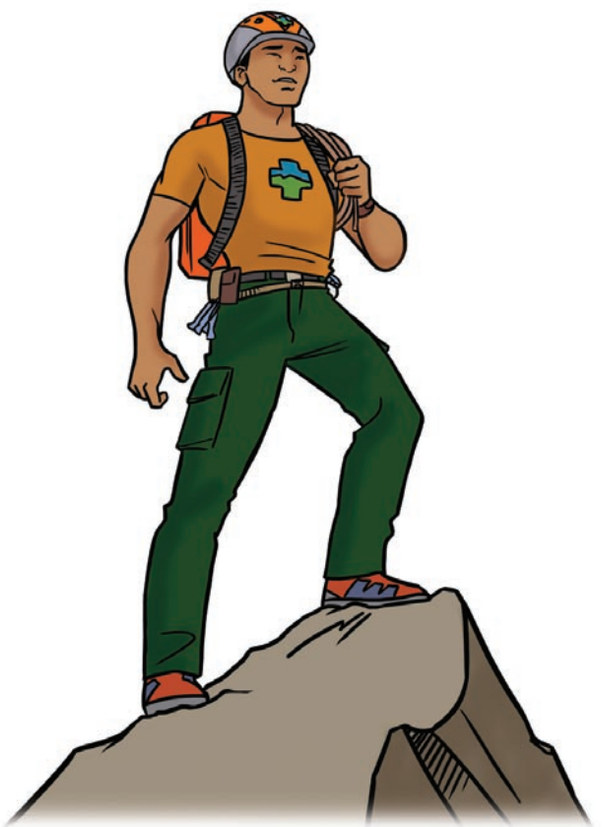
MATH 6

Third Edition

Teacher's Edition



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MATH 6 Teacher's Edition
Third Edition

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Photo credits for *Math 6 Student Text* appear on page A23.

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15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

What you do matters...

You spend long hours preparing lessons and grading papers.

You help each child to understand his true potential.

You care not just for the minds but also for the souls.

You touch the future and make it a better time.

And we can help.

This book is designed to meet your needs as a teacher—to be your most helpful tool as you share knowledge with your students. You asked for ideas for daily lessons, suggestions for helping unconventional learners, colorful pages, and content that helps you teach comprehension—and you will find it all here.

We like to hear from you, so contact us anytime with questions, suggestions, or needs.

Thank you for your dedication to Christian education.

CONTENTS

1 Add & Subtract

2 Multiply by a Whole Number

3 Divide by a Whole Number

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6 Plane Figure Geometry

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9 Divide Decimals

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14 Measurement

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Appendix

Teacher's Toolkit CD

The Christian Curriculum with the Balanced Approach

1 The Goals

- Students will understand math so that they can become problem solvers.
- Students will develop a Christian worldview (Proverbs 3:13).

2 The Methods

- Use concrete manipulatives to introduce new math concepts.
- Promote interactive learning with questions.
- Develop problem-solving skills.
- Increase skill in computation.
- Review concepts systematically.
- Make learning math enjoyable.

3 The Christian Approach

Integrated Christian content cultivates a Christian worldview that will help each student take his place in God's world. Teachers explain math concepts in the Bible, identify Christian principles, highlight Christian character traits, and point out that math is an important tool for making wise use of God's creation.

4 The Benefits

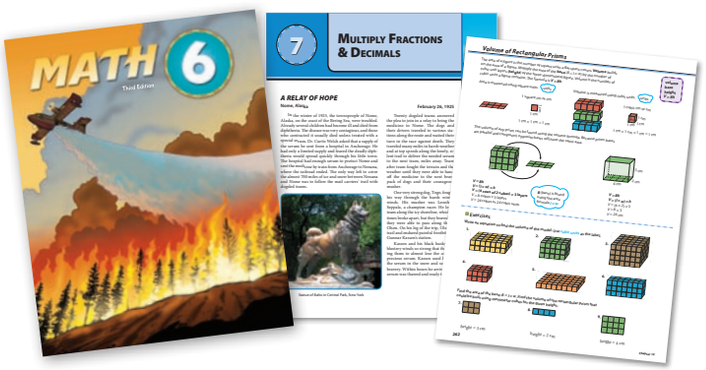
- Students understand math.
- Students' specific needs are met.
- Students are well-prepared for higher-level math.
- Students develop critical thinking skills.
- Students enjoy math.

INSTRUCTIONAL MATERIALS

Student Materials

Student Text

The Student Text provides two pages of explanation and practice problems to reinforce skills taught in the lesson and in earlier lessons. In addition, it provides Daily Review exercises for previously taught concepts. The search-and-rescue theme introduces each chapter. Key math concepts and terms are listed on the first page of most lessons, and a variety of activities are provided. Included at the end of each chapter are a Chapter Review, a Cumulative Review, and an Exploring Ideas page (to further develop thinking skills) or a Career Link page (to emphasize the value of math knowledge in the workplace). Glossary terms and definitions along with illustrations of math concepts are in the Handbook for student and teacher reference.



Student Manipulatives Packet (grades 4–6)

The Student Manipulatives Packet contains pocket charts, geometric shapes, paper coins and bills, fractions, and place-value materials to be used in the lessons by the students. The packet also contains number cards, multiplication/division fact family flashcards, a thermometer, a clock, number lines, and rulers. Items may be prepared at the beginning of the school year or as needed in each chapter. Many of these items will be used in sixth grade. (See instructions in the packet.)

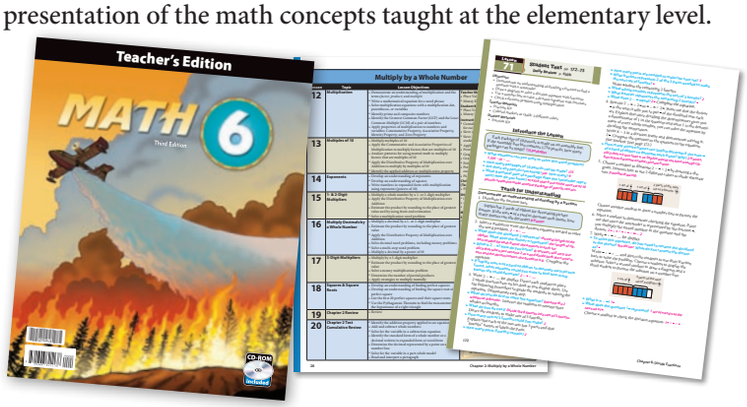
Tests

The packet of tests includes a test for each of the seventeen chapters.

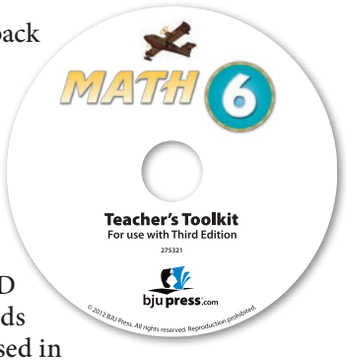
Teacher Materials

Teacher's Edition

This Teacher's Edition contains 165 lessons divided into seventeen chapters. Each chapter is preceded by a Chapter Overview, which includes the following: a chart listing the objectives for each lesson, the materials that need to be gathered and prepared for the chapter, and a section entitled A Little Extra Help to provide ideas for helping the student who experiences difficulty with the concepts taught in the chapter. Each lesson includes reduced Student Text pages with answer overprint, and the steps used to solve word problems and other mathematical procedures on the Student Text pages are provided in the Solutions section. Each chapter concludes with a Chapter Review lesson and a Cumulative Review lesson. Reduced pages of the Student Text Handbook and the answer key for the Daily Review pages of the Student Text are also provided. A Guide for Math Facts is included in the Appendix, along with a section providing the teacher with a thorough presentation of the math concepts taught at the elementary level.



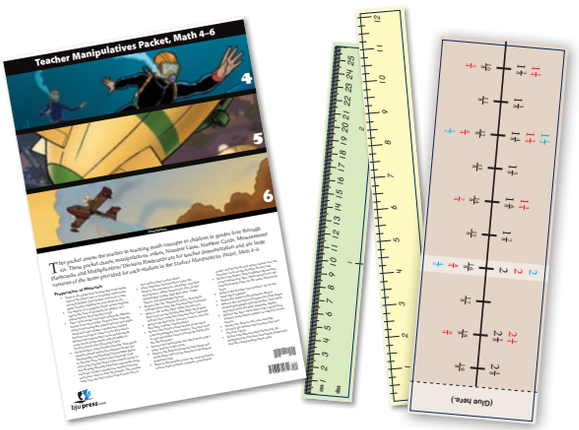
Teacher's Toolkit CD



The CD-ROM, located inside the back cover of this Teacher's Edition, contains several sections. One section, Christian Worldview Shaping, provides additional teacher instruction and student pages that emphasize the importance of math in helping us make wise use of God's creation. The CD also contains the Instructional Aids pages and the Teaching Visuals used in the lessons. Teachers may copy or transfer the teaching charts for display. Several supplemental teaching charts are included for review or display. A few manipulatives are provided for duplication if additional manipulatives are desired. The Daily *Reviews* from the Student Text are provided as full-page worksheets. These may be reproduced and distributed for additional practice and evaluation. Also included on the CD are Application pages, Assessment pages, Fact Reviews, and Calculator Activities. The Solutions and the Daily Review Pages Answer Key are also included. See page A26 for CD installation instructions.

Teacher Manipulatives Packet (grades 4–6)

The Teacher Manipulatives Packet includes manipulatives for teacher demonstration: paper coins and bills, rulers, number lines, place-value materials, pocket charts, multiplication/division fact family flashcards, and number cards. These visuals are large duplicates of the items provided for each student in the *Student Manipulatives Packet.* Many of these items are used in sixth grade. For the home educator and those teaching small groups, all of the manipulatives needed for teaching the lessons are provided in the Teaching Visuals section of the Teacher's Toolkit CD and the *Student Manipulatives Packet*.



Tests Answer Key

The packet includes an answer key for each of the seventeen chapters.

Christian Worldview Shaping

God has made a world of marvelous complexity and beautiful order. And God has called us to work with the world He has made so that we can help others and declare His glory. We learn this from the Creation Mandate in Genesis 1:28, which states God's command for us to subdue the earth and have dominion over it.

How does math fit in? When viewed from the perspective of a Christian worldview, math is a powerful tool for living out the commands of Genesis 1:28. God's world is a place that can be measured with numbers. And if we know how to use numbers, we can become very skilled at having the kind of dominion that helps others and glorifies God.

For this reason, we have included a series of exercises titled "Christian Worldview Shaping." These contain real-life problems and are designed to show the students that math really is a powerful tool for exercising dominion. Math helps us understand God's world, and it helps us develop the wisdom we need to know how to use His world. Our obedience to the Creation Mandate compels us to take math seriously.

LESSON FEATURES

Objectives point out the skills to teach in the lesson.

The **lesson pages** and the **Daily Reviews** page are listed at the top of each lesson.

Materials list items to collect or prepare ahead of time.

Notes contain helpful information for the teacher.

Introduce the Lesson may direct the teacher to the search-and-rescue theme information or may provide a quick mathematical review.

Teach for Understanding provides effective procedures for explaining math concepts, using manipulatives, and encouraging problem solving.

Involve the student in **active learning** by providing manipulatives, by encouraging discussion, and by promoting critical thinking.

Lesson **Student Text** pp. 220–21
Daily Review p. 438d

Objectives
- Solve addition and subtraction equations using inverse operations
- Check addition and subtraction equations using substitution

Teacher Materials
- Equation Mat, page IA46 (CD)
- Variable Card: 1 *n* card (or a rectangle from the Shapes Kit to represent the *n* card)
- 30 round counters

Student Materials
- Equation Mat
- Variable Cards: 1 *n* card and the *x* card
- 19 round counters

Note
Rather than using the Equation Mat provided for you on the Teacher's Toolkit CD, you may choose to prepare a large equation mat similar to one provided for the students in the Student Manipulatives Packet, Math 4–6. Use white poster board for the mat and cut circles from colored paper to use as counters. Use the *x* card from the Teacher Manipulatives Packet or cut a rectangle from colored paper to use as *x*.

Introduce the Lesson

Guide the students in reading aloud the story and facts on pages 212–13 of the Student Text (pages 210–11 of this Teacher's Edition).

Teach for Understanding

Solve equations using inverse operations

1. Write 7 + 5 __ 12 for display.
➤ What math symbol can you write to make the number sentence true? Why? *An equal sign; both expressions have a value of 12.* Write the equal sign.
2. Display the Equation Mat. Place a set of 7 counters and a set of 5 counters to the left of the equal sign and a set of 12 counters to the right of the equal sign. Remind the students that an equation is like a balanced scale; any operation that is performed on one side of the equation must also be performed on the other side to keep the expressions equal (the equation balanced).
3. Remove the 5 counters that are to the left of the equal sign.
➤ Are the expressions still equal? Why? *No; 5 counters were removed from only one side of the equation; 7 does not equal 12.*
Write 7 + 5 − 5 ≠ 12 for display and then write 7 ≠ 12 below it, aligning the not equal signs.
➤ What must you do to keep the values on both sides of the Equation Mat equal? *Elicit that you must also remove 5 of the counters that are to the right of the equal sign.*
Remove 5 of the counters from the right of the equal sign.
➤ Are the expressions equal? Why? *Yes; the same amount (5 counters) was removed from both sides of the equation; 7 equals 7.*
Write 7 + 5 − 5 = 12 − 5 and then write 7 = 7 below it, aligning the equal signs. Continue to display the equation.
4. Repeat the procedure, using 7 + 5 = 12. Allow students to remove or add an equal number of counters on both sides of the equal sign. Guide the students in writing equations for the operations that are performed (e.g., remove 7 counters from each side *7 + 5 − 7 = 12 − 7; 5 = 5*; add 3 counters to both sides *7 + 5 + 3 = 12 + 3; 15 = 15*).
Direct attention to 7 + 5 − 5 = 12 − 5 and 7 + 5 − 7 = 12 − 7. Elicit that subtracting from both sides of the equation an amount that is equal to one of the addends will cancel out the value of that addend on one side of the equation, making the value of that expression the other addend (e.g., 7 + 5 − 5 = 7 + 0 = 7 [Identity Property of Addition]).
5. Write for display: *The sum of a number and 5 equals 8.*
➤ What algebraic equation can you write for this sentence? Why? n + *5 = 8; elicit that "equals" tells you that an equation is needed, and "sum" tells you to add* n *and 5.*
6. Distribute the Equation Mats, the Variable Cards, and the counters. Write *n* + 5 = 8. Explain that to solve an equation with a variable, you need to find the value of the variable. The value of the variable must make the number sentence true; it is the *solution* to the equation.
Point out that the goal when solving an equation with an unknown value is to isolate the variable so that it stands alone on one side of the equation, giving you the value of *n* (e.g., *n* = __ or __ = *n*).
➤ How can you illustrate *n* + 5 on your Equation Mat? *Place 1* n *card and 5 counters to the left of the equal sign.* the sum 8? *Place 8 counters to the right of the equal sign.*
7. Direct the students to picture the equation on their mats as you picture it on your mat.
➤ How do you think you can isolate the variable *n* on your mat? *Elicit that you need to remove the 5 counters that are to the left of the equal sign.*
➤ If you remove the 5 counters that are to the left of the equal sign, what must you do to the right of the equal sign? *Remove 5 counters.*
Instruct the students to remove 5 counters from both sides of the equal sign. Demonstrate.
➤ What is the value of *n*? n = *3*
8. Direct attention to *n* + 5 = 8 that was written for display. Explain that to solve the equation you first need to identify the operation that is being performed on the variable.
➤ What operation is being performed on the variable in the equation? *Elicit that 5 is being added to* n.
➤ What operation must you perform to isolate *n*? Why? *Elicit that you must subtract 5 from the left side of the equation because subtraction is the inverse operation of addition.*
➤ If you subtract 5 from the left side of the equation, what must you do to the right side? *Subtract 5.*
9. Write *n* + 5 − 5 = 8 − 5 below *n* + 5 = 8. Point out that subtracting 5 from the left side of the equation cancels out the addend 5 (5 − 5 = 0). The value of the equation does not change because 5 is being subtracted from both sides of the equation. Write *n* + 0 = 3 below *n* + 5 − 5 = 8 − 5.
➤ What does the Identity Property of Addition tell you about adding zero to any number? *The sum will be the other addend.*
➤ What is the value of *n*? n = *3* Write *n* = 3 below *n* + 0 = 3. Explain that by subtracting 5 from both sides of the equation you isolated the variable (*n*) and determined that its value is 3.
➤ How could you check the solution to this equation? *Elicit that you can substitute 3 for the variable* (n) *in the original equation.*

Student Text pages provide practice of math skills and a tool to evaluate understanding.

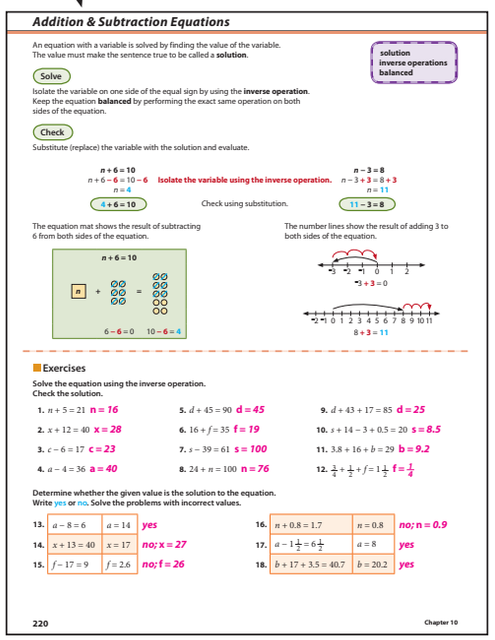
The **Challenge symbol** indicates that the activity may require application of a concept or that it may present a challenge to the average student.

Practice & Application provides review and extension of skills and concepts previously taught in the Student Text.

The **Journal symbol** indicates problems to be completed and/or explained in the journal section of the student's math notebook.

The **Daily Review** exercises provide systematic review of skills and concepts in the Student Text.

Encourage a **Christian worldview** by discussing real-life problems to show the student that math is a powerful tool for exercising dominion over the earth as commanded in Genesis 1:28.



Addition & Subtraction Equations

An equation with a variable is solved by finding the value of the variable. The value must make the sentence true to be called a **solution.**

solution
inverse operations
balanced

Solve

Isolate the variable on one side of the equal sign by using the **inverse operation.** Keep the equation **balanced** by performing the exact same operation on both sides of the equation.

Check

Substitute (replace) the variable with the solution and evaluate.

$n + 6 = 10$
$n + 6 - 6 = 10 - 6$
$n = 4$
$4 + 6 = 10$

Isolate the variable using the inverse operation.

Check using substitution.

$n - 3 = 8$
$n - 3 + 3 = 8 + 3$
$n = 11$
$11 - 3 = 8$

The equation mat shows the result of subtracting 6 from both sides of the equation.

The number lines show the result of adding 3 to both sides of the equation.

Exercises

Solve the equation using the inverse operation. Check the solution.

1. $n + 5 = 21$ **n = 16**
2. $x + 12 = 40$ **x = 28**
3. $c - 6 = 17$ **c = 23**
4. $a - 4 = 36$ **a = 40**
5. $d + 45 = 90$ **d = 45**
6. $16 + f = 35$ **f = 19**
7. $s - 39 = 61$ **s = 100**
8. $24 + n = 100$ **n = 76**
9. $d + 43 + 17 = 85$ **d = 25**
10. $s + 14 - 3 + 0.5 = 20$ **s = 8.5**
11. $3.8 + 16 + b = 29$ **b = 9.2**
12. $\frac{1}{4} + \frac{1}{2} + f = 1\frac{1}{2}$ **f = $\frac{1}{4}$**

Determine whether the given value is the solution to the equation. Write yes or no. Solve the problems with incorrect values.

13.	$a - 8 = 6$	$a = 14$	yes		
14.	$x + 13 = 40$	$x = 17$	no; x = 27		
15.	$f - 17 = 9$	$f = 2.6$	no; f = 26		
16.	$n + 0.8 = 1.7$	$n = 0.8$	no; n = 0.9		
17.	$a - 1\frac{1}{2} = 6\frac{1}{2}$	$a = 8$	yes		
18.	$b + 17 + 3.5 = 40.7$	$b = 20.2$	yes		

Evaluate the expression. Let $x = 3$.

19. $15 \div x - 4$ — $15 \div 3 - 4 = 5 - 4 = 1$
20. $4 + x - 2$ — $4 + 3 - 2 = 7 - 2 = 5$
21. $(18 - x) \div 5$ — $(18 - 3) \div 5 = 15 \div 5 = 3$
22. $(x + 15) \div 2$ — $(3 + 15) \div 2 = 18 \div 2 = 9$
23. $x(2.3)$ — $3(2.3) = 6.9$
24. $2x + 3x$ — $2(3) + 3(3) = 6 + 9 = 15$
25. $3^2 + 7 - x$ — $9 + 7 - 3 = 16 - 3 = 13$
26. $x(2^2) - 6$ — $3(8) - 6 = 24 - 6 = 18$
27. $\sqrt{49} + 6x$ — $7 + 6(3) = 7 + 18 = 25$

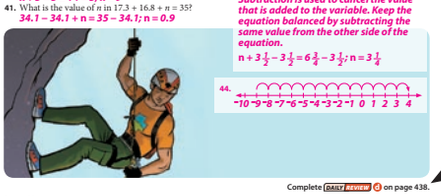
Write an equation for the sentence. Solve the equation using the inverse operation. Check the solution.

28. 5 more than n equals 12. **n + 5 = 12; n = 7**
29. 8 less than n is 3. **n − 8 = 3; n = 11**
30. The sum of 10 and n number is 17. **10 + n = 17; n = 7**
31. The difference of a number and 2 equals 5. **n − 2 = 5; n = 7**
32. 6 subtracted from a number is 12. **n − 6 = 12; n = 18**
33. A number increased by 3 equals 16. **n + 3 = 16; n = 13**
34. A number decreased by 7 is 9. **n − 7 = 9; n = 16**
35. 7 and a number equals 10. **7 + n = 10; n = 3**

Practice & Application

36. Find the product of 113 and 609 using only two partial products. **68,817**
37. Write equations to show that 468 is divisible by 2, 3, 4, and 6. **468 ÷ 2 = 234; 468 ÷ 3 = 156; 468 ÷ 4 = 117; 468 ÷ 6 = 78**
38. Explain how you know that 317 is *not* divisible by 5 without dividing. **There is not a 5 or a 0 in the Ones place.**
39. Use front-end estimation to estimate the sum of 398,640 and 954,207. **390,000 + 950,000 = 1,340,000**
40. What is the value of x in $x + 5 = 14$? **x + 5 − 5 = 14 − 5; x = 9**
41. What is the value of n in $17.3 + 16.8 + n = 35$? **34.1 − 34.1 + n = 35 − 34.1; n = 0.9**
42. What whole number is equivalent to $\frac{34}{2}$? **17**
43. Three triangles represent $\frac{1}{2}$ of a set. How many triangles are in the whole set? **6 triangles**
44. Draw a [illegible] to show that [illegible] = 13.
45. [illegible] each factor to the greatest place to estimate the product of 17.8 and 21.03. **20 × 20 = 400**
J Explain how the inverse operation helps you find the value of n in $n + 3\frac{1}{2} = 6\frac{3}{4}$. Solve.

Subtraction is used to cancel the value that is added to the variable. Keep the equation balanced by subtracting the same value from the other side of the equation.
$n + 3\frac{1}{2} - 3\frac{1}{2} = 6\frac{3}{4} - 3\frac{1}{2}$; $n = 3\frac{1}{4}$



Complete DAILY REVIEW on page 438.

➤ **What does 3 + 5 equal?** *8* **Is this solution correct?** *yes*

10. Write $4 + x = 15$ and instruct the students to solve it on their Equation Mat, using the x card and the counters.
➤ **What operation is being performed on the variable?** *Elicit that 4 is being added to* x.
Write $x + 4 = 15$ for display. Elicit that the Commutative Property of Addition allows you to change the order of the addends. Explain that applying the Commutative Property clearly shows that 4 is being added to x; it places the plus sign (+) directly in front of the addend 4, making it easier to determine the inverse operation.
➤ **What inverse operation can be performed to isolate the variable?** *Subtract 4.* Direct the students to solve either of the equations on paper. Give guidance as needed.

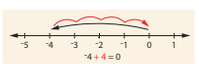
$4 + x = 15$	$x + 4 = 15$
$4 - 4 + x = 15 - 4$	$x + 4 - 4 = 15 - 4$
$x = 11$	$x = 11$

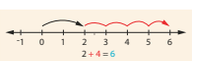
➤ **How can you check the solution?** *Substitute 11 for the variable (x) in the original equation.*
➤ **What is 4 + 11?** *15* **Is the solution correct?** *yes*

11. Follow a similar procedure for these equations, using the corresponding Variable Card for each equation.

$7 = 2 + n$	$6 + n = 10$	$x + 7 = 9$
n = 5	**n = 4**	**x = 2**

12. Write $x - 4 = 2$ for display.
➤ **What operation is being performed in this equation?** *Elicit that 4 is being subtracted from* x.
➤ **What inverse operation can be performed to isolate the variable?** *Add 4.*
➤ **If you add 4 to the left side of the equation, what must you do to the right side? Why?** *Elicit that you must add 4 to the right side of the equation to keep the equation balanced.*
Write $x - 4 + 4 = 2 + 4$ below $x - 4 = 2$. Point out that adding 4 to the left side of the equation cancels out the subtrahend 4 (i.e., $x - 4 + 4 = x$). The value of the equation does not change because 4 is being added to both sides of the equation.





Write $x - 0 = 6$ below $x - 4 + 4 = 2 + 4$.
➤ **What does the Zero Principle of Subtraction state?** *When you subtract zero from any number, the answer is that number.*
➤ **What is the value of x?** **x = 6** Write $x = 6$.
➤ **Is the solution correct? How do you know?** *Yes; elicit that when you substitute 6 for the variable (x) in the original equation, the equation is true; 6 − 4 = 2.*

13. Guide the students in solving these equations on paper without using manipulatives.

$b + 12 = 18$	$j - 7 = 21$	$a + 3 + 7 = 12$	$c - 5 = 14$
b = 6	**j = 28**	**a = 2**	**c = 19**

14. **Christian Worldview Shaping (CD)**

Student Text pp. 220–21

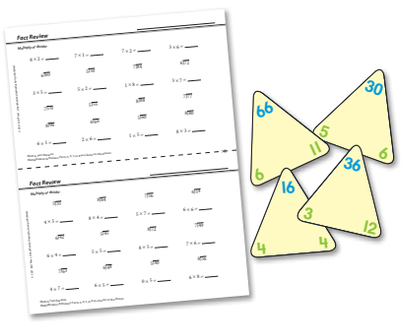
REVIEW FEATURES

Review provided by chapter sequence

- The chapter sequence of core math topics provides review. This sequence allows time for the teacher to review concepts, and reteach if necessary, before the student moves to a higher level in that same math topic.

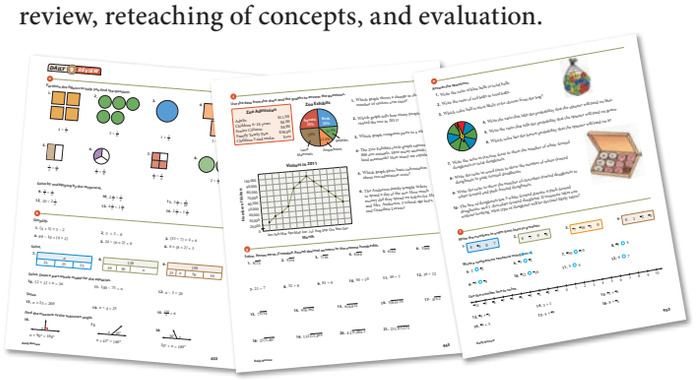
Review daily with practice activities

- *Practice* activities are drill activities that usually require more memory than understanding. These include measurement equivalents and fact memorization. Math facts should be practiced for at least 8–10 minutes daily. Flashcards for practicing the facts and the measurement equivalents are included in the Teacher Manipulatives Packet and the Student Manipulatives Packet. Fact Reviews and mental math problems are provided on the Teacher's Toolkit CD.



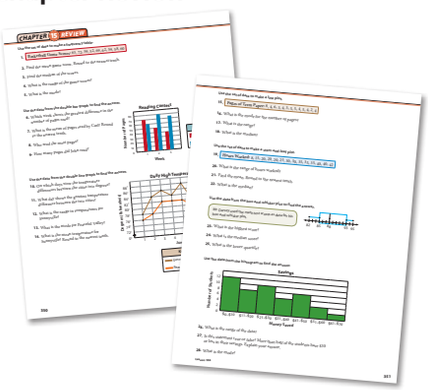
Review with Student Text Daily Review

- A section of *Daily Review* exercises is included for each chapter of the Student Text. These exercises review a concept taught or practiced in an earlier chapter or in fifth grade. Full-page worksheets of the Daily Review pages are provided on the Teacher's Toolkit CD. These may be used for additional review, reteaching of concepts, and evaluation.



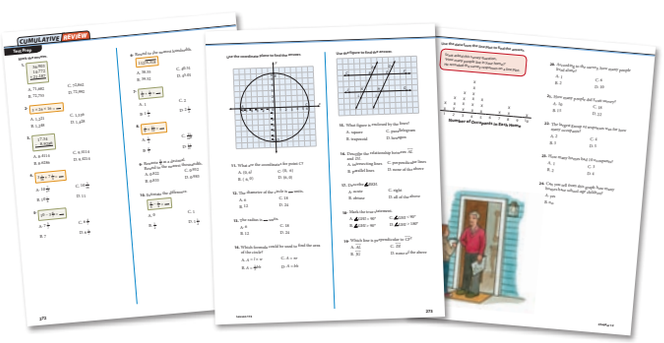
Review the chapter with a Chapter Review

- A *Chapter Review* is included at the end of each chapter. During the Chapter Review lesson, the teacher reviews the main concepts of the chapter. The two Student Text pages allow the teacher to evaluate what the student has learned; these pages along with the *Daily Review* exercises can be used as a study guide for the chapter test.



Review preceding chapters with a Cumulative Review

- A *Cumulative Review* follows the Chapter Review at the end of chapters 2–17. These Student Text pages include skills from several earlier chapters and can be used to review math concepts or to identify concepts the student has forgotten or not yet mastered. This review enables the teacher to evaluate the specific needs of students in order to reteach these students individually or in small groups. A Fifth Grade Review is at the end of Chapter 1.



TEACHING TIPS

Scheduling Math Lessons

Math 6 consists of 165 lesson days. The following are suggestions for helping you complete this program.

- Assign *Cumulative Review* pages as seatwork or homework instead of using them as individual math lessons.
- On test days, after administering the chapter test, teach the first lesson of the next chapter.
- If combining lessons is necessary, combine the first and second lessons of a chapter.
- Schedule the math lesson to follow a subject that is less active since the student is involved in active learning during most math lessons.

Planning Math Lessons

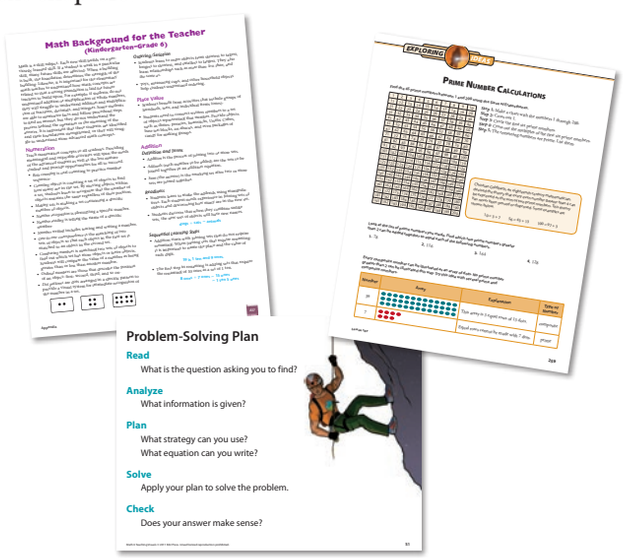
- Read *Math Background for the Teacher* (Appendix pages A8–A17) for a complete mathematical understanding of *Math 6* objectives. The effective use of this program depends on the teacher's mathematical understanding so that he can develop the student's understanding of math, not just teach the student to find answers to math problems.
- Note the objectives listed at the beginning of each lesson.
- Before teaching a lesson that includes manipulatives, practice using the manipulatives by following the instructions in the lesson.
- Highlight in the lesson plan the problems for which the student will use manipulatives or the problems that you will demonstrate with the manipulatives.

Teaching with Manipulatives

- The success of this math program depends on the use of manipulatives by the student to build a strong conceptual foundation in math. When teaching a new concept, start at the concrete level (the student uses manipulatives), move to the semi-concrete level (the student watches your demonstration or uses pictures), and finally, progress to the abstract level (the student uses only numbers).
- The purpose of manipulatives is to teach the student to *understand* math so that he is not just following a procedure that gives him the correct answer. Connect the manipulative activities to understanding the operation and understanding the answers to problems that the student is solving.
- Suggestions for organizing manipulatives are provided in the *Manipulatives Management* section on Appendix page A5.
- Ideas for making manipulatives are provided in the *Manipulatives Alternatives* section of the Teacher's Toolkit CD.

Teaching Problem Solving

- Problem solving is the primary goal of all math instruction. It is the process of confronting a problem and using one's wisdom and insight to attempt to solve the problem.
- Solving problems successfully is a result of understanding, questioning, and thinking. Build on a student's knowledge by *asking* him questions, when possible, rather than *telling* him information. Before explaining how to get the answer, explain the process and explore other ways of solving the problem.
- Make up word problems or allow the student to make up word problems to go with the problems you are demonstrating.
- Teach the student to listen for the question and to identify the information in a problem. Guide him in developing a plan to solve the problem. After he has solved the problem, encourage him to evaluate whether the answer is reasonable.
- While teaching the student to read graphs, encourage him to evaluate the information provided in the graph.
- Additional activities that help to develop the student's thinking skills as he uses his knowledge of math are provided on the *Exploring Ideas* pages at the end of some of the Student Text chapters.



Teaching Calculator Skills

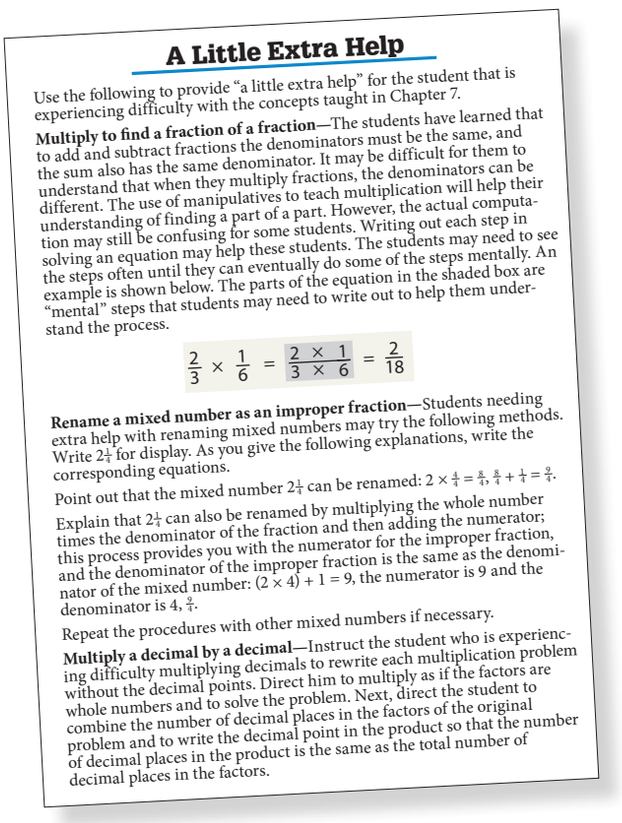
- Use the *Calculator Activities* on the Teacher's Toolkit CD to teach calculator skills for addition, subtraction, multiplication, division and other math concepts. In preparation for real-life situations, the student benefits from the instruction and the use of the calculator in math class. The use of calculators is not intended to replace fact memorization and mental computation.

Teaching Math Facts

- Refer to the *Guide for Math Facts* on Appendix pages A6–A7. Lists of addition, subtraction, multiplication, and division facts for memorization, *Fact Fun Activities,* and *Fact Reviews* are located on the Teacher's Toolkit CD.

Meeting Specific Needs

- *A Little Extra Help* in each Chapter Overview provides ideas for helping the student who is experiencing difficulty with the concepts taught in the chapter.



A Little Extra Help

Use the following to provide "a little extra help" for the student that is experiencing difficulty with the concepts taught in Chapter 7.

Multiply to find a fraction of a fraction—The students have learned that to add and subtract fractions the denominators must be the same, and the sum also has the same denominator. It may be difficult for them to understand that when they multiply fractions, the denominators can be different. The use of manipulatives to teach multiplication will help their understanding of finding a part of a part. However, the actual computation may still be confusing for some students. Writing out each step in solving an equation may help these students. The students may need to see the steps often until they can eventually do some of the steps mentally. An example is shown below. The parts of the equation in the shaded box are "mental" steps that students may need to write out to help them understand the process.

$$\frac{2}{3} \times \frac{1}{6} = \frac{2 \times 1}{3 \times 6} = \frac{2}{18}$$

Rename a mixed number as an improper fraction—Students needing extra help with renaming mixed numbers may try the following methods. Write $2\frac{1}{4}$ for display. As you give the following explanations, write the corresponding equations.

Point out that the mixed number $2\frac{1}{4}$ can be renamed: $2 \times \frac{4}{4} = \frac{8}{4}$, $\frac{8}{4} + \frac{1}{4} = \frac{9}{4}$.

Explain that $2\frac{1}{4}$ can also be renamed by multiplying the whole number times the denominator of the fraction and then adding the numerator; this process provides you with the numerator for the improper fraction, and the denominator of the improper fraction is the same as the denominator of the mixed number: $(2 \times 4) + 1 = 9$, the numerator is 9 and the denominator is 4, $\frac{9}{4}$.

Repeat the procedures with other mixed numbers if necessary.

Multiply a decimal by a decimal—Instruct the student who is experiencing difficulty multiplying decimals to rewrite each multiplication problem without the decimal points. Direct him to multiply as if the factors are whole numbers and to solve the problem. Next, direct the student to combine the number of decimal places in the factors of the original problem and to write the decimal point in the product so that the number of decimal places in the product is the same as the total number of decimal places in the factors.

- Use the *Cumulative Review* pages to identify concepts the student has forgotten or not yet mastered. This review enables you to evaluate the specific needs of students so that you can reteach these students individually or in small groups.
- The *Application Pages*, located on the Teacher's Toolkit CD, provide reinforcement activities for each student and challenging activities for the advanced student and the resourceful student who is willing to explore alternative measures for solving problems. Although the pages include individualized activities, the teacher may need to provide some direction and encouragement as the student develops and applies his thinking skills.
- Teachers of students with English as a second language should recognize cultural differences that affect the teaching of math to these students. Assignments may need to be modified or replaced with easier assignments while these students are learning foundational skills. When completing assignments, they need much oral practice and the benefit of being paired with English-proficient students.

Making Math Enjoyable

- The search-and-rescue theme provides the teacher with ideas to motivate students.
- Read-aloud stories about search-and-rescue events introduce each chapter. These stories are enjoyable even to the reluctant math student and may help to improve his attitude toward math.
- Activities such as using math manipulatives, acting out math problems, and making graphs engage the student in active learning.
- Colorful Student Text pages provide a variety of interesting activities for the student to practice what he has learned.
- *Calculator Activities* add variety and fun to math.

Assigning Homework

Although no pages or exercises have been designated as specific homework assignments for math, there is ample material that may be assigned. The following are examples of possible homework assignments.

- Complete unfinished Student Text pages.
- Complete the *Cumulative Review* pages in the Student Text.
- Complete a *Daily Review* page or worksheet.
- Complete an *Application* page.
- Practice math facts.
- Study for an *Assessment* page.
- Study for the chapter *Test*.

Math assignments, whether completed in class or as homework, should be adjusted according to the type of math instruction.

- Instruction that emphasizes the understanding of math using interactive learning and manipulatives places the focus on *problem solving*. The average student will not need to do many problems.
- Instruction that emphasizes following a procedure to get the correct answer focuses on *computation*. The average student will need to do more problems since he is learning by repetition.

Grading Math

- Check all Student Text pages but record a grade from only 1 or 2 pages each week.
- Record grades for Student Text pages that reflect skills that are not new. *Daily Review* pages or worksheets may also be assigned and graded several days after the lesson is taught.
- Administer each *Assessment* page and record the grade.
- Administer each chapter *Test* and record the grade.
- Assign more value to word problems than computation problems; e.g., the correct equation for a word problem receives 1 point, and the correct answer receives 2 points; the total point value for solving the word problem is 3 points.
- You may choose to grade the student's participation in math class. This grade may include the effective use of manipulatives and a genuine effort to understand the concept.
- When determining the math grade for report cards, you may want to give some aspects of math more weight than others. You will know best what your expectations are and if your emphasis has changed from one grading period to another.

Possible Grading Proportions

Written Work	Tests	Participation
75%	25%	—
65%	25%	10%
25%	50%	25%
50%	50%	—

LESSON PLAN OVERVIEW

Lesson	TE Pages	Student Pages	Skill Focus	Daily Review	Christian Worldview Shaping
Chapter 1: Add & Subtract					
1	4–5	2–5	place value through the Billions period standard form, word form, expanded form, and expanded form with multiplication value of digits in a whole number compare using >, <, or = round to the place of greatest value or to a given place	addition and subtraction facts	
2	6–7	6–7	addition strategies for mental math add whole numbers estimate the sum by rounding or using front-end estimation addition word problems	addition and subtraction facts multiplication facts	
3	8–9	8–9	Zero Principle of Subtraction subtract whole numbers estimate the difference by rounding or using front-end estimation subtraction word problems check a subtraction problem using addition	place value order numbers compare numbers multiplication facts	
4	10–11	10–11	decimal place value through the Ten-Thousandths place decimals in standard form, word form, fraction form, expanded form, and expanded form with multiplication value of digits in a decimal compare and order decimals round decimals to the place of greatest value or to a given place	bar graph line graph addition and subtraction word problems	
5	12–13	12–13	apply addition properties to decimals: Commutative, Identity, Associative add and subtract decimals estimate sums and differences check a subtraction problem using addition	bar graph division facts	
6	14–15	14–15	inverse relationship between addition and subtraction part-whole model to solve missing addend, missing subtrahend, and missing minuend word problems write an equation for a word problem multi-step word problems	place value compare numbers division facts	Christian behavior as showing God's love to others Man created in God's image Fall of man God's provision for man's sin
7	16–17	16–17	compare and order positive and negative numbers identify the number that is 1 more or 1 less plot positive and negative numbers on a number line add positive and negative numbers using a number line	order decimals and numbers add and subtract decimals multiplication and division facts	
8	18–19	18–19	read and write Roman numerals complete a sequence of Roman numerals	part-whole model round to the greatest place to estimate a sum or difference addition and subtraction facts	
9	20–21	20–21	use logic to identify number patterns use a pattern to solve a problem	compare and order positive and negative numbers multiplication and division facts	
10	22–23	22–23	Chapter 1 Review		
11 *TP	24–25	24–27	Chapter 1 Test Grade 5 Review		

*TP = Test Prep (Standardized Test Preparation)

Lesson	TE Pages	Student Pages	Skill Focus	Daily Review	Christian Worldview Shaping
Chapter 2: Multiply by a Whole Number					
12	**30–31**	**28–31**	factor, product, and multiple write a mathematical expression for a word phrase solve multiplication equations with a multiplication dot, parentheses, or variables prime and composite numbers Greatest Common Factor (GCF) Least Common Multiple (LCM) Multiplication Properties: Commutative, Identity, Zero, Associative	place value compare numbers round to the greatest place	
13	**32–33**	**32–33**	multiply multiples of 10 apply multiplication properties to multiples of 10 analyze patterns to multiply multiples of 10 using mental math	round to the greatest place to estimate the sum add decimals and whole numbers	
14	**34–35**	**34–35**	exponents squares expanded form with multiplication using exponents (powers of 10)	subtract whole numbers and decimals related addition equation round to the greatest place to estimate the difference	
15	**36–37**	**36–37**	multiply a whole number by a 1- or 2-digit multiplier Distributive Property of Multiplication over Addition estimate the product by rounding to the place of greatest value and by using front-end estimation multiplication word problems	place value standard form and word form order decimals round decimals to the greatest place	
16	**38–39**	**38–39**	multiply a decimal by a 1- or 2-digit multiplier estimate the product by rounding to the greatest place Distributive Property of Multiplication over Addition decimal word problems, including money problems multi-step word problems multiply a decimal by a power of 10	compare positive and negative numbers add positive and negative numbers plot positive and negative numbers on a number line multiplication facts	
17	**40–41**	**40–41**	multiply by a 3-digit multiplier estimate the product by rounding to the greatest place money multiplication problems determine the number of partial products apply strategies to multiply mentally	stem-and-leaf plot	Man's use of God's resources Goal setting
18	**42–43**	**42–43**	perfect squares square root of a perfect square Pythagorean Theorem	division facts related multiplication equations	
19	**44–45**	**44–45**	Chapter 2 Review		
20 TP	**46–47**	**46–49**	Chapter 2 Test Cumulative Review		
Chapter 3: Divide by a Whole Number					
21	**52–53**	**50–53**	dividend, divisor, and quotient inverse relationship between multiplication and division divide by a 1-digit divisor to find 2- and 3-digit quotients interpret a remainder in a division word problem	multiplication terms and properties multiply by a 3-digit multiplier	
22	**54–55**	**54–55**	divisibility rules divide multiples of 10, using mental math divide by a 2-digit multiple of 10 estimate a quotient interpret a remainder in a division word problem check a division problem using multiplication	fraction terms compare fractions	
23	**56–57**	**56–57**	estimate a quotient divide by 2-digit divisors adjust the quotient in a division problem interpret a remainder in a division word problem check a division problem using multiplication	line, line segment, ray parallel, perpendicular, and intersecting lines	

Lesson	TE Pages	Student Pages	Skill Focus	Daily Review	Christian Worldview Shaping
24	58–59	58–59	divide a decimal by a 1-digit whole number annex a 0 to rename a decimal check a division problem using multiplication estimate a quotient divide to find a quotient less than 1 express a fraction as an equivalent decimal interpret a remainder in a division word problem	perimeter area volume	
25	60–61	60–61	determine an average (mean) or a unit rate divide a decimal by a 2-digit whole number estimate a quotient divide to find a quotient less than 1 annex a 0 to rename a decimal interpret a remainder in a division word problem express a fraction as an equivalent decimal	measure inches and half inches customary conversions	Man's God-given dominion God's use of creation for His purposes
26	62–63	62–63	divide by a power of 10 divide whole numbers by 1-, 2-, and 3-digit divisors divide decimals by 1-, 2-, and 3-digit whole numbers estimate a quotient interpret a remainder in a division word problem	line graph range	
27	64–65	64–65	Order of Operations complete an expression to make an equation true	number sense word problems	
28	66–67	66–67	multi-step problems use the Order of Operations to write an equation for a multi-step problem	add and subtract 2- and 3-digit numbers multiply by 2- and 3-digit multipliers divide by a 2-digit divisor	
29	68–69	68–69	Chapter 3 Review		
30 TP	70–71	70–73	Chapter 3 Test Cumulative Review		
Chapter 4: Fraction Theory					
31	76–77	74–77	Greatest Common Factor (GCF) of two or more numbers: list factors, create a Venn diagram, construct a factor tree to evaluate the prime factorization apply the GCF to problem-solving situations	prime and composite numbers exponent form multiply by a 3-digit multiplier	
32	78–79	78–79	determine the GCF of two numbers Least Common Multiple (LCM) of two or more numbers: list multiples, create a Venn diagram, construct a factor tree to evaluate the prime factorization prime factorizations using exponential notation apply the LCM to problem-solving situations	divisibility rules Order of Operations long division	
33	80–81	80–81	write a fraction to name part of a whole, a point on a number line, and part of a set draw and complete fraction models identify fractions equivalent to 1	fractions compare fractions	
34	82–83	82–83	rename a mixed number as an improper fraction rename an improper fraction as a mixed number draw a model to solve a word problem	identify a right triangle identify radii and diameters identify shapes	
35	84–85	84–85	rename fractions to higher, lower, and lowest terms use cancellation to rename fractions to lowest terms	number sense positive and negative numbers prime and composite numbers	
36	86–87	86–87	write an inequality to express unequal relationships compare and order fractions using number sense or common denominators (LCM) compare and order mixed numbers and improper fractions	perimeter area long division	
37	88–89	88–89	write an inequality to express unequal relationships compare and order fractions using number sense, common denominators (LCM), cross-multiplication, or by renaming as decimals	bar graph	
38	90–91	90–91	use a fraction model to represent a percent write a percent as a fraction in lowest terms write a fraction as a percent a circle graph	add positive and negative numbers using a number line Order of Operations	Man's knowledge and wise application of God's Word to help his fellow man

Lesson	TE Pages	Student Pages	Skill Focus	Daily Review	Christian Worldview Shaping
39	92–93	92–93	Chapter 4 Review		
40 TP	94–95	94–97	Chapter 4 Test Cumulative Review		
Chapter 5: Add & Subtract Fractions					
41	100–101	98–101	identify fractions equivalent to 1 and to $\frac{1}{2}$ write an inequality to express an unequal relationship estimate the sum or the difference of mixed numbers and fractions by rounding to the nearest 1 or $\frac{1}{2}$	rename improper fractions and mixed numbers write the fraction in lowest terms identify the GCF	
42	102–3	102–3	add and subtract fractions and mixed numbers with like denominators rename an improper fraction as a mixed number simplify fractions by renaming to lowest terms fraction word problems estimate the sum or the difference of mixed numbers by rounding to the nearest whole number apply addition properties to fractions	Order of Operations add with 3-, 4-, and 6-digit numbers subtract with 2-, 3-, and 4-digit numbers multiply and divide	
43	104–5	104–5	add and subtract fractions and mixed numbers with unlike (related) denominators multiply to rename fractions to higher terms simplify fractions by renaming to lowest terms fraction word problems estimate the sum or the difference	identify shapes identify a face, edge, vertex, and curved surface multiply and divide	
44	106–7	106–7	add and subtract unlike (unrelated) fractions estimate the sum of a fraction equation multiply unlike denominators to find a common denominator Least Common Denominator: list multiples, create a Venn diagram, construct a factor tree to evaluate the prime factorization prime factorizations using exponential notation	place value add and subtract decimals multiply and divide decimals	
45	108–9	108–9	compare fractions and mixed numbers round fractions to the nearest 0, $\frac{1}{2}$, or 1 to estimate add and subtract fractions and mixed numbers solve problems with 3 addends word problems using the Least Common Denominator	measurement customary conversions identify the best unit of measurement	God's perfect design God's knowledge of each individual Man's responsibility to glorify God
46	110–11	110–11	guess-and-check	Order of Operations and properties part-whole model fractions to show probability	
47	112–13	112–13	Chapter 5 Review		
48 TP	114–15	114–117	Chapter 5 Test Cumulative Review		
Chapter 6: Plane Figure Geometry					
49	120–21	118–21	identify, name, and draw points, lines, and planes distinguish between collinear and noncollinear points identify or graph the location of a point on a coordinate plane, naming the coordinates and the quadrant points, lines, and planes in everyday life	addition and subtraction multiply and divide solve a word problem	
50	122–23	122–23	graph points on a coordinate plane to form a line identify lines as intersecting, perpendicular, or parallel use variables to represent coordinates on a coordinate plane complete an input/output table relate lines to real-life situations	circle graph connect fractions with percents	
51	124–25	124–25	identify and name rays and angles classify angles: right, acute, obtuse, straight use a protractor to measure and draw angles relate geometry to everyday life	place value order numbers round to the greatest place multiplication and division	
52	126–27	126–27	supplementary and complementary angles find the unknown measure of an angle in a pair of supplementary angles and in a pair of complementary angles recognize angles: right, acute, obtuse, straight use a protractor to measure angles	write the equivalent unit of time calendar write the equivalent unit of measurement weight and capacity	

Lesson	TE Pages	Student Pages	Skill Focus	Daily Review	Christian Worldview Shaping
53	**128–29**	**128–29**	identify and name line segments regular and irregular polygons number of sides and interior angles in a polygon graph points on a coordinate plan to form a polygon	add and subtract fractions and mixed numbers	
54	**130–31**	**130–31**	sum of the measures of the angles in a triangle equals 180° find the unknown measure of an angle in a triangle classify triangles by their angles: right, acute, obtuse classify triangles by their sides: equilateral, isosceles, scalene measure the angles in a triangle using a protractor	perimeter area volume	
55	**132–33**	**132–33**	regular and irregular polygons classification of quadrilaterals sum of the angles of a quadrilateral equals 360° find the unknown measure of an angle in a quadrilateral measure the angles in a quadrilateral using a protractor	add positive and negative numbers add and subtract fractions, mixed numbers multiply and divide	
56	**134–35**	**134–35**	similar and congruent polygons corresponding angles and line segments ratios for corresponding sides in a pair of polygons draw congruent and similar polygons	number sense with fractions compare fractions add and subtract mixed numbers	
57	**136–37**	**136–37**	transformations: translation, rotation, reflection draw a transformed figure symmetrical figures draw lines of symmetry on a figure	add, subtract, multiply, divide word problems with decimals	
58	**138–39**	**138–39**	find the diameter/radius given the radius/diameter circle: center, radius, chord, diameter, central angle draw a circle using a protractor measure the central angles of a circle using a protractor relate fractions of a circle to corresponding degrees in a circle to make a circle graph	use the chart to find the average, range, median line graph	
59	**140–41**	**140–41**	polyhedrons 3-dimensonal figures that are not polyhedrons classify 3-dimensional figures as spherical, conical, or cylindrical faces, vertices, and edges in polyhedrons construct polyhedrons	add positive and negative numbers order numbers	
60	**142–43**	**142–43**	Chapter 6 Review		Man's demonstration of God's love Man as steward of God's creation
61 TP	**144–45**	**144–47**	Chapter 6 Test Cumulative Review		
Chapter 7: Multiply Fractions & Decimals					
62	**150–51**	**148–51**	multiply a whole number and a fraction multiply to find a fraction of a whole number or of a fraction use manipulatives to multiply fractions rename a whole number as an improper fraction solve a multiplication word problem	addition, subtraction, multiplication, division facts input/output tables	
63	**152–53**	**152–53**	use cancellation when multiplying fractions multiply to find a fraction of a fraction identify the reciprocal of a fraction write and solve an equation for a word problem	list the factors find the GCF and LCM rename fractions to lowest terms add and subtract fractions	
64	**154–55**	**154–55**	multiply mixed numbers rename an improper fraction as a mixed number rename a mixed number as an improper fraction use the Distributive Property to multiply mixed numbers use cancellation when multiplying mixed numbers write and solve an equation for a word problem estimate products of mixed numbers and fractions	coordinate graph multiplication and division	
65	**156–57**	**156–57**	multiply a decimal by a decimal understand the relationship between decimals and fractions round to estimate the product of fractions apply the Distributive Property to multiply decimals use mental math to multiply a decimal and a power of 10	choose the best unit of measure Celsius temperature add and subtract	

Lesson	TE Pages	Student Pages	Skill Focus	Daily Review	Christian Worldview Shaping
66	**158–59**	**158–59**	multiply a decimal by a decimal understand the relationship between decimals and fractions annex zeros in the product estimate the product by rounding	word problems write a ratio	Man's responsibility for his actions Honesty Dependability
67	**160–61**	**160–61**	develop an understanding of our infinite number system fractions and decimals that come between two numbers multi-step word problems	write a fraction in decimal form write a percent in fraction form connect a fraction with a percent	
68	**162–63**	**162–63**	Chapter 7 Review		
69 TP	**164–65**	**164–67**	Chapter 7 Test Cumulative Review		
Chapter 8: Divide Fractions					
70	**170–71**	**168–71**	divide a whole number, fraction, or mixed number by a fraction number line to solve a division equation with fractions draw a diagram to solve a division equation with fractions check a division problem using multiplication write and solve an equation for a word problem	classify triangles find the measure of the unknown angle	
71	**172–73**	**172–73**	divide a fraction to find a quotient with a remainder draw a diagram to solve a division equation with fractions use a number line to solve a division equation with fractions check a division problem using multiplication	estimate the product and quotient addition and subtraction solve the expression	Man's use of God's resources Man's demonstration of God's love
72	**174–75**	**174–75**	identify the reciprocal of a fraction divide by multiplying by the reciprocal of the divisor draw a diagram for a division word problem with fractions check a division problem using multiplication multiplication and division equations for a fraction family	multiply fractions and mixed numbers using cancellation and the Distributive Property fraction word problems	
73	**176–77**	**176–77**	divide mixed numbers divide mixed numbers by multiplying by the reciprocal check a division problem using multiplication draw a diagram or use a number line to solve a division equation with a mixed number write and solve an equation for a word problem	identify quadrilaterals find the measure of the unknown angle	
74	**178–79**	**178–79**	write and solve a multi-step equation Order of Operations	chart using mass measurement word problems	
75	**180–81**	**180–81**	apply mathematical properties to evaluate expressions with fractions Order of Operations substitute a given value for a variable in an expression	line graph temperature word problems	
76	**182–83**	**182–83**	apply Order of Operations to multi-step equations multi-step problems with too much or too little information	add, subtract, multiply, and divide with decimals decimal and fraction word problems	
77	**184–85**	**184–85**	Chapter 8 Review		
78 TP	**186–87**	**186–89**	Chapter 8 Test Cumulative Review		
Chapter 9: Divide Decimals					
79	**192–93**	**190–93**	divide a decimal by a 1-digit whole number estimate the quotient of a decimal division problem check a division problem using multiplication annex a 0 to rename a decimal divide a decimal by a power of 10 using mental math	partition figures to find the quotient divide fractions multiply by the reciprocal	
80	**194–95**	**194–95**	divide a decimal by a 1- or a 2-digit whole number estimate the quotient of a decimal division problem divide a whole number by a whole number to find a decimal fraction in the quotient check a division problem using multiplication word problems	Order of Operations part-whole model solve for *n* unknown measure of an angle	
81	**196–97**	**196–97**	estimate the quotient of a decimal division problem divide a decimal by a 1- or a 2-digit whole number terminating and repeating decimal quotients write an equation for a word problem money word problems	compare decimals add, subtract, and multiply decimals decimal word problems	

Lesson	TE Pages	Student Pages	Skill Focus	Daily Review	Christian Worldview Shaping
82	**198–99**	**198–99**	rename a fraction as a decimal by renaming the denominator as a power of ten rename a fraction as a decimal using division identify a quotient as a repeating decimal or a non-repeating, non-terminating decimal compare a decimal and a fraction	perimeter area volume volume and perimeter word problems	
83	**200–1**	**200–1**	divide a whole number by a decimal write an equation for a word problem	congruent and similar shapes percent probability: certain, equally likely, impossible	
84	**202–3**	**202–3**	divide a whole number by a decimal divide a decimal by a decimal money word problems complete an input/output table	pictograph add, subtract, multiply, and divide money	Honesty Purity of a Christian's heart Christians as faithful workers
85	**204–5**	**204–5**	real numbers apply properties to real numbers	find the measure of the unknown angle	
86	**206–7**	**206–7**	Chapter 9 Review		
87 TP	**208–9**	**208–11**	Chapter 9 Test Cumulative Review		
Chapter 10: Equations					
88	**214–15**	**212–15**	write a word phrase as a numeric or algebraic expression algebraic expressions with more than one operation evaluate an expression using substitution Order of Operations	mental math rename a fraction as a decimal add, subtract, multiply, and divide decimals	
89	**216–17**	**216–17**	write an equation with two equal expressions determine the variable in an equation evaluate and relate expressions using >, <, or =	factor tree prime factorization in exponent form find the GCF Venn diagram	
90	**218–19**	**218–19**	simplify algebraic expressions using manipulatives apply properties to simplify algebraic expressions	mental multiplication and division addition and subtraction round to the nearest hundredth	
91	**220–21**	**220–21**	solve algebraic equations using inverse operations: addition and subtraction	whole number place value	
92	**222–23**	**222–23**	solve multiplication equations using division (inverse operation) check multiplication equations using substitution write an equation with a variable to solve a word problem	volume area perimeter	Man's responsibility for his actions God's Word as the only true source of guidance
93	**224–25**	**224–25**	solve algebraic equations using inverse operations: division and multiplication write an algebraic equation for a word problem picture an inequality on a number line determine if a given number is a solution to an inequality	divide fractions and whole numbers measurement word problems	
94	**226–27**	**226–27**	use a Distributive Property to find equivalent expressions solve algebraic equations using inverse operations	lines and points classify polygons classify a triangle by the length of its sides	
95	**228–29**	**228–29**	calculate the distance traveled given the rate and the time calculate the rate of travel given the distance and the time calculate the time traveled given the distance and the rate	circle graph add, subtract, divide	
96	**230–31**	**230–31**	Chapter 10 Review		
97 TP	**232–33**	**232–35**	Chapter 10 Test Cumulative Review		

Lesson	TE Pages	Student Pages	Skill Focus	Daily Review	Christian Worldview Shaping
Chapter 11: Perimeter & Area					
98	**238–39**	**236–39**	measure the perimeter of a figure in centimeters perimeter of a polygon using a formula unknown length of a side of a polygon algebraic expression to find the perimeter of a rectangle	write a word phrase as a numeric or algebraic expression compare expressions	
99	**240–41**	**240–41**	relate the diameter to the circumference of a circle calculate the circumference of a circle using a formula find the diameter of a circle given the circumference relate circumference to real-life situations	add money, whole numbers, decimals, and fractions	
100	**242–43**	**242–43**	area formulas: rectangle, square, parallelogram area of a complex figure unknown measurement of a rectangle or square relate area to real-life situations	subtraction	
101	**244–45**	**244–45**	area formula: triangles area of a complex figure find the unknown height of a triangle	apply properties to find an unknown simplify expressions solve using the inverse operation	
102	**246–47**	**246–47**	area formula: circle estimate the area of a circle	multiplication	
103	**248–49**	**248–49**	conical figures: 1 base; cylindrical figures: 2 congruent bases 3-dimensional figures and their nets surface area of rectangular, square, and triangular prisms construct a triangular prism relate surface area to real-life situations	circle graph line graph money, percent, and fraction word problems	
104	**250–51**	**250–51**	surface area of rectangular, square, and triangular prisms surface area of a cylinder make a cylinder net	divide whole numbers and decimals	
105	**252–53**	**252–53**	varied perimeter for a fixed area area and perimeter of a rectangle area of a complex figure create a basic floor plan from a fixed area	decimal word problems money word problems	God's loving care God's provision for man Man's use of his God-given dominion and resources
106	**254–55**	**254–55**	Chapter 11 Review		
107 TP	**256–57**	**256–59**	Chapter 11 Test Cumulative Review		
Chapter 12: Volume					
108	**262–63**	**260–63**	volume and capacity volume of a rectangular prism using a model volume of a rectangular prism using a formula relate geometry to real-life situations	simplify expressions write a word phrase as an algebraic expression solve for the variable	
109	**264–65**	**264–65**	volume of a cube (square prism) using a model volume of a cube using a formula unknown measurement of a rectangular prism given its volume and the area of the base (or 2 dimensions)	write the equivalent measure compare units of measurement choose the best unit of measurement	
110	**266–67**	**266–67**	volume of an irregular prism using a model volume of a triangular prism using a formula relate triangular prisms to rectangular prisms volume of a cylinder using a formula	line graph	
111	**268–69**	**268–69**	varied surface area for a fixed volume volume and surface area of a rectangular prism varied volume for a fixed lateral surface area volume and lateral surface area of a cylinder conservation of volume	add, subtract, multiply, divide	
112	**270–71**	**270–71**	Chapter 12 Review		God's orderly design God's creation for man's enjoyment
113 TP	**272–73**	**272–75**	Chapter 12 Test Cumulative Review		

Lesson	TE Pages	Student Pages	Skill Focus	Daily Review	Christian Worldview Shaping
Chapter 13: Ratios, Proportions & Percents					
114	**278–79**	**276–79**	ratio: word form, ratio form, fraction form equivalent ratios unit rates calculate the distance traveled at a given rate and time	perimeter area volume word problems	
115	**280–81**	**280–81**	ratio table use ratios to represent and to solve real-life problems plot the pairs of values in a ratio table on a coordinate plane	compare decimals money word problems write an equation for the word phrase	
116	**282–83**	**282–83**	determine whether 2 ratios are proportionate solve for a missing term in a proportion	multiply and divide fractions and mixed numbers rename to lowest terms	Man as steward of God's creation Man's use of wisdom to serve his fellow man
117	**284–85**	**284–85**	solve for a missing term in a proportion use proportions to find unknown measures in similar figures find an indirect measurement using proportions and similar figures	classify a triangle by its angles or its sides the unknown measure of an angle in a polygon the measure of a complementary or supplementary angle circle: diameter, chord, radius	
118	**286–87**	**286–87**	use a scale and scale drawing, map, or model to find actual measurements determine the length on a scale drawing to represent an actual measurement	write a fraction as a decimal division with repeating digits money word problems	
119	**288–89**	**288–89**	express percents as ratios, decimals, and fractions express decimals and fractions as percents compare percents to decimals and fractions solve percent problems	use given values to evaluate the expressions simplify expressions	
120	**290–91**	**290–91**	find a percent of a number using equations, models, or proportions solve percent problems	write the time degrees Fahrenheit write the equivalent measurement	
121	**292–93**	**292–93**	find the unknown whole in a percent problem using models, equations, or proportions	coordinate plane and ordered pairs	
122	**294–95**	**294–95**	calculate the unknown distance, rate of speed, or time (like and unlike units) use a proportion to find an equivalent rate	add, subtract, divide round to the nearest tenth	
123	**296–97**	**296–97**	Chapter 13 Review		
124 TP	**298–99**	**298–301**	Chapter 13 Test Cumulative Review		
Chapter 14: Measurement					
125	**304–5**	**302–5**	linear measurement units: inch, foot, yard, mile estimate measurements using benchmarks measure to the nearest inch, half inch, fourth inch, eighth inch, and sixteenth inch convert linear measurements add and subtract linear measurements	write a ratio as a fraction in lowest terms write a ratio from given data ratio table	
126	**306–7**	**306–7**	weight units: ounce, pound, ton capacity units: fluid ounce, cup, pint, quart, gallon convert weight and capacity measurements read a scale add and subtract capacity measurements	compare fractions find the unit rate equivalent ratios	
127	**308–9**	**308–9**	metric linear units: kilometer, meter, centimeter, millimeter estimate and measure to the nearest meter, centimeter, and millimeter determine the appropriate linear unit convert metric linear measurements add and subtract metric linear measurements	decimal form, percent form, fraction form percent of a number	
128	**310–11**	**310–11**	metric capacity units: liter and milliliter convert liters to milliliters and milliliters to liters metric mass units: gram, kilogram, milligram convert milligrams, grams, and kilograms add or subtract unlike metric units	volume of a prism and a cylinder volume word problems	

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129	**312–13**	**312–13**	add, subtract, multiply, and divide measurements solve measurement word problems find a fraction of a measurement	ratio probability word problems	
130	**314–15**	**314–15**	standard Celsius and Fahrenheit temperatures read and set a Celsius and Fahrenheit thermometer determine increase/decrease between two temperatures determine the more reasonable temperature convert degrees Celsius to degrees Fahrenheit and degrees Fahrenheit to degrees Celsius	order, compare, and add positive and negative numbers	
131	**316–17**	**316–17**	recognize approximate equivalencies between customary and metric measurements compare customary and metric measurements estimate conversions between customary and metric measurements	average	Interrelationship of the parts of creation Man as steward of God's creation
132	**318–19**	**318–19**	equivalent units of time tell and write time differentiate between AM and PM convert units of time add and subtract time 24-hour clock	divide fractions and mixed numbers fraction word problems	
133	**320–21**	**320–21**	time zones elapsed time convert units of time	divide decimals write a fraction as a decimal divide fractions with repeating decimal quotients	
134	**322–23**	**322–23**	add, subtract, multiply, and divide measurements solve measurement word problems standard Celsius and Fahrenheit temperatures compare values between customary and metric measurements convert measurements tell and write time elapsed time	coordinate plane: ordered pairs	
135	**324–25**	**324–25**	write a unit multiplier from an equivalency convert units of measure using a unit multiplier	add, subtract, multiply, divide	
136	**326–27**	**326–27**	Chapter 14 Review		
137 TP	**328–29**	**328–31**	Chapter 14 Test Cumulative Review		
Chapter 15: Statistics					
138	**334–35**	**332–35**	complete a frequency table using given data determine range, mean, median, and mode for a set of data	ratio: word form, ratio form, fraction form write a ratio as a fraction in lowest terms equivalent ratios add, subtract, multiply, divide	
139	**336–37**	**336–37**	double bar graph double line graph identify range, mean, median, and mode for a set of data	similar figures write a proportion to find the unknown measure proportion word problems	
140	**338–39**	**338–39**	stem-and-leaf plot	percent as a decimal and as a fraction in lowest terms ratio and decimal as a percent frequency table/tally chart	
141	**340–41**	**340–41**	line plot cluster, gap, and outlier determine the effects of an outlier	equivalent measurements convert measurements add and subtract measurements	
142	**342–43**	**342–43**	histogram	equivalent measurements convert measurements add and subtract measurements	
143	**344–45**	**344–45**	box-and-whisker plot lower, middle, and upper quartiles of data	circle graph percent	

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144	**346–47**	**346–47**	double bar graph double line graph stem-and-leaf plot line plot histogram box-and-whisker plot	write an improper fraction as a mixed number or a whole number add and subtract fractions and mixed numbers fraction word problems	
145	**348–49**	**348–49**	identify range, mean, median, and mode for a set of data record data in a frequency table choose an appropriate graph to display data	add, subtract, multiply, divide add positive and negative numbers solve for the variable	Giving God the best Man as a steward of time
146	**350–51**	**350–51**	Chapter 15 Review		
147 TP	**352–53**	**352–355**	Chapter 15 Test Cumulative Review		
Chapter 16: Probability					
148	**358–59**	**356–59**	probability expressed as a number between 0 and 1 or a percent between 0% and 100% probability as a fraction, a decimal, and a percent theoretical probability of an event probability of the complement of an event	stem-and-leaf plot range, mean, mode, and median	Man exercising dominion over the earth and its resources Man showing love to God
149	**360–61**	**360–61**	make a list or a tree diagram to find the sample space Multiplication Counting Principle theoretical probability of an event	write a ratio for the picture write a ratio as a fraction in lowest terms	
150	**362–63**	**362–63**	theoretical probability of an event theoretical probability of an event to predict the results of an experiment probability experiment experimental probability of an event make a line plot of the results of an experiment	compare fractions find the unknown measurement equivalent ratios	
151	**364–65**	**364–65**	probability experiment experimental probability of an event make a list or a tree diagram to find the sample space and theoretical probability of an event use probability to determine if a game is fair or not fair use probability to make decisions and to make predictions	fraction or decimal as a percent percent of the number percent word problems	
152	**366–67**	**366–67**	independent and dependent compound events find the probability of 2–4 independent events or 2–4 dependent events using a formula	coordinate plane: ordered pairs and quadrants	
153	**368–69**	**368–69**	Chapter 16 Review		
154 TP	**370–71**	**370–73**	Chapter 16 Test Cumulative Review		
Chapter 17: Integers					
155	**376–77**	**374–77**	absolute value of a number compare and order integers	compare and order numbers round to the greatest place word form, standard form, expanded form, expanded form with multiplication	
156	**378–79**	**378–79**	add integers using manipulatives add integers using a number line write an addition equation for a word problem	add, subtract, multiply, and divide fractions and mixed numbers	
157	**380–81**	**380–81**	subtract integers using manipulatives subtract integers using a number line write a subtraction equation for a word problem	measure an angle using a protractor classify angles: acute, obtuse, right, straight diameter unknown measure of an angle rhombus	
158	**382–83**	**382–83**	add and subtract integers using a number line and manipulatives relationship between subtracting an integer and adding its opposite write an equation for a word problem	mental math add, subtract, multiply, divide write a fraction as a decimal	

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159	**384–85**	**384–85**	add and subtract integers solve real-life word problems	word phrase as an algebraic expression simplify expressions	Man's wise use of money
160	**386–87**	**386–87**	multiply integers using manipulatives write an equation for a word problem	perimeter circumference area	
161	**388–89**	**388–89**	multiply and divide integers write an equation for a word problem	unit rate distance traveled in a given time ratio percent as a decimal and as a fraction in lowest terms write a proportion to find an equivalent ratio	
162	**390–91**	**390–91**	add and subtract integers using manipulatives and a number line subtract integers by adding the opposite multiply and divide integers order of operations	experimental probability probability as a fraction and a percent possible combinations	
163	**392–93**	**392–93**	graph points on a four-quadrant coordinate plane write ordered pairs to identify points on a coordinate plane	order, compare, add, and subtract integers	
164	**394–95**	**394–95**	Chapter 17 Review		
165 TP	**396–97**	**396–99**	Chapter 17 Test Cumulative Review		