Fourth Edition

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Contents

Lesson Features

Objectives point out the skills taught in the lesson.

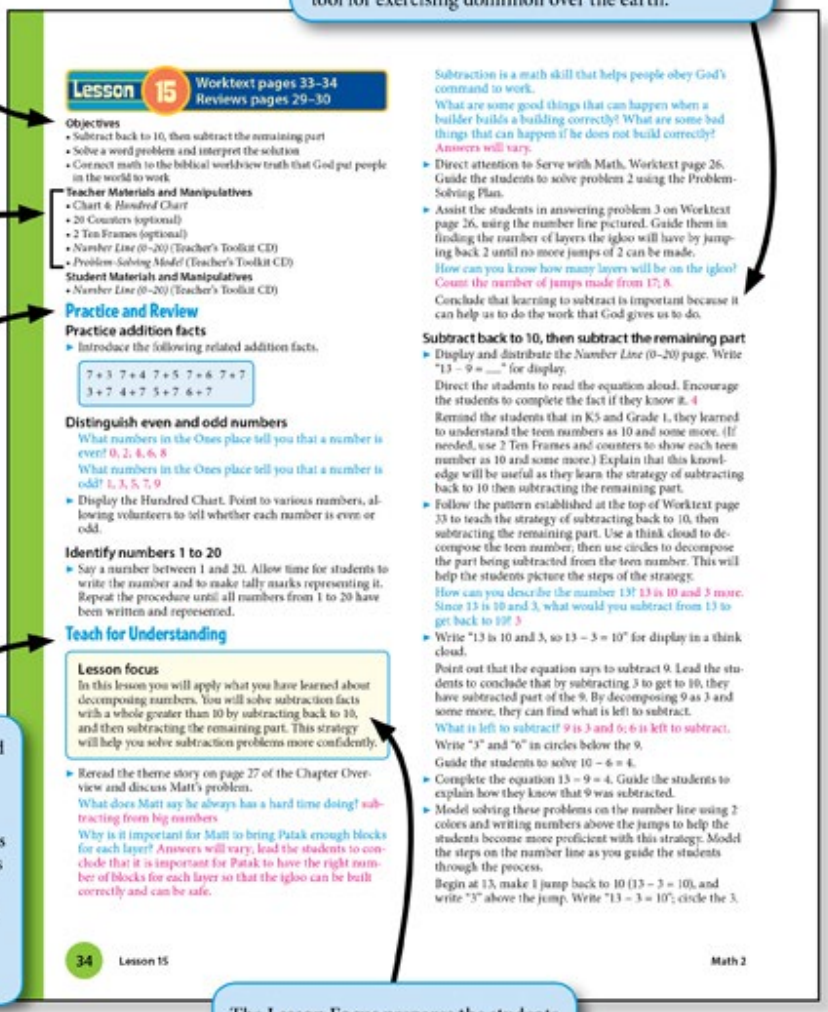
Encourage a **biblical worldview** by discussing real-life problems to show the students that math is a powerful tool for exercising dominion over the earth.

The **Materials** section lists items that are used in the lesson.

Practice and Review provides activities for practicing facts and previously taught skills. Review of concepts can occur any time during the day.

Teach for Understanding and **Check for Understanding** provide background information and questions to effectively engage the students in learning the math concepts for each lesson. Lessons incorporate manipulatives to promote a problem-solving approach that develops critical-thinking skills.

The **Lesson Focus** prepares the students for what they will learn in the lesson.



Lesson 15 — Worktext pages 33–34 — Reviews pages 29–30

Objectives
- Subtract back to 10, then subtract the remaining part
- Solve a word problem and interpret the solution
- Connect math to the biblical worldview truth that God put people in the world to work

Teacher Materials and Manipulatives
- Chart 4: *Hundred Chart*
- 20 Counters (optional)
- 2 Ten Frames (optional)
- *Number Line (0–20)* (Teacher's Toolkit CD)
- *Problem-Solving Model* (Teacher's Toolkit CD)

Student Materials and Manipulatives
- *Number Line (0–20)* (Teacher's Toolkit CD)

Practice and Review

Practice addition facts
- Introduce the following related addition facts.

7 + 3 7 + 4 7 + 5 7 + 6 7 + 7
3 + 7 4 + 7 5 + 7 6 + 7

Distinguish even and odd numbers

What numbers in the Ones place tell you that a number is even? 0, 2, 4, 6, 8

What numbers in the Ones place tell you that a number is odd? 1, 3, 5, 7, 9

- Display the Hundred Chart. Point to various numbers, allowing volunteers to tell whether each number is even or odd.

Identify numbers 1 to 20
- Say a number between 1 and 20. Allow time for students to write the number and to make tally marks representing it. Repeat the procedure until all numbers from 1 to 20 have been written and represented.

Teach for Understanding

Lesson focus
In this lesson you will apply what you have learned about decomposing numbers. You will solve subtraction facts with a whole greater than 10 by subtracting back to 10, and then subtracting the remaining part. This strategy will help you solve subtraction problems more confidently.

- Reread the theme story on page 27 of the Chapter Overview and discuss Matt's problem.

What does Matt say he always has a hard time doing? subtracting from big numbers

Why is it important for Matt to bring Patak enough blocks for each layer? Answers will vary; lead the students to conclude that it is important for Patak to have the right number of blocks for each layer so that the igloo can be built correctly and can be safe.

Subtraction is a math skill that helps people obey God's command to work.

What are some good things that can happen when a builder builds a building correctly? What are some bad things that can happen if he does not build correctly? Answers will vary.

- Direct attention to Serve with Math, Worktext page 26. Guide the students to solve problem 2 using the Problem-Solving Plan.
- Assist the students in answering problem 3 on Worktext page 26, using the number line pictured. Guide them in finding the number of layers the igloo will have by jumping back 2 until no more jumps of 2 can be made.

How can you know how many layers will be on the igloo? Count the number of jumps made from 17; 8.

Conclude that learning to subtract is important because it can help us to do the work that God gives us to do.

Subtract back to 10, then subtract the remaining part
- Display and distribute the *Number Line (0–20)* page. Write "13 − 9 = ____" for display.

Direct the students to read the equation aloud. Encourage the students to complete the fact if they know it. 4

Remind the students that in K5 and Grade 1, they learned to understand the teen numbers as 10 and some more. (If needed, use 2 Ten Frames and counters to show each teen number as 10 and some more.) Explain that this knowledge will be useful as they learn the strategy of subtracting back to 10 then subtracting the remaining part.

- Follow the pattern established at the top of Worktext page 33 to teach the strategy of subtracting back to 10, then subtracting the remaining part. Use a think cloud to decompose the teen number; then use circles to decompose the part being subtracted from the teen number. This will help the students picture the steps of the strategy.

How can you describe the number 13? 13 is 10 and 3 more. Since 13 is 10 and 3, what would you subtract from 13 to get back to 10? 3

- Write "13 is 10 and 3, so 13 − 3 = 10" for display in a think cloud.

Point out that the equation says to subtract 9. Lead the students to conclude that by subtracting 3 to get to 10, they have subtracted part of the 9. By decomposing 9 as 3 and some more, they can find what is left to subtract.

What is left to subtract? 9 is 3 and 6; 6 is left to subtract.

Write "3" and "6" in circles below the 9.

Guide the students to solve 10 − 6 = 4.

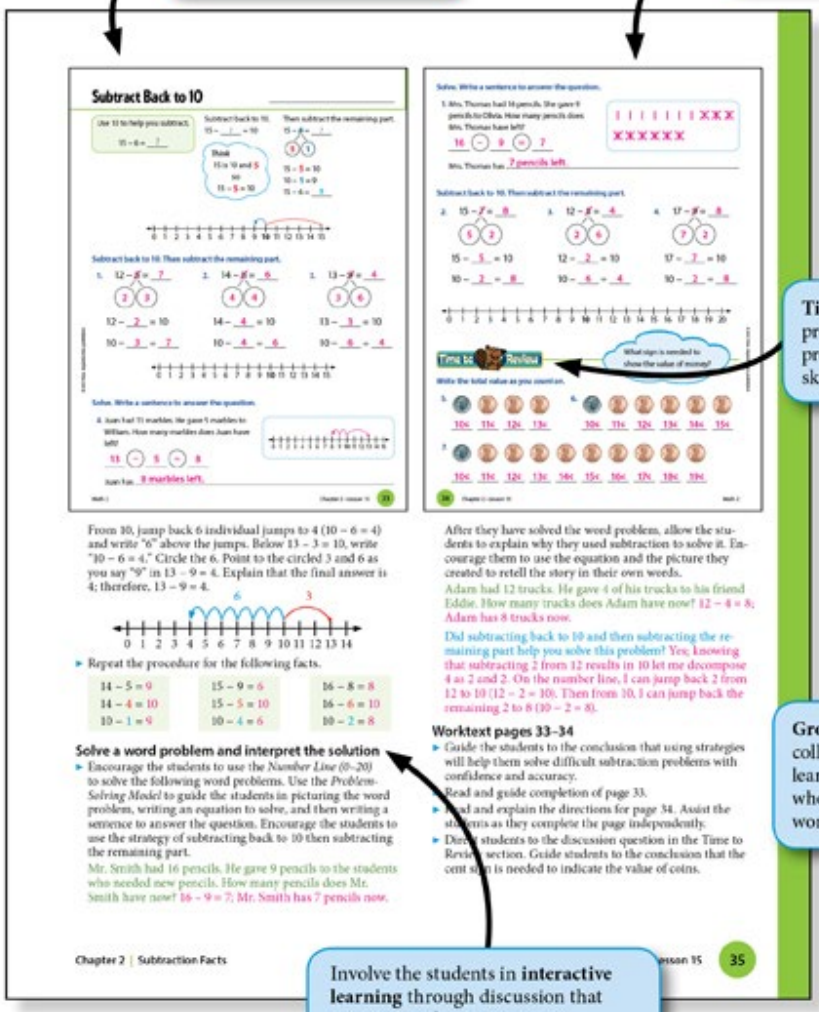
- Complete the equation 13 − 9 = 4. Guide the students to explain how they know that 9 was subtracted.
- Model solving these problems on the number line using 2 colors and writing numbers above the jumps to help the students become more proficient with this strategy. Model the steps on the number line as you guide the students through the process.

Begin at 13; make 1 jump back to 10 (13 − 3 = 10), and write "3" above the jump. Write "13 − 3 = 10"; circle the 3.

34 Lesson 15 Math 2

Reduced **Worktext** pages provide solutions. Use these pages to evaluate student progress and to determine where more guidance is needed.

A variety of **activities** allows the students to see math at work in real-life contexts.



Time to Review exercises provide systematic review of previously learned essential skills and concepts.

From 10, jump back 6 individual jumps to 4 (10 − 6 = 4) and write "6" above the jumps. Below 13 − 3 = 10, write "10 − 6 = 4." Circle the 6. Point to the circled 3 and 6 as you say "9" in 13 − 9 = 4. Explain that the final answer is 4; therefore, 13 − 9 = 4.

- Repeat the procedure for the following facts.

14 − 5 = 9	15 − 9 = 6	16 − 8 = 8
14 − 4 = 10	15 − 5 = 10	16 − 6 = 10
10 − 1 = 9	10 − 4 = 6	10 − 2 = 8

Solve a word problem and interpret the solution

- Encourage the students to use the *Number Line (0–20)* to solve the following word problems. Use the *Problem-Solving Model* to guide the students in picturing the word problem, writing an equation to solve, and then writing a sentence to answer the question. Encourage the students to use the strategy of subtracting back to 10 then subtracting the remaining part.

Mr. Smith had 16 pencils. He gave 9 pencils to the students who needed new pencils. How many pencils does Mr. Smith have now? 16 − 9 = 7; Mr. Smith has 7 pencils now.

After they have solved the word problem, allow the students to explain why they used subtraction to solve it. Encourage them to use the equation and the picture they created to retell the story in their own words.

Adam had 12 trucks. He gave 4 of his trucks to his friend Eddie. How many trucks does Adam have now? 12 − 4 = 8; Adam has 8 trucks now.

Did subtracting back to 10 and then subtracting the remaining part help you solve this problem? Yes; knowing that subtracting 2 from 12 results in 10 let me decompose 4 as 2 and 2. On the number line, I can jump back 2 from 12 to 10 (12 − 2 = 10). Then from 10, I can jump back the remaining 2 to 8 (10 − 2 = 8).

Worktext pages 33–34

- Guide the students to the conclusion that using strategies will help them solve difficult subtraction problems with confidence and accuracy.
- Read and guide completion of page 33.
- Read and explain the directions for page 34. Assist the students as they complete the page independently.
- Direct students to the discussion question in the Time to Review section. Guide students to the conclusion that the cent sign is needed to indicate the value of coins.

Group work promotes collaborative learning. Students learn by working together as a whole class and sometimes by working in smaller groups.

Involve the students in **interactive learning** through discussion that encourages them to construct reasonable proof for their solutions.

New to This Edition

1. The goal of this book is to help you advance the math understanding of every student in your classroom. Since students have diverse needs and learning styles, this book places increased emphasis on implementing differentiated instruction. Changes include more group work, which allows collaboration and interaction among peers. For optimal learning for all students, each group should include students with varying strengths and abilities. Groups may vary for each instructional strand. Students who are reluctant to respond in large groups will often participate in small groups. The use of manipulatives and strategies is emphasized throughout to help your students grow their math knowledge and demonstrate their thinking and reasoning skills.

2. The Teacher Notes section at the beginning of each chapter details the learning objectives for the chapter. This section includes background information, indicates what foundational knowledge the chapter is building on, and gives other helpful information pertaining to the chapter. On this page you will find Math Board suggestions, which are designed to guide practice of previously learned material and can be used any time of day. This review time focuses on core concepts and provides an excellent opportunity for you to find areas where your students would benefit from additional teaching or practice.

3. Studies show that retention increases by 23 percent when students know what learning is expected of them. This book offers a Lesson Focus for every lesson, which is to be conveyed to your students before the lesson begins. In some cases the Lesson Focus will point out how previous knowledge will be applied to the new concept. Students should discuss and conclude what they have learned before they begin their practice on the Worktext pages.

4. To help your students become life-long problem solvers, more focus has been placed on processing word problems. Encourage the students to become active listeners by asking them to listen for who the problem is about and what action is taking place as you read through the word problem the first time. As you reread the problem one sentence at a time, encourage your students to picture the problem with manipulatives or drawings. After all sentences have been reread and the picture is complete, ask the students to translate the picture into a number sentence and retell the story in their own words. Making a picture will help the students make sense of their number sentence. Finally, a summary sentence should be crafted to explain the solution.

5. Students are expected to reason and explain their thinking. Engaging the students in the learning process involves asking them questions and allowing them time to answer. Their answers should include their reasoning based on their interaction with manipulatives or drawings. Their answers should also incorporate math terminology. It may take additional questioning to draw more complete answers and explanations from your students at the beginning of the year. The lessons establish a pattern of asking students to explain their answers or reasoning. You will notice that the reasoning is often included in answers even when the question does not specifically ask for it. It is expected that students will give their reasoning for all answers where appropriate. Taking time to listen to students explain their answers provides insight into their reasoning and can help you strengthen their thinking or clear up any misconceptions they may have. A gear icon ( ) is used to help you identify higher-level thinking questions within the lessons. Supply any prompts or background needed to guide the student to the answer. Student Worktext pages often have discussion questions in blue think bubbles. These questions are intended to engage your students in math discussions that lead them to a deeper level of math understanding and further develop their reasoning abilities.

6. Provide a safe and loving learning environment that encourages the students to participate in the learning process. Remember that each student is made in God's image (Genesis 1:26–27). Circulate among the students as they work, guiding them to correct thinking and giving individual attention as needed. The theme stories make many real-life connections for math as Matt uses math skills to build homes for people in different parts of the world. Teach your students that God provides many opportunities for them to help others and that math can be a tool they use to portray Christ's love and grace to those around them.