when a is 4.

Name: _____ Date: _____

Journal Writing

These equations are false. Change the equations to make them true.

15. $7x + 5 = 12x$

16. $12y - 8 = 4y$

Name: _____ Date: _____

These equations are false. Change the equations to make them true.

17. $p + 5 + 5 + p = 2p + 25$

18. $4r + 9 + 8 - 3r = 13r + 5r$
$= 18r$

Name: _____ Date: _____

Correct the mistake.

19. Gavin was given this problem.

$3x - 9 = 18$
Solve for x.

He solved the problem this way.

$3x - 9 = 18$
$x - 9 = 18 \div 3 = 6$
$x = 6 + 9 = 15$

Show the correct way to solve the problem.

Name: _____ Date: _____

CHAPTER 6

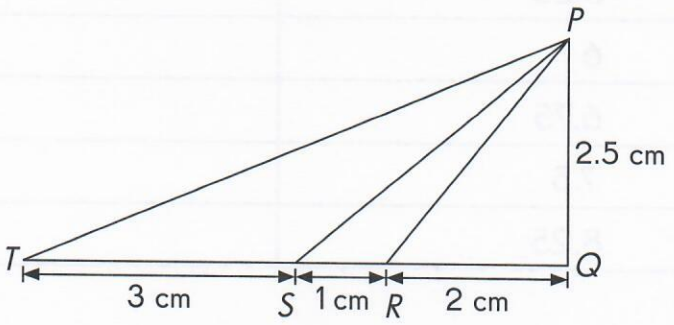
Area

PROBLEM SOLVING

Thinking Skills

Solve. Show your work.

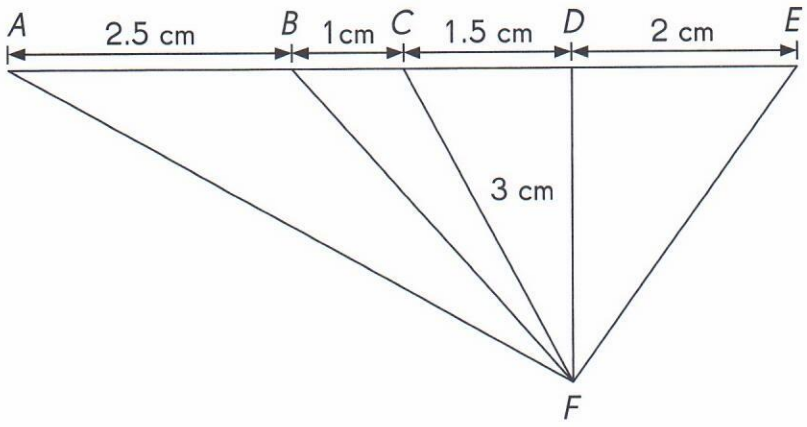
1. The areas of different triangles from the figure are listed in the table. Look at the figure and name the triangles that have the given areas.



Area of Triangle (cm^2)	Triangle
2.5	
7.5	
5	
3.75	

Name: _____ **Date:** _____

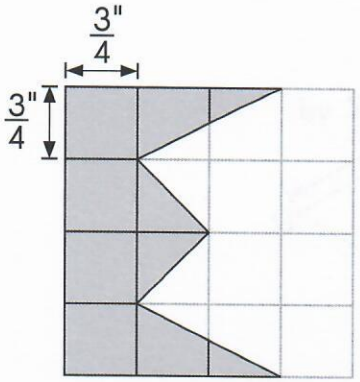
2. The table lists areas that were found by adding the areas of two, or three, triangles from the figure. Name the triangles that were used.



Sum of Areas of Triangles (cm^2)	Triangles
5.25	
6	
6.75	
7.5	
8.25	

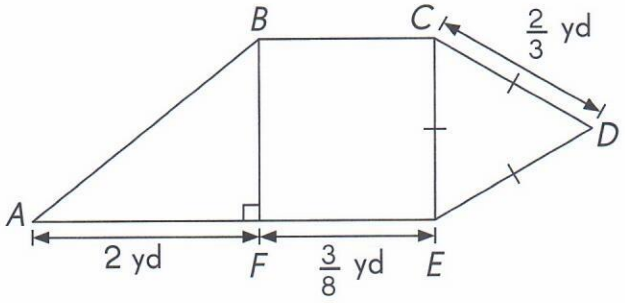
Name: _____ Date: _____

3. Find the area of the shaded figure.



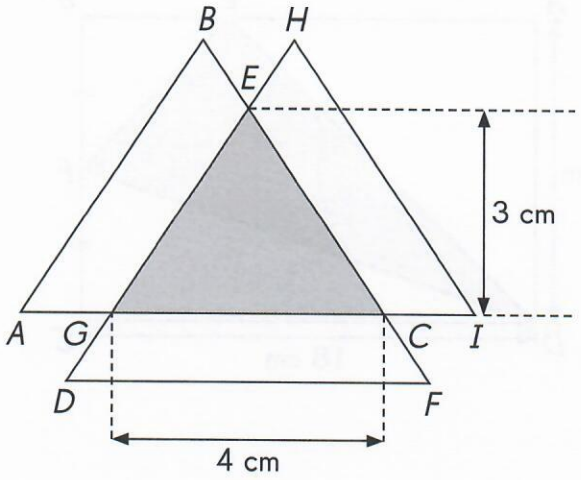
Name: _____ Date: _____

4. The figure is made up of a rectangle, a right triangle, and an equilateral triangle. Find the total area of the right triangle and the rectangle.



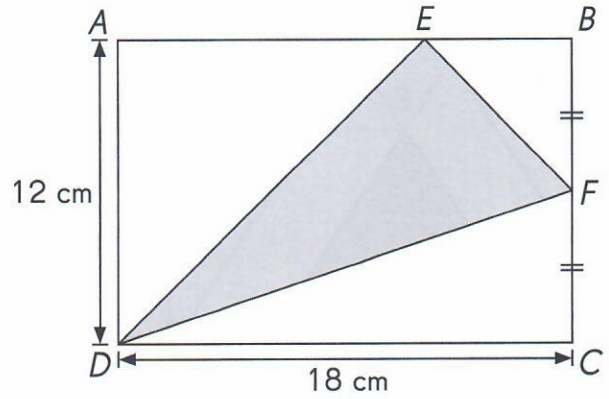
Name: _____ **Date:** _____

5. Triangles *ABC*, *DEF* and *GHI* are identical. The shaded part is $\frac{3}{5}$ the area of each of the three triangles. Find the area of the whole figure.



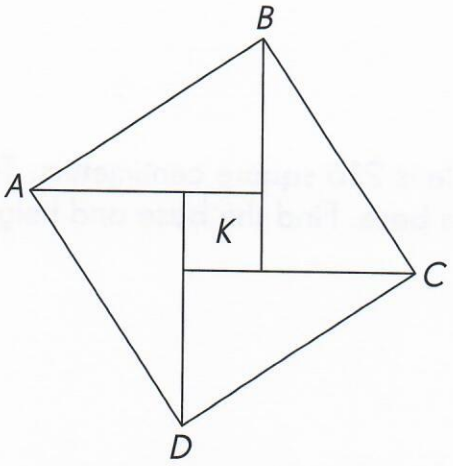
Name: _____ Date: _____

6. *ABCD* is a rectangle. $BF = FC$ and *AE* is twice as long as *EB*. Find the area of triangle *DEF*.



Name: _____ **Date:** _____

7. The figure is made up of 4 identical triangles and square *K*. The base of each triangle is 9 inches, and the height of each triangle is 12 inches. Find the area of square *ABCD*.



Name: _____ Date: _____

PROBLEM SOLVING

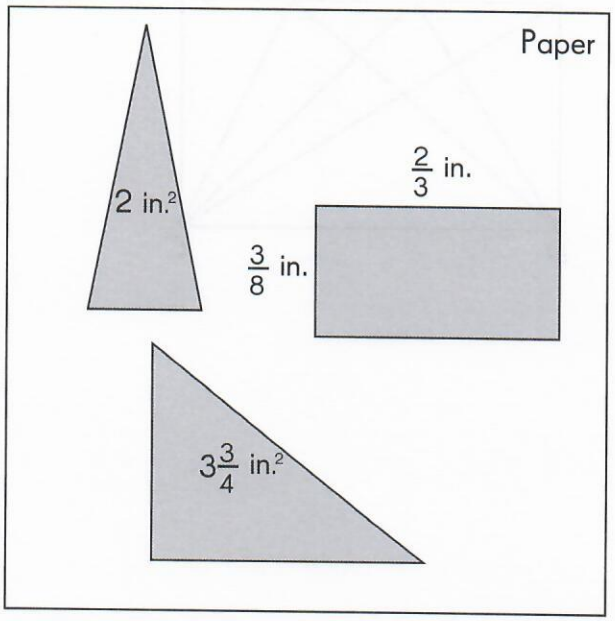
Strategies

Solve. Show your work.

8. The area of a triangle is 216 square centimeters. The height of the triangle is 3 times as long as its base. Find the base and height of the triangle.

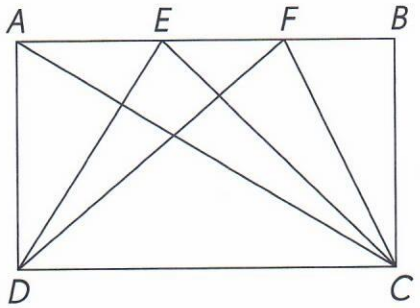
Name: _____ **Date:** _____

9. After cutting out three shapes from a square piece of paper, the area of the remaining piece of paper was 10 square inches. What was the area of the original piece of paper?



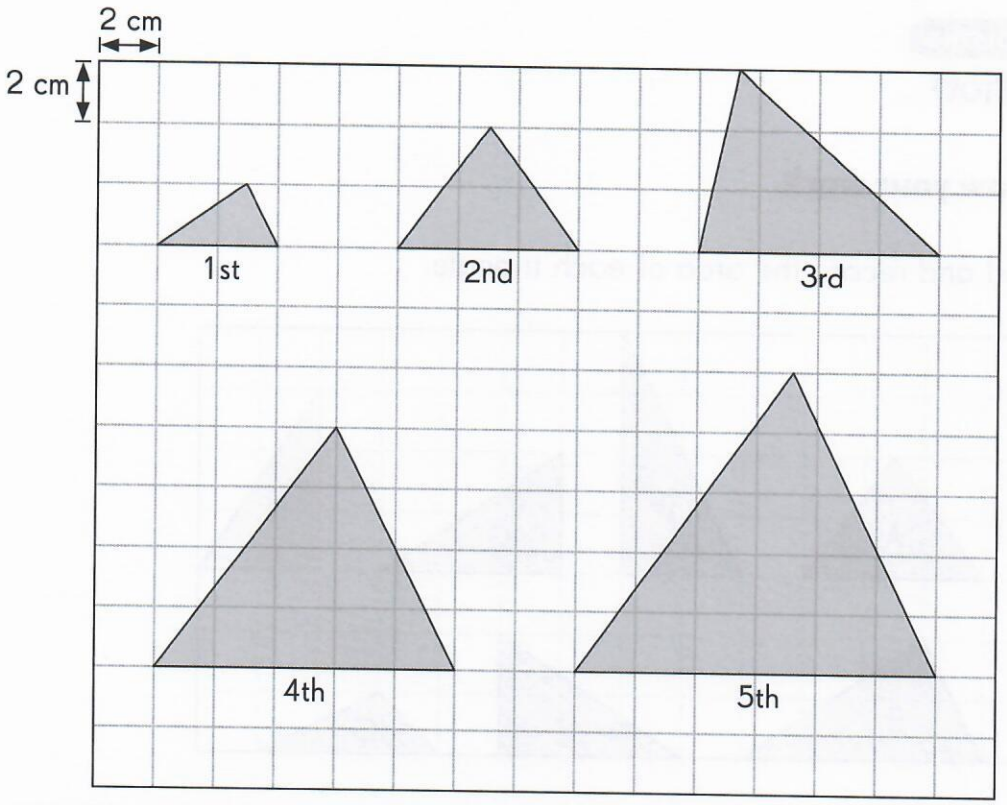
Name: _____ **Date:** _____

10. Look at rectangle *ABCD*. What do you notice about the areas of triangles *DAC*, *DEC*, and *DFC*?



Name: _____ **Date:** _____

11. The triangles follow a pattern. Find the area of the 6th triangle.



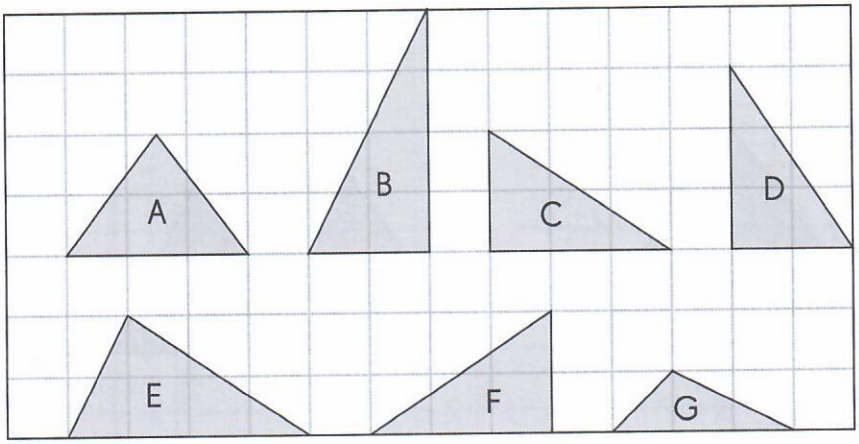
Name: _____ Date: _____

PROBLEM SOLVING

Exploration

Solve. Show your work.

12. Find and record the area of each triangle.



Triangle	Base	Height	Area
A			
B			
C			
D			
E			
F			
G			

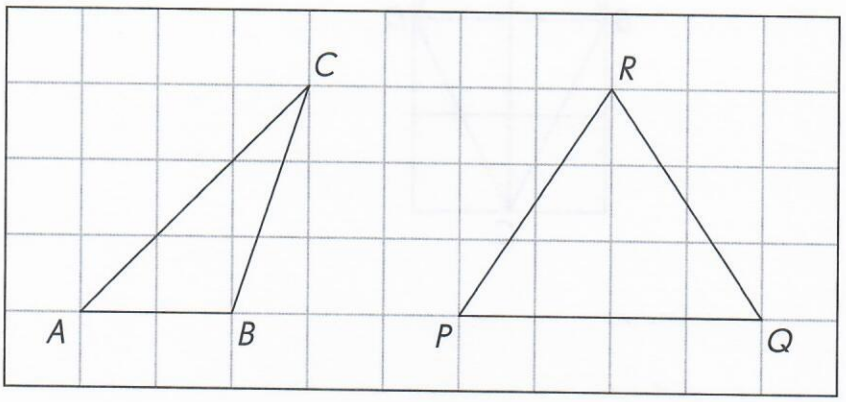
Study the areas. What pattern do you see? What can you say about the area of triangles?

Name: _____ **Date:** _____

Journal Writing

Explain.

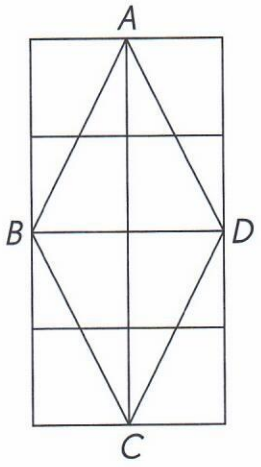
13. Study the two triangles below. Tell a story of each triangle stating the base, height and area. You can make comparisons in your story.



Name: _____ Date: _____

Solve. Show your work.

14. Show two ways to find the area of the four-sided figure *ABCD*.



Name: _____ Date: _____

Ratio

PROBLEM SOLVING

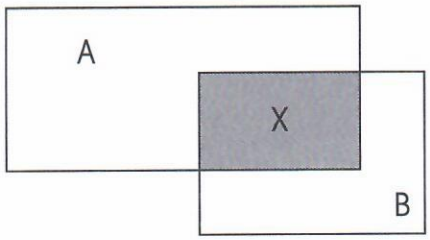
Thinking Skills

Solve. Show your work.

1. The ratio of two numbers is 7 : 2. The difference between the two numbers is 15. What is the greater number?

Name: _____ Date: _____

2. The ratio of area A to area X is 8 : 3. The ratio of area B to area X is 4 : 3.



a. Find the ratio of area A to area X to area B.

b. Area B is 90 square centimeters larger than area X.
Find the area of the whole figure.

Name: _____ **Date:** _____

3. The areas of three lawns are in the ratio 4 : 2 : 7. The medium-sized lawn has an area of 72 square yards. It costs $2 per square yard to fertilize the lawns. How much more does it cost to fertilize the largest lawn than the smallest lawn?

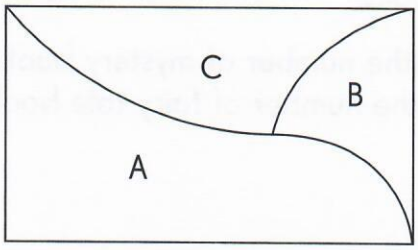
Name: _____ Date: _____

4. Box A and Box B contained 171 books in all. Then 58 books were taken out of Box B and put into Box A. The ratio of the number of books in Box A to the number of books in Box B became 7 : 2. How many more books were in Box B than in Box A at first?

5. Shannon, Kate, and Dale brought some craft sticks to school for their art class. The ratio of the number of Shannon's craft sticks to Kate's craft sticks was 2 : 3. The ratio of the number of Kate's craft sticks to Dale's craft sticks was 4 : 1. If Dale brought 36 craft sticks, how many craft sticks did Kate bring?

Name: _____ Date: _____

6. A rectangular field is divided into parts A, B, and C. The ratio of area A to area B is 3 : 1. The ratio of area B to area C is 2 : 3. If area C is 255 square meters, what is the area of the entire field?



Name: _____ Date: _____

7. In a class library, there are $\frac{7}{16}$ as many fairy tale books as the total number of books. Of the remaining books, $\frac{1}{3}$ are mystery books and the rest are puzzle books.

a. Find the ratio of the number of mystery books to the number of puzzle books to the number of fairy tale books.

b. If there are 24 puzzle books, how many mystery and fairy tale books are there altogether?

Name: _____ Date: _____

PROBLEM SOLVING

Strategies

Solve. Show your work.

8. Joe spent $\frac{1}{5}$ of his money on a tennis racket. He divided the remaining money for food and savings in the ratio 5 : 3, putting aside more money for food than for savings. If he saved $150, how much money did he have at first?

9. In a plantation, the ratio of the number of palm trees to the number of coconut trees was 1 : 4. Then 300 coconut trees were chopped down to make way for an additional 250 palm trees. The difference between the number of palm trees and coconut trees became 140. How many palm trees were there at first?

Name: _____ Date: _____

10. Mrs. Smith rears chickens and sheep on her farm. The ratio of the total number of legs of the chickens to the total number of legs of the sheep is 4 : 7. Find the least number of chickens and the least number of sheep on Mrs. Smith's farm.

11. The ratio of the number of fiction books to the number of nonfiction books that Sophia had was 5 : 3. She gave away some fiction books and the ratio of the number of fiction books to the number of nonfiction books became 3 : 4. She had 84 books at the end. How many fiction books did Sophia give away?

Name: _____ Date: _____

12. The ratio of Theo's age to Zack's age is 7 : 10. Twelve years ago, Zack was twice as old as Theo. What will be the ratio of Theo's age to Zack's age 9 years from now?

Name: _____ Date: _____

PROBLEM SOLVING

Exploration

Solve. Show your work.

13. Roxana has savings accounts in Growth Bank and United Bank. The ratio of her savings in Growth Bank to those in United Bank is 5 : 2. The savings in United Bank is $75 less than the savings in Growth Bank. Find the total amount of Roxana's savings in both banks.

Name: _____ Date: _____

14. Juanita has some quarters and dimes. The ratio of the number of quarters to the number of dimes is 2 : 3. How much money could Juanita have? List five possible answers.

Name: _____ Date: _____

Journal Writing

List the steps.

15. List the steps you use to find the unknown terms of the ratio.

2 : 3 : 5 = 14 : _____ : _____

Step 1

Step 2

Step 3