Module 4
Early Division with Remainders

Session 1  A Remainder of One ......................................................................................... 3
Session 2  What Can You Do with the Remainder? ............................................................. 7
Session 3  Remainders Win ............................................................................................... 11
Session 4  Multiplication & Division .................................................................................. 15
Session 5  Unit 2 Post-Assessment ................................................................................... 21

Teacher Masters
Pages renumber with each module.
Division Story Problems ................................................................. T1
Division Story Problems Forum Planner ........................................... T2
Work Place Guide 2D Remainders Win ............................................. T3
2D Remainders Win Record Sheet 1 .................................................. T4
2D Remainders Win Record Sheet 2 .................................................. T5
2D Remainders Win Record Sheet 3 .................................................. T6
Spilled Ketchup ................................................................................ T7
Work Place Guide 2E More or Less Multiplication ......................... T8
2E More or Less Multiplication Record Sheet ................................. T9
2E More or Less Multiplication Challenge Record Sheet .............. T10
Large Base Ten Grid Paper ............................................................ T11
Unit 2 Post-Assessment ................................................................. T12
Base Ten Grid Paper ........................................................................ T16

Student Book Pages
Page numbers correspond to those in the consumable books.
Multiplication Tables ........................................................................ 73
Sharing Problems ............................................................................. 74
Work Place Instructions 2D Remainders Win ................................. 75
Multiplying with Money .................................................................. 76
Work Place Instructions 2E ............................................................... 77
More or Less Multiplication ............................................................ 77
Fourth Grade Games ........................................................................ 79
Multiplication & Division Practice .................................................. 80

Home Connections Pages
Page numbers correspond to those in the consumable books.
Multiplying & Dividing .................................................................... 41
Multiplication & Division Puzzles ..................................................... 43
Moolah on My Mind .......................................................................... 45
Module 4
Early Division with Remainders

Overview

Module 4 focuses on strategies for solving division problems with remainders, both in and out of context. Students begin by modeling division with remainders in Session 1 and solve story problems involving division with remainders in Session 2. In Session 3, the class holds a math forum to discuss strategies for solving division problems and interpreting remainders based on context. Session 4 opens with a problem that encourages students to apply concepts of multiplication and division to find an unknown dividend. Sessions 3 and 4 introduce new Work Places designed to provide practice with multiplication and division, and in Session 5, students take the unit post-assessment.

Planner

<table>
<thead>
<tr>
<th>Session &amp; Work Places Introduced</th>
<th>P&amp;I</th>
<th>PS</th>
<th>MF</th>
<th>WP</th>
<th>A</th>
<th>HC</th>
<th>DP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Session 1</strong> A Remainder of One</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teacher reads aloud <em>A Remainder of One</em> by Elinor J. Pinczes, and students model the actions described in the book and make predictions about remainders. At the conclusion of this part of the session, students add the term <em>remainder</em> to their handbooks and then go to Work Places.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Session 2</strong> What Can You Do with the Remainder?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In this session the class begins by solving one division problem with a remainder. They describe the strategies they used to solve the problem and interpret the remainder. Then pairs solve the rest of the problems on the Division Story Problems page in preparation for a math forum in Session 3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Session 3</strong> Remainders Win</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students participate in a math forum about the Division Story Problems solved in Session 2. They discuss how to interpret remainders in context and consider sharing and grouping strategies. Then students are introduced to Work Place 2D Remainders Win and play against the teacher.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Work Place 2D</strong> Remainders Win</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Players take turns selecting an array, computing the product, and then dividing the product by a number rolled on a die numbered 4–9. They record the results of each turn in the form of an equation, circling any remainder. At the end of the game, they find the sum of their remainders, and the player with the higher sum wins.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Session 4</strong> Multiplication &amp; Division</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students solve a problem by applying properties of multiplication and division to find an unknown dividend. Then the teacher introduces a new Work Place game, More or Less Multiplication. Students spend the rest of the session visiting Work Places while the teacher helps those who need additional support.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Work Place 2E</strong> More or Less Multiplication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Players play either for more or less. They take turns rolling 3 dice and multiplying the 3 numbers. They determine the product, then have the option of multiplying or dividing the product by the number rolled on a 1–6 die.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Session 5</strong> Unit 2 Post-Assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Today students take the Unit 2 Post-Assessment to show their understanding of place value, multi-digit multiplication, and early division with remainders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Materials Preparation

Each session includes a complete list of the materials you’ll need to conduct the session, as well as notes about any preparation you’ll need to do in advance. If you would like to prepare materials ahead of time for the entire module, you can use this to-do list.

<table>
<thead>
<tr>
<th>Task</th>
<th>Done</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Copies</strong></td>
<td></td>
</tr>
<tr>
<td>Run copies of Teacher Masters T1–T16 according to the instructions at the top of each master.</td>
<td></td>
</tr>
<tr>
<td>Run a single display copy of Student Book page 75.</td>
<td></td>
</tr>
<tr>
<td>If students do not have their own Student Books, run a class set of Student Book pages 73–80.</td>
<td></td>
</tr>
<tr>
<td>If students do not have their own Home Connections books, run a class set of the assignments for this module using pages 41–48 in the Home Connections Book.</td>
<td></td>
</tr>
<tr>
<td><strong>Work Place Preparation</strong></td>
<td></td>
</tr>
<tr>
<td>Prepare the materials for Work Places 2D &amp; 2E using the lists of materials on the Work Place Guides (Teacher Masters T3 &amp; T8).</td>
<td></td>
</tr>
<tr>
<td><strong>Special Items</strong></td>
<td></td>
</tr>
<tr>
<td>Familiarize yourself with the book <em>A Remainder of One</em> prior to Session 1. Place sticky notes over the numbers that result from each bug formation so you do not accidently reveal answers while reading aloud.</td>
<td></td>
</tr>
</tbody>
</table>

Additional Resources

Please see this module’s Resources section of the Bridges Educator site for a collection of resources you can use with students to supplement your instruction.
Session 1

A Remainder of One

Summary

Students listen as the teacher reads aloud *A Remainder of One* by Elinor J. Pinczes. Students model the actions described in the book and make predictions about remainders. At the conclusion of this part of the session, students add the term **remainder** to their handbooks and then go to Work Places. To end the session, the teacher introduces and assigns the Multiplying & Dividing Home Connection.

Skills & Concepts

- Solve single-step story problems involving division with remainders (supports 4.OA)
- Divide a 2-digit number by a 1-digit number, with a remainder, using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)
- Model with mathematics (4.MP.4)
- Look for and make use of structure (4.MP.7)

Materials

<table>
<thead>
<tr>
<th>Problems &amp; Investigations</th>
<th>Kit Materials</th>
<th>Classroom Materials</th>
</tr>
</thead>
</table>
| *A Remainder of One*      | • colored tiles, 25 per student, plus extras for support  
                          | • *A Remainder of One* by Elinor J. Pinczes (see Preparation)  
                          | • Word Resource Cards for divide and remainder  
                          | • student math journals  
                          | • 4 sticky notes (see Preparation) |

Work Places in Use

1D Spinning Around Multiplication (introduced in Unit 1, Module 2, Session 6)  
1E Products Four in a Row (introduced in Unit 1, Module 3, Session 1)  
1F Dragon's Gold (introduced in Unit 1, Module 3, Session 4)  
2A What's Missing? Bingo (introduced in Unit 2, Module 1, Session 4)  
2B Division Capture (introduced in Unit 2, Module 2, Session 1)  
2C Moolah on My Mind (introduced in Unit 2, Module 3, Session 4)

Home Connection

HC 41–42  
Multiplying & Dividing

Daily Practice

SB 73  
Multiplication Tables

Vocabulary

An asterisk [*] identifies those terms for which Word Resource Cards are available.

*divide*  
*quotient*  
*remainder*

Preparation

- Familiarize yourself with the book *A Remainder of One* prior to the session. Place sticky notes over the numbers that result from each bug formation so you do not accidently reveal answers while reading aloud.
- Write the list of Work Places from which students can choose today. You can just write the numbers (1D–2C) or write out the full names if you have time. (See the list in the Work Places in Use row of the Materials Chart for the complete list of Work Places used today.)
Problems & Investigations

A Remainder of One

1 Explain to students they will spend the next few sessions exploring division. Post the divide Word Resource Card, and have students share in pairs what they know about dividing numbers.

Use questions like the following to encourage student discussion:

- What does the word divide mean?
- What do people do when they divide something?
- When have you had to divide something?

**Students** When you divide it’s like sharing, so everyone gets the same amount and it’s fair.

We talked about division when we did multiplication, too.

I think division’s the opposite of multiplication. Like $2 \times 6 = 12$, so you know that $12 \div 2 = 6$.

I think multiplication and division go together, kind of like adding and subtracting.

**ELL/SUPPORT** Use a small handful of colored tiles to demonstrate sharing tiles amongst two or more students. Use the term divide to describe the action.

2 Tell students you are going to read aloud a story called *A Remainder of One*. Ask students to share what the word remainder means, and post the Word Resource Card for the term.

**Students** A remainder is when something is left over.

It’s like when you have some extras of something!

3 Read the story aloud, but omit the actual numbers that result from each formation. As you read, have students predict whether each new formation will work.

*Students will determine the remainder in each formation during a second reading. There are four places in the book to omit numbers when reading the first time.*

4 Have students take out their journals and prepare them while helpers pass out tiles.

- Each student needs 25 tiles.
- Have students turn to a new page in their journals and write the date and the heading “A Remainder of One.”
- Tell students you are going to reread the book, and you will stop each time a new formation is described so they can represent the situation with their tiles.

5 Begin reading. Pause when the bugs divide into 2 lines, and ask students to model the situation with their tiles.

- Ask one or two students to share their thinking.
• Write the following equation on the board, and have students record it in their journals: \( 25 \div 2 = 12 \text{ R} 1 \).

6  Continue reading until you get to the next bug formation, which involves dividing 25 by 3. Ask students to model the situation with tiles and then write an equation in their journals to represent it.

![Image of tiles representing 25 ÷ 3]

• As students work, walk around the room to see the equations they record.
• Ask several students to share the equations they wrote.
• Record the equations where everyone can see, and then discuss them.

You will likely hear a variety of responses, and you may need to help students connect the model with some of the equations volunteered.

DJ  I wrote \( 25 \div 8 \) because there are 8 bugs in each line.

Anna  I think it’s \( 25 \div 3 \) because we split them into 3 lines.

Lionel  I wrote \( 8 \div 3 \) because we have 8 in each line, and there are 3 lines.

Willie  I said it was \( 8 + 8 + 8 + 1 = 25 \) because that’s how it looks.

Teacher  Wow! We have quite a few different ideas here. Let’s go back to the first situation and equation. We wrote \( 25 \div 12 = 12 \text{ R} 1 \). What does the 25 mean?

DJ  That’s how many bugs there were.

Teacher  What about the divided by 2? What does that mean?

Lionel  That’s the two lines that the bugs were in. It was 25 cut into 2 parts.

Teacher  And the 12?

Willie  That’s the answer.

Teacher  And the answer to a division problem is called the quotient. But what does the 12 mean in this situation?

Anna  It means there were 12 bugs in each line. And the R1 means there was one left over because he doesn’t have a partner and the lines have to be the same length.

Teacher  I’d like you to try to use that same reasoning to come to an agreement with the people in your table group about which equation matches this situation.

When students come to a consensus, erase the equations that did not match the situation.

7  Then continue reading. Pause after each new formation so students can model the situations, record equations, and discuss their thinking with the group.

**SUPPORT**  Rather than drawing individual ants or shapes to represent them, encourage students to model the situations using groups of tile like the one shown above.

8  When the book is finished, draw students’ attention to the four equations on the board and ask students to share their observations about the sequence.

\[
25 \div 2 = 12 \text{ R} 1 \\
25 \div 3 = 8 \text{ R} 1 \\
25 \div 4 = 6 \text{ R} 1 \\
25 \div 5 = 5
\]
Ask students to make predictions about what would happen if the story continued.

- Have students predict whether there would be a remainder if the ants decided to divide themselves into 6 lines.
- Ask students to model the situation and record an equation in their journals.

Close this part of the session by having students add an entry for *remainder* in their handbook.

Have students write the word *remainder*, a definition, and a sketch or equation.

As students finish their journal entry, have them spend any time remaining in the session doing Work Places.

Close the session.

- Remind students to fill in their Work Place Logs if they completed any of the Work Place games or activities today.
- Have them clean up the Work Place materials.

Introduce and assign the Multiplying & Dividing Home Connection, which provides more practice with the following skills:

- Recall from memory all products of two 1-digit numbers (3.OA.7)
- Solve story problems involving division with remainders (4.OA.3)
- Multiply a 2-digit whole number by 10 (supports 4.NBT)
- Multiply a 2-digit whole number by a 1-digit whole number using strategies based on place value and the properties of operations (4.NBT.5)

The optional Multiplication Tables Student Book page provides additional opportunities to apply the following skills:

- Divide a 2-digit number by a 1-digit number, using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)
- Divide a 2-digit number by a 1-digit number, with a remainder, using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)

Extensions

With 25 bugs, there is only one formation (5 lines) that leaves no remainders. If Joe’s squadron had only 12 bugs, how many different ways could they have lined up without leaving anyone out? Have students find the numbers between 16 and 38 that offer at least 4 different ways for the bugs to line up without leaving any remainders. Which number between 16 and 38 offers the most possibilities?

Challenge Have students complete the extension and then find a way to model their thinking for the rest of the class. Challenge them to find a mathematical explanation for their answer and a rule to follow to determine groupings. Alternatively, have students find groupings for larger numbers.
Session 2
What Can You Do with the Remainder?

Summary
In this session the class begins by solving one division problem with a remainder. They describe the strategies they used to solve the problem and interpret the remainder. Then pairs solve the rest of the problems on the Division Story Problems page in preparation for a math forum in Session 3.

Skills & Concepts
- Solve single-step story problems involving division with remainders (supports 4.OA)
- Divide a 2-digit number by a 1-digit number, with a remainder, using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)
- Make sense of problems and persevere in solving them (4.MP.1)
- Use appropriate tools strategically (4.MP.5)

Materials

<table>
<thead>
<tr>
<th>Problems &amp; Investigations</th>
<th>Kit Materials</th>
<th>Classroom Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM T1</strong> Division Story Problems</td>
<td>- Word Resource Cards for divide, quotient, and remainder.</td>
<td>- student math journals (see note below)</td>
</tr>
<tr>
<td><strong>TM T2</strong> Division Story Problems Forum Planner</td>
<td></td>
<td>- piece of paper to mask portions of the teacher master</td>
</tr>
</tbody>
</table>

Daily Practice

| SB 74 Sharing Problems |

HC – Home Connection, SB – Student Book, TM – Teacher Master

Copy instructions are located at the top of each teacher master.

Preparation
Read Session 3 to see how students might share their work from today’s session. Before tomorrow’s forum, use the Division Story Problems Forum Planner to help select students to share their work.

Note: Students will solve a series of problems in their student journals today and turn in their work as they complete the set. If you prefer, you can have them use blank paper instead of their journals.

Vocabulary
An asterisk [*] identifies those terms for which Word Resource Cards are available.

divide*
quotient*
remainder*
Problems & Investigations

Solving Division Story Problems

1. Open the session by reviewing the Word Resource Cards divide, remainder, and quotient.
   - Invite student volunteers to remind the class what each word means.
   - Let students know that they will continue to work with division in this session and have them get out their math journals.
   - Ask them to find the next available page and label it with the day’s date and the title “Division Story Problems.”

2. Introduce the Division Story Problems Teacher Master and then have students work in pairs to solve the example problem.
   - Display the example problem at the top of the sheet, keeping the rest of the problems covered for now.
   - Read the problem aloud while students follow along and provide any clarification necessary.
     Rachel, Lindsey, Kendra, and Amber baked a batch of 29 cookies. They divided the cookies equally. How many cookies did each girl get to take home?
   - Have students work in pairs to solve the problem, but let them know that each partner is responsible for showing the work in their math journal.
   - Also, let students know that they can use any of the classroom math manipulatives they find useful in solving the problems.
   - As students work, walk around the room to observe the strategies they are using.

A chart of common strategies follows. Look for students who can share these strategies and be prepared to model those you don’t see.

<table>
<thead>
<tr>
<th>Common Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy</strong></td>
</tr>
<tr>
<td>Sharing the cookies one by one and cutting the last cookie in fourths. Students may use a variety of symbols (e.g., tally marks) or manipulatives (e.g., tiles) to represent the cookies.</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
3 After a few minutes, ask student volunteers to share their answers and show their work at the display.

4 Have students continue to work in pairs to solve the rest of the problems on the sheet.
   - Display all the problems on your copy of the Division Story Problems Teacher Master, and have helpers give a copy of the sheet to each student pair.
   - Tell students they can choose any problem to begin with. When they complete one problem, they should immediately begin work on another.
   - Remind students to discuss their thinking with their partner but to record their work in their own journal.
   - Also, be sure to ask students to clearly label each problem they solve, using the letter from the teacher master.

5 As students work, walk around the room and use the Division Story Problems Forum Planner to note the different strategies being used.
   Ask guiding questions to clarify the strategies students are using for each problem and nudge them toward more sophisticated and efficient strategies.

6 If there is time remaining as pairs finish the Division Story Problems Teacher Master, have them return the sheet to you and choose a Work Place for the rest of the session.

7 Close the session by collecting students’ work and telling them that they will share observations and strategies in a math forum in the next session.

   **Note** As you observe students and review their work, use the Division Story Problems Forum Planner to record notes about the strategies or models students are using. Indicate which students will present during the math forum and decide the order in which you wish to have them present.

---

**Daily Practice**

The optional Sharing Problems Student Book page provides additional opportunities to apply the following skills:

- Solve single-step story problems involving division with remainders (supports 4.OA)
- Divide a 2-digit number by a 1-digit number, with a remainder, using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)
Session 3
Remainders Win

Summary
In this session students participate in a math forum about the Division Story Problems solved in Session 2. They discuss how to interpret remainders in context and consider sharing and grouping strategies. Then students are introduced to Work Place 2D Remainders Win and play against the teacher. At the end of the session, the teacher assigns the Multiplication & Division Puzzles Home Connection.

Skills & Concepts
- Solve single-step story problems involving division with remainders (supports 4.OA)
- Divide a 2-digit number by a 1-digit number, with a remainder, using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)
- Use an equation and an area model to explain strategies for dividing a multi-digit number by a 1-digit number (4.NBT.6)
- Construct viable arguments and critique the reasoning of others (4.MP.3)
- Model with mathematics (4.MP.4)
- Look for and make use of structure (4.MP.7)

Materials

<table>
<thead>
<tr>
<th>Copies</th>
<th>Kit Materials</th>
<th>Classroom Materials</th>
</tr>
</thead>
</table>
| Math Forum | Division Story Problems Math Forum | • chart paper  
• marker  
• Division Story Problems (TM T1, student work from Session 2)  
• Division Story Problems Forum Planner (TM T2, with notes from Session 2) |

Work Places
Introducing Work Place 2D Remainders Win

- TM T3 Work Place Guide 2D Remainders Win
- TM T4–T6 2D Remainders Win Record Sheets
- SB 75* Work Place Instructions 2D Remainders Win
- • dice numbered 4–9 (half-class set)

Home Connection

HC 43–44 Multiplication & Division Puzzles

Daily Practice

SB 76 Multiplying with Money

Vocabulary
An asterisk [*] identifies those terms for which Word Resource Cards are available.
divide*
dividend*
divisor*
grouping
multiplication
ratio table*
remainder*
sharing
skip-counting

* Run 1 copy of this page for use by the teacher and other adult helpers during Work Place time.
Preparation

- Look over student work on the Division Story Problems Teacher Master from Session 2 to decide which student pairs should present. You can use the Division Story Problems Forum Planner to help organize your thinking.

- In today’s session, you will introduce Work Place 2D Remainders Win, which takes the place of Work Place 1D Spinning Around Multiplication. Before this session, you should review the Work Place Guide and Work Place Instructions. Make copies of the 2D Remainders Win Record Sheets for use today and store the rest in the Work Place tray.

Math Forum

Division Story Problems Math Forum

1. Set the stage for today’s session.
   - Let students know that they will share how they solved some of the problems from the previous session in a math forum today.
   - After the math forum, you’ll introduce a new Work Place game called Remainders Win.

2. Review expectations for a math forum.
   Remind students where to sit, how to show good listening, how to respond to each other respectfully and thoughtfully, and what your mathematical goals are for this time.

3. Give each student pair a copy of the Division Story Problems Teacher Master from Session 2. Ask students to sit with their partners so they can remind each other how each problem was solved.

4. Ask students to reread the problem you have selected to discuss efficiency. Then call selected students to come to the front to talk about how they solved the problem.

5. With students’ input, create a chart of strategies for solving division problems.

   Division Strategies

   Here are some of the ways we know right now to do division problems like $29 \div 3$.
   - Share out (deal out) 1 by 1.
   - Share out (deal out) in bigger chunks.
   - Skip-count until you get close to the number and then see if there are any leftovers.
   - Use the multiplication facts that you know. If you know that $9 \times 3 = 27$, that tells you that the answer is 9 with a remainder of 2.

6. Tell students to turn and talk to partners about how the problems that were presented in the math forum were similar and different. What observations can they make about the answers to these problems?
   Lead a discussion about how to interpret remainders for division problems in context.
Connect the strategies and ideas that students shared today with these important concepts about division:

- Division can be thought of as grouping or sharing.
- Remainders have to be dealt with according to the context of the problem.
- Using known multiplication facts can help solve division problems.

**Note** Save the Division Strategies chart for use in Unit 6.

---

### Work Places

**Introducing Work Place 2D Remainders Win**

8. Introduce the game Remainders Win.
   - Display a 2D Remainders Win Record Sheet where everyone can see.
   - Explain that the game will help students see relationships between multiplication and division and work with division with remainders.

9. Briefly summarize the game before playing against the class.
   Players take turns selecting an array from the record sheets, computing the product, and then dividing the product by a number rolled on a die numbered 4–9. Players record the results of each turn in the form of a division equation, with the remainder (if there is one) circled. At the end of the game, players find the sum of their remainders. The player with the higher sum wins.

10. Play a game of 2D Remainders Win against the class.
    Pose questions like the following to promote discussion of multiplication and division strategies while you play:
    - How are you choosing an array to work with?
    - What strategies are you using to find the product of the array?
    - Are there known facts you can use to solve the arrays you don’t know?
    - Before you solve each problem predict whether there will be a remainder.
    - What strategies are you using to solve the division problem? Are there more efficient strategies you could use?

11. Then ask students if they have any questions about how to play the game. If you have time, invite students to pair up and play at least one game.
    Have student helpers pass out the 2D Remainders Win Record Sheet, page 2 and 1 die numbered 4-9 per student pair.

12. Close the session.
    - Have students put away Work Place materials.
    - Tell students to turn to a partner and talk about one division strategy on the class chart that they can use successfully and one strategy they want to improve to be more efficient.

---

#### Math Practices in Action 4.MP.3

Asking careful questions about classmates’ strategies helps students critique the reasoning of others. Games offer rich context for this kind of discussion, as students are particularly invested in developing successful strategies. When they are able to pinpoint and clarify things they don’t understand about others’ work, it deepens their conceptual understanding, permits them to think carefully about others’ reasoning, and improves their ability to construct clear and viable mathematical arguments of their own.
Home Connection

13. Introduce and assign the Multiplication & Division Puzzles Home Connection, which provides more practice with the following skills:

- Find the value of an unknown in an equation (supports 4.OA)
- Solve multi-step story problems involving only whole numbers, using multiplication and division (4.OA.3)
- Divide a 2 or 3-digit whole number by a 1-digit whole number using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)

Daily Practice

The optional Multiplying with Money Student Book page provides additional opportunities to apply the following skills:

- Multiply a 2-digit whole number by a 1-digit whole number using strategies based on place value and the properties of operations (4.NBT.5)
- Use a rectangular array to explain strategies for multiplying with multi-digit numbers (4.NBT.5)
Session 4
Multiplication & Division

Summary
In this session students solve a problem by applying properties of multiplication and division to find an unknown dividend. Then the teacher introduces a new Work Place game, More or Less Multiplication. After they learn to play the new game, students spend the rest of the session visiting Work Places while the teacher circulates and helps students who need additional support.

Skills & Concepts
- Multiply 2-digit whole numbers by a 1-digit whole number using strategies based on place value and the properties of operations (4.NBT.5)
- Divide a 2-digit number by a 1-digit number, with a remainder, using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)
- Make sense of problems and persevere in solving them (4.MP.1)
- Construct viable arguments and critique the reasoning of others (4.MP.3)

Materials

<table>
<thead>
<tr>
<th>Problems &amp; Investigations</th>
<th>Kit Materials</th>
<th>Classroom Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spilled Ketchup</td>
<td></td>
<td>Division Strategies chart from the previous session</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work Places</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Introducing Work Place 2E More or Less Multiplication</td>
<td>2 dice numbered 1–6</td>
<td>calculator</td>
</tr>
<tr>
<td>TM T8</td>
<td>1 die numbered 4–9</td>
<td></td>
</tr>
<tr>
<td>TM T9</td>
<td>1 more/less cube</td>
<td></td>
</tr>
<tr>
<td>TM T10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM T11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SB 77–78*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Place Guide 2E More or Less Multiplication</td>
<td>2E More or Less Multiplication Record Sheet</td>
<td></td>
</tr>
<tr>
<td>2E More or Less Multiplication Challenge Record Sheet</td>
<td>2E More or Less Multiplication Record Sheet</td>
<td></td>
</tr>
<tr>
<td>Large Base Ten Grid Paper (optional, for Support suggestion)</td>
<td>2E More or Less Multiplication Record Sheet</td>
<td></td>
</tr>
<tr>
<td>SB 77–78*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Place Instructions 2E More or Less Multiplication</td>
<td>2E More or Less Multiplication Challenge Record Sheet</td>
<td></td>
</tr>
<tr>
<td>2E More or Less Multiplication (introduced in this session)</td>
<td>2E More or Less Multiplication Challenge Record Sheet</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work Places in Use</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1F Dragon's Gold (introduced in Unit 1, Module 3, Session 4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2A What's Missing? Bingo (introduced in Unit 2, Module 1, Session 4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2B Division Capture (introduced in Unit 2, Module 2, Session 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2C Moolah on My Mind (introduced in Unit 2, Module 3, Session 4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2D Remainders Win (introduced in Unit 2, Module 4, Session 3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2E More or Less Multiplication (introduced in this session)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Daily Practice

| SB 79                     |               |                             |
| Fourth Grade Games        |               |                             |

Vocabulary
An asterisk [*] identifies those terms for which Word Resource Cards are available.
- divide*
- division
- less
- more
- multiply*
- multiplication
- product*
- remainder*
Preparation

- In today’s session, you’ll introduce Work Place 2E More or Less Multiplication, which takes the place of Work Place 1E Products Four in a Row. Before this session, you should review the Work Place Guide, as well as the Work Place Instructions. Make copies of the More or Less Multiplication Record Sheet for use today, and store the rest in the Work Place 2E More or Less Multiplication tray.

- Write the list of Work Places from which students can choose today. You can just write the numbers (1F–2E) or write out the full names if you have time. (See the list in the Work Places in Use row of the Materials chart for the complete list of Work Places used today.)

Problems & Investigations

Spilled Ketchup

1. Set the stage for today’s session.
   
   Let students know that you’re going to share an interesting problem with them and then introduce a new Work Place game that will give them more practice multiplying and dividing numbers. After you play the new game as a whole class, they’ll play it again in partners, and then spend the rest of the session at Work Places.

2. Then revisit the Division Strategies chart created during the previous session.
   
   Remind students that you have discussed a variety of ways to solve division problems, including thinking about known multiplication facts.

3. Display the Spilled Ketchup Teacher Master, and explain that ketchup was somehow spilled on the work.
   
   - Ask students to look at the work for a moment, and then invite them to share their observations without giving the solution just yet.

4. Ask students to share ideas about how to figure out how much money Matthew and his friends earned.

   \[ \div 5 = 9 \text{ R1} \]

   \[
   \begin{align*}
   \text{Teacher} & \quad \text{What is this problem asking?} \\
   \text{Students} & \quad \text{The question says, “How much money should they each get?”} \\
   & \quad \text{Well, yeah, but the answer to that is right there— it says 9 R1. I think we’re supposed to figure out what they started with.} \\
   \text{Teacher} & \quad \text{How could we figure out how much Matthew and his friends started with?} \\
   \text{Maritza} & \quad \text{We can draw the five kids and work backward. We’d give them each 9 R1 dollars.} \\
   \text{Oliver} & \quad \text{No, I think each kid would get $9. No one gets the remainder because it’s left over.} \\
   \text{Teacher} & \quad \text{So we can draw the kids, or something to represent the kids, and give them each $9. What expression can we write to show that?}
   \end{align*}
   \]
Monica Oh, that’s 5 × 9! We don’t have to draw it. We know 5 × 9 = 45.

Teacher So they started with 45 dollars?

Willie I don’t think so. You have to add the dollar that’s left over, the remainder. They started with $46.

5 Discuss with students the remainder of 1 that is shown for the problem. Ask students if the remainder makes sense, or if there is a better way to answer the question.

Teacher I’m thinking about what we talked about yesterday, that the story affects how we show the remainder. Does anyone have any thoughts about the remainder that is written?

Ebony Yeah, it’s the leftover dollar. They need 4 more dollars to give everyone the same amount.

Craig I thought money was one of the things that we said could be split.

Ebony Yeah, quarters would work if there were 4 kids, but there are 5. Dimes are only 10¢, so that won’t work either.

Carlos A dollar is 100¢ and 5 times 20 is 100, so she could have given each kid 20 more cents.

Teacher Does anyone agree or disagree with that idea?… Let’s see if we can write the new remainder in an equation. What would that look like?

Sasha They each got 9 dollars and 20 cents. So, 5 × $9.20 = $46.

Carlos Or you could write $46 ÷ 5 = $9.20.

Work Places

Introducing Work Place 2E More or Less Multiplication

6 Display the Work Place 2E More or Less Multiplication Record Sheet, and give each student a copy of the sheet.

7 Explain that the class will play the game as a team against you and then spend the remainder of the session doing Work Places, including the new one.

8 Summarize the game.

Partners roll to determine whether they are playing for more or less. Then players take turns rolling three dice and multiplying the three numbers. Once the product is determined, the player has the option of rolling a 1–6 die and multiplying or dividing the product by that number. The lower total wins if the partners rolled “less” at the start of the round; the higher total wins if they rolled “more” at the start of the round.

9 Invite a student volunteer to roll the more/less cube, and ask students to circle the appropriate word at the top of the Round 1 box as you do so on the display.

10 Take the first turn as Player 1.

• Roll three dice, two marked 1–6 and one marked 4–9, and ask students to record your three numbers in the boxes, as you do so on the display.

• Ask students to think about the order in which they would multiply these three numbers to make the computation as efficient as possible.
• Invite volunteers to explain why the combination they chose would be the easiest or most efficient.

When you record the order on the second line, review with students that you always perform the computation in parentheses first.

• Have students complete the computation for you, and then ask a few to share their solutions and strategies.

• Record one student’s methods in the “Show Your Work” section of the teacher’s side, and write the answer on the line.

**SUPPORT** Provide base ten grid paper for students who are still developing solid understandings and efficient methods to multiply 2-digit numbers by 1-digit numbers. If you have students working on grid paper, sketch the combination on base ten grid paper on the display as well.

11 Repeat step 10 with the students, recording the results in the Round 1 box for Player 2 as they do so on their record sheets.

• After the students’ total is determined, compare the two sides and circle the winner.

12 Play Round 2 with the class.

**SUPPORT** This round, model quick sketches of the arrays rather than using base ten grid paper to help students represent the quantity.

• After students help you determine your score for the second round, explain the Last Toss Option.

One or both players can elect to roll the 1–6 die and multiply or divide their total by the number they get, using the calculator to help with the computation if needed. Suspense is heightened if you require that the first player choose whether to take a last toss before the second player begins to roll.

*Teacher* I’m not all that happy with a score of 135, especially since we’re playing for less in this round. Lucky for me, there’s a final step I can choose to take, and I’m going to take it. I can roll the 1–6 die one more time and enter the number in the little box beside the calculator at the bottom of my Round 2 box. Then I can multiply or divide my total by that number. … I rolled a 2. Should I multiply or divide my total by 2 if I want a smaller number?
Students  Divide it, but it won't come out evenly because you have an odd number!

No, multiply it! That way, we'll win for sure, because \(135 \times 2 = 270\)!
We can get less.

Teacher  I think I'll divide so I can get a smaller total. The little calculator drawing means it's OK to use the calculator to help with this part, but I still have to write an equation: \(135 \div 2 = 67.5\), or I can say \(67 \frac{1}{2}\).

13  Finish playing Rounds 2 and 3 with the Last Toss Option available to you and the class.
- Wrap up the game by asking students to turn to a partner and talk about helpful strategies for More or Less Multiplication.

Work Places

14  Tell students they will spend the rest of the period doing Work Places.
- Let them know they will take the Unit 2 Post-Assessment in the next session. The Work Places will help them review and practice important Unit 2 skills and concepts.
- Have students pick up their Work Place folders and a pencil, and remind them to fill out their Work Place Logs as they finish each activity.
- Take this opportunity to work with students who could use help before the unit post-assessment next session.

Refer to the Work Place Guides for suggestions on differentiated instruction.

15  Close the session.
- Have students put away materials.
- Ask students to turn to a partner and talk about one thing they have learned or improved during this unit.
Daily Practice

The optional Fourth Grade Games Student Book page provides additional opportunities to apply the following skills:

- Solve multi-step story problems involving only whole numbers, using addition and multiplication (4.OA.3)
- Multiply a 2-digit whole number by a 1-digit whole number using strategies based on place value and the properties of operations (4.NBT.5)
Session 5
Unit 2 Post-Assessment

Summary
Today students take the Unit 2 Post-Assessment to show their understanding of place value, multi-digit multiplication, and early division with remainders. When they are finished, students visit Work Places. At the end of the session, the teacher introduces and assigns the Moolah on My Mind Home Connection.

Skills & Concepts
• Identify a multiplication equation to represent a verbal statement of a multiplicative comparison (4.OA.1)
• Solve story problems involving a multiplicative comparison using multiplication or division (4.OA.2)
• Solve multi-step story problems involving only whole numbers, using multiplication and division (4.OA.3)
• Determine whether a whole number between 1 and 100 is prime or composite (4.OA.4)
• Demonstrate an understanding that in a multi-digit number, each digit represents ten times what it represents in the place to its right (4.NBT.1)
• Multiply a 2- or 3-digit whole number by a 1-digit whole number and two 2-digit numbers using strategies based on place value and the properties of operations (4.NBT.5)
• Use a rectangular array to explain strategies for multiplying with multi-digit numbers (4.NBT.5)
• Divide a 2-digit number by a 1-digit number, with a remainder, using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)
• Apply the area formula for a rectangle to solve a problem (4.MD.3)

Materials

<table>
<thead>
<tr>
<th>Copies</th>
<th>Kit Materials</th>
<th>Classroom Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>Unit 2 Post-Assessment</td>
<td></td>
</tr>
<tr>
<td>TM T12–T15</td>
<td>base ten area and linear pieces</td>
<td>scratch paper</td>
</tr>
<tr>
<td>TM T16</td>
<td>money value pieces</td>
<td></td>
</tr>
<tr>
<td>Base Ten Grid Paper</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Work Places in Use
1F Dragon's Gold (introduced in Unit 1, Module 3, Session 4)
2A What's Missing? Bingo (introduced in Unit 2, Module 1, Session 4)
2B Division Capture (introduced in Unit 2, Module 2, Session 1)
2C Moolah on My Mind (introduced in Unit 2, Module 3, Session 4)
2D Remainders Win (introduced in Unit 2, Module 4, Session 3)
2E More or Less Multiplication (introduced in Unit 2, Module 4, Session 4)

Home Connection
HC 45–47 Moolah on My Mind

Daily Practice
SB 80 Multiplication & Division Practice

Preparation
Set out the base ten area and linear pieces, plastic coins, scratch paper, and copies of the Base Ten Grid Paper Teacher Master in a location (or more than one location) where students will be able to access them easily without disturbing others.
Assessment

Unit 2 Post-Assessment

1 Set the stage for today.
   • Briefly brainstorm with students about the math they have learned the past few weeks.
   • Encourage students to do their best work and make sure they explain their thinking where requested.
   • Tell students they will have as long as they need to complete the assessment.
   Most students will need about 40–45 minutes.

2 Place the Unit 2 Post-Assessment Teacher Master on display as helpers give a copy of the assessment to each student.
   • Have students write their name and the date on the first page.
   • Remind students to wait to begin the test.
   • Give students a minute to look over the assessment.

3 Review strategies students can use that will help them during an assessment.
   • Let students know that they can use scratch paper, one or more copies of the Base Ten Grid Paper Teacher Master, base ten area and linear pieces, or money value pieces to help with any of the problems on the assessment.
     » Display each of these items as you list them.
     » Tell students how and where to access these materials.
   • Model the following strategies as you describe them to students.
     » Read the whole assessment before you begin to get a sense of what you need to do.
     » Notice which problems might be easier or more difficult for you. You might put a small star by easier problems and a question mark by more challenging ones.
     » Think about how to use your time during the test so that you have time and energy to finish all the problems.

4 After students have read through the assessment, refer to the first page and ask students to point out important math vocabulary.
   • Encourage students to look for words they have seen on Word Resource Cards or put in their math journals.
   • Have them underline these words.
   • Remind students to raise their hands if they need help reading a problem. This is not meant to be a reading test.

5 When students understand what to do, let them begin.

ELL/SUPPORT Have students underline unfamiliar or confusing words so that as you circulate, you can help students clarify the meanings. Make students can reference the multiplication and division strategy charts you’ve created during this unit.
Work Places

As students finish the assessment, have them turn in their papers, get their Work Place folders and choose a Work Place to do quietly until everyone has finished.

Close the session.

- Have students put away the Work Place materials.
- Take a few minutes to discuss the Unit 2 Post-Assessment with the class. Did the problems seem easier this time than when they took the assessment several weeks ago? Why?

Home Connection

Introduce and assign the Moolah on My Mind Home Connection, which provides more practice with the following skills:

- Multiply 2 and 3-digit whole numbers by a 1-digit whole number and two 2-digit numbers using strategies based on place value and the properties of operations (4.NBT.5)
- Use equations and rectangular arrays to explain strategies for multiplying with multidigit numbers (4.NBT.5)
- Solve story problems involving money, using multiplication (4.MD.2)

Daily Practice

The optional Multiplication & Division Practice Student Book page provides additional opportunities to apply the following skills:

- Multiply a 2-digit whole number by 10 (supports 4.NBT)
- Multiply a 2-digit whole number by a 1-digit whole number and two 2-digit numbers using strategies based on place value and the properties of operations (4.NBT.5)
- Use equations or rectangular arrays to explain strategies for multiplying with multidigit numbers (4.NBT.5)
- Divide a 2-digit number by a 1-digit number, with a remainder, using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)
Division Story Problems

Solve these story problems in your math journal.

**ex** Rachel, Lindsey, Kendra, and Amber baked a batch of 29 cookies. They divided the cookies equally. How many cookies did each girl get to take home?

**a** Felipe and Sam bought a rope that was 29 feet long. They want to cut it into 2 equal pieces. How long will each piece be?

**b** Mrs. Ingram’s fourth grade has 29 students. Today she wants them to work in groups of 3. How many groups will there be?

**c** David, Joel, Sage, and Sarah washed cars all Saturday and earned $29.00. They shared the work equally, so they want to share the money equally. How much money will each person get?

**d** There are 29 kids on the swim team. Today, they’re going to a big swim meet on the other side of town. If each car can take 5 kids, how many cars will they need for everyone on the team?

**e** Carlos wants to display his favorite sports cards on a bulletin board in his room. He has 29 cards and wants to arrange them in equal rows with at least 6 in each row but no more than 9. How can Carlos arrange his cards to display as many of them as possible?

**f** Five friends mowed lawns together on Saturday. Together, they earned $29. How much did each friend get if they split the money equally?

**g** Papa’s Pizza is having a big sale on frozen pizzas! Three families went in together to buy 29 pizzas. If they share the pizzas equally, how many will each family get?
**Division Story Problems Forum Planner**

Use this planner to make a record of the strategies you see students using to solve problems during Session 2. Prior to Session 3, use the third column to indicate the order in which you plan to have students share during the forum.

There are 29 kids on the swim team. If each car can take 5 kids, how many cars will they need for everyone on the team?

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Student Names and Notes</th>
<th>Order of Sharing in Forum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skip-Count Using a Ratio Table</strong></td>
<td>Students reason that 1 car holds 5 kids, 2 cars hold 10 kids and then 5 cars hold 25 kids, but there are still 4 more kids who have to go, so they needed another car.</td>
<td></td>
</tr>
<tr>
<td><strong>Use Known Multiplication Fact</strong></td>
<td>Choose a problem where one pair of students used known facts and another pair did not to invite a comparison of efficiency.</td>
<td></td>
</tr>
</tbody>
</table>

Three families went in together to buy 29 pizzas.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Student Names and Notes</th>
<th>Order of Sharing in Forum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sharing</strong></td>
<td>Students use 3 circles to represent the 3 families sharing pizza and give the pizzas out to them 1 at a time.</td>
<td></td>
</tr>
<tr>
<td><strong>Grouping with Known Multiplication Fact</strong></td>
<td>Students thought about how many 3s are in 29, and set up $3 \times ___ = 29$.</td>
<td></td>
</tr>
<tr>
<td><strong>Interpret Remainders in Context</strong></td>
<td>Look for situations where remainders are broken up and shared and compare to situations where remainders are rounded up or down to the nearest whole number to make sense.</td>
<td></td>
</tr>
</tbody>
</table>
Work Place Guide 2D Remainders Win

Summary
Players take turns selecting an array, computing the product, and then dividing the product by a number rolled on a die numbered 4–9. They record the results of each turn in the form of an equation, circling any remainder. At the end of the game, they find the sum of their remainders, and the player with the higher sum wins.

Skills & Concepts
- Divide a 2-digit number by a 1-digit number, with a remainder, using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)
- Use an equation and an area model to explain strategies for dividing a multi-digit number by a 1-digit number (4.NBT.6)

Materials

<table>
<thead>
<tr>
<th>Copied by...</th>
<th>Kit Materials</th>
<th>Classroom Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM T3</td>
<td>3 dice numbered 4–9 die</td>
<td>scratch paper (optional)</td>
</tr>
<tr>
<td>TM T4–6</td>
<td>2D Remainders Win Record Sheets</td>
<td></td>
</tr>
<tr>
<td>SB 78</td>
<td>Work Place Instructions 2D Remainders Win</td>
<td></td>
</tr>
</tbody>
</table>

Assessment & Differentiation

<table>
<thead>
<tr>
<th>If you see that...</th>
<th>Differentiate</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>One or more students struggle to find the product of the array efficiently.</td>
<td>SUPPORT Help students use the array to find smaller known facts.</td>
<td>“I see you are counting the squares in the picture one-by-one for $6 \times 8$. Are there any groups of 6s or 8s you know? Oh, you know $6 \times 5$? Then how many more 6s do you need to make $8 \times 6$?”</td>
</tr>
<tr>
<td>A student has difficulty finding the quotient in the division problem.</td>
<td>SUPPORT Have the student’s partner model by thinking aloud. Help the student record any known smaller facts in a ratio table and think multiplicatively.</td>
<td>“You chose $7 \times 9$ and found that the product was 63. Then you rolled an 8. So we need to see how many 8s are in 63. Hmm...how many 8s do you know? 5? OK, that is...yes, 40. So how far away are we? Yes, 23. How many more 8s are in 23?”</td>
</tr>
<tr>
<td>One or more students have no difficulty determining the quotient.</td>
<td>CHALLENGE Pair students with similar abilities. Have them play game variation C and determine the divisor before choosing an array. What strategies can they use to win playing this variation?</td>
<td></td>
</tr>
</tbody>
</table>

English-Language Learners Use the following adaptations to support the ELL students in your classroom.
- Have ELL students observe other students playing the game before playing it themselves.
- Pair each ELL student with a supportive partner (an English-speaking student or another ELL student with more command of English) who can offer support and explain the instructions while they play.
- Play the game with the ELL students yourself. Model how to play and put emphasis on strategies for finding quotients.
- Once students are playing the game with understanding, help them verbalize and demonstrate their strategies.
2D Remainders Win Record Sheet 1

Player 1

Player 2

Remainder Total

2 × 9

3 × 5

2 × 7

3 × 6

4 × 5

4 × 4

4 × 6

3 × 9

5 × 5

2 × 7
2D Remainders Win Record Sheet 2

Player 1

Player 2

---

Remainder Total

---

5 × 8
3 × 6
7 × 7
3 × 9
4 × 8
3 × 8
4 × 7
6 × 7
4 × 9
5 × 7
2D Remainders Win Record Sheet 3

Player 1

Player 2

Remainder Total

<table>
<thead>
<tr>
<th>4 × 9</th>
<th>8 × 9</th>
<th>4 × 8</th>
<th>7 × 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 × 8</td>
<td>5 × 9</td>
<td>9 × 9</td>
<td>8 × 8</td>
</tr>
<tr>
<td>7 × 7</td>
<td>6 × 9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Matthew and his 4 friends earned \( \text{ } \) dollars at the band fundraiser. How much money should they each get?

\[
\div 5 = 9 \text{ R1}
\]
**Work Place Guide 2E More or Less Multiplication**

**Summary**
Partners roll to determine whether they are playing for more or less. Then players take turns rolling three dice and multiplying the three numbers. Once the product is determined, the player has the option of rolling a 1–6 die and multiplying or dividing the original product by that number. The lower total wins if the partners rolled “less” at the start of the round; the higher total wins if they rolled “more” at the start of the round.

**Skills & Concepts**
- Multiply 2-digit whole numbers by a 1-digit whole number using strategies based on place value and the properties of operations (4.NBT.5)
- Divide a 2-digit number by a 1-digit number, using strategies based on place value, the properties of operations, or the relationship between multiplication and division (4.NBT.6)

**Materials**

<table>
<thead>
<tr>
<th>Copies</th>
<th>Kit Materials</th>
<th>Classroom Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM T8</td>
<td>6 dice numbered 1–6</td>
<td>• calculators</td>
</tr>
<tr>
<td>TM T9</td>
<td>3 dice numbered 4–9</td>
<td></td>
</tr>
<tr>
<td>TM T10</td>
<td>3 more/less cubes</td>
<td></td>
</tr>
<tr>
<td>TM T11</td>
<td>Work Place Instructions 2E More or Less Multiplication</td>
<td></td>
</tr>
</tbody>
</table>

**Assessment & Differentiation**

<table>
<thead>
<tr>
<th>If you see that…</th>
<th>Differentiate</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>A student needs help developing efficient strategies.</td>
<td>SUPPORT</td>
<td>Pull together several students and play a small-group version of the game. Model and share your own thinking and encourage students to help one another as you play. Emphasize the order of the numbers.</td>
</tr>
<tr>
<td>A student is skip-counting or using repeated addition and is frustrated by having to add or skip-count so many numbers.</td>
<td>SUPPORT</td>
<td>Use base ten grid paper to help students make arrays or use ratio tables. Then help them find more efficient ways to find the products of their arrays or the numbers in their ratio table, such as chunking or doubling.</td>
</tr>
<tr>
<td>A student is very proficient at 1-digit-by-2-digit multiplication.</td>
<td>CHALLENGE</td>
<td>Encourage students to use game variation A or B.</td>
</tr>
<tr>
<td>A student can multiply 1-digit-by-2-digit numbers easily.</td>
<td>CHALLENGE</td>
<td>Have students find the most efficient way of solving the problem, or ask students to solve the problems in more than one way and then to decide which strategy is the most efficient.</td>
</tr>
</tbody>
</table>

**English-Language Learners** Use the following adaptations to support the ELL students in your classroom.

- Play a game with ELL students to make sure they know how to play.
- Use this game to review important vocabulary such as more, less, multiply, divide, factor, and product.
### 2E More or Less Multiplication Record Sheet

#### Round 1
We played for (circle one) more / less.

Player 1 rolled: _____  _____  _____

(____ × ____ ) × ____

____ × ____ = ____

Show your work:

____ × / ÷ ____ = ____

Player 2 rolled: _____  _____  _____

(____ × ____ ) × ____

____ × ____ = ____

Show your work:

____ × / ÷ ____ = ____

#### Round 2
We played for (circle one) more / less.

Player 1 rolled: _____  _____  _____

(____ × ____ ) × ____

____ × ____ = ____

Show your work:

____ × / ÷ ____ = ____

Player 2 rolled: _____  _____  _____

(____ × ____ ) × ____

____ × ____ = ____

Show your work:

____ × / ÷ ____ = ____

#### Round 3
We played for (circle one) more / less.

Player 1 rolled: _____  _____  _____

(____ × ____ ) × ____

____ × ____ = ____

Show your work:

____ × / ÷ ____ = ____

Player 2 rolled: _____  _____  _____

(____ × ____ ) × ____

____ × ____ = ____

Show your work:

____ × / ÷ ____ = ____
## 2E More or Less Multiplication Challenge Record Sheet

**Example:** We played for (circle one) more \textless{} less.

<table>
<thead>
<tr>
<th>Player 1 rolled: 5 4 8 3 7</th>
<th>Player 2 rolled:</th>
<th>(\underline{\text{3}} \times \underline{\text{7}}) \times 8 / - (\underline{\text{5}} \times \underline{\text{4}})</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 \times 4 = 20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>21 \times 8 = 168</td>
</tr>
<tr>
<td></td>
<td></td>
<td>160 \times 8 = 168</td>
</tr>
<tr>
<td></td>
<td></td>
<td>168 \div / - 20 = 148</td>
</tr>
</tbody>
</table>

**Show your work:**

\[
\begin{align*}
\text{Round 1} & \quad \text{We played for (circle one) more / less.} \\
\text{Player 1 rolled: } & \quad \underline{\text{5}} \quad \underline{\text{4}} \quad \underline{\text{8}} \quad \underline{\text{3}} \quad \underline{\text{7}} \\
& \quad (\underline{\text{3}} \times \underline{\text{7}}) \times \underline{\text{8}} / - (\underline{\text{5}} \times \underline{\text{4}}) \\
& \quad \underline{\text{5}} \times \underline{\text{4}} = \underline{\text{20}} \\
& \quad 21 \times \underline{\text{8}} = \underline{\text{168}} \\
& \quad 160 \times \underline{\text{8}} = \underline{\text{168}} \\
& \quad 168 \div / - \underline{\text{20}} = \underline{\text{148}} \\
\end{align*}
\]

**Round 2** We played for (circle one) more / less.

**Player 1 rolled: \underline{\text{5}} \quad \underline{\text{4}} \quad \underline{\text{8}} \quad \underline{\text{3}} \quad \underline{\text{7}}**

\[
\begin{align*}
(\underline{\text{3}} \times \underline{\text{7}}) \times \underline{\text{8}} / - (\underline{\text{5}} \times \underline{\text{4}}) \\
\underline{\text{5}} \times \underline{\text{4}} = \underline{\text{20}} \\
\text{Show your work:} \\
\underline{\text{5}} \times \underline{\text{4}} = \underline{\text{20}} \\
\end{align*}
\]

**Player 2 rolled: \underline{\text{5}} \quad \underline{\text{4}} \quad \underline{\text{8}} \quad \underline{\text{3}} \quad \underline{\text{7}}**

\[
\begin{align*}
(\underline{\text{3}} \times \underline{\text{7}}) \times \underline{\text{8}} / - (\underline{\text{5}} \times \underline{\text{4}}) \\
\underline{\text{5}} \times \underline{\text{4}} = \underline{\text{20}} \\
\text{Show your work:} \\
\underline{\text{5}} \times \underline{\text{4}} = \underline{\text{20}} \\
\end{align*}
\]
Large Base Ten Grid Paper
Maya says there are 4 hundreds in 5,467. Jenny says there are 54 hundreds in 5,467. Their teacher says they’re both right. How can that be so? Explain.

2 Fill in the blanks.

3 Fill in the blanks and complete the equations for each array.
4 Fill in the blanks in the ratio table.

<table>
<thead>
<tr>
<th>Number of Pencils</th>
<th>13</th>
<th>39</th>
<th>130</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

5 For each of the story problems a, b, and c, show your thinking with numbers, labeled sketches, or words. Then write an equation that represents the problem and give the answer labeled with the correct units.

a Luke is six times taller than his puppy, Farley. The puppy is 20 cm tall. How tall is Luke?

b Maggie is building a new pen for her sheep. The pen is 19 by 11 feet. What is the area of the pen?

c Last Saturday Grandma brought 17 cookies for Lauren and her 3 cousins to share. The 4 children split the cookies evenly. How many did they each get?
Every fall, Maggie’s family shears the wool from the sheep to spin it into yarn. Each sheep has about 8 pounds of wool. It takes about 4 pounds of wool to make a sweater.

a If Maggie has 6 sheep, how many sweaters can she make from her sheep’s wool in one year? Show all your work.

b Which equation best represents this problem? (Note: $s$ stands for the number of sweaters Maggie can make.)

- $(8 \times 6) \div 4 = s$
- $(8 \times 6) \times 4 = s$
- $(8 \times 4) \div 6 = s$
- $(8 \times 4) \times 6 = s$

7 I have 180 toothpicks. Katie said, “You have four times as many toothpicks as I do!” Which equation could represent this situation? (Note: $k$ stands for Katie’s toothpicks.)

- $4 \times 180 = k$
- $180 \times 4 = k$

8 Which of these numbers is composite?

- 13
- 37
- 25
- 11

9 Fill in the blanks.

- $30 \times 7 = 210$
- $40 \times 10 = 400$
- $14 \times 12 = 168$
- $100 \times 900 = 90,000$

(continued on next page)
10 True or False?

a  $70 \times 8 = 80 \times 7$  _____  

b  $19 \times 13 = (10 \times 13) + (9 \times 13)$  _____  

c  $5 \times 500 = (5 \times 5) + 100$  _____  

d  $30 \div 4 = 7 \text{ R}2$  _____  

11 Fill in the blanks.

$18 \times 10 = (\_ \_ \_ \times 10) + (8 \times 10)$  
$34 \times 20 = (30 \times 20) + (\_ \_ \_ \times 20)$

12 Andre’s dad made pancakes for breakfast the other day. He said that Andre and his 3 sisters could divide the 17 pancakes from the first batch evenly among themselves.

a  Which equation does NOT show how many pancakes each of the 4 children got?

- $17 \div 4 = 4 \text{ R}1$
- $17 \div 4 = 4.25$
- $17 \div 4 = 4 \frac{1}{4}$

b  Explain your choice. Why did you choose that equation instead of one of the other two?
Base Ten Grid Paper
Multiplication Tables

1. Complete the multiplication tables below.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>2</th>
<th>9</th>
<th>3</th>
<th>8</th>
<th>6</th>
<th>7</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10</td>
<td>4</td>
<td>18</td>
<td>6</td>
<td>16</td>
<td>12</td>
<td>14</td>
<td>8</td>
</tr>
</tbody>
</table>

a

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>2</th>
<th>9</th>
<th>3</th>
<th>8</th>
<th>6</th>
<th>7</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>2</th>
<th>9</th>
<th>3</th>
<th>8</th>
<th>6</th>
<th>7</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

c

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>2</th>
<th>9</th>
<th>3</th>
<th>8</th>
<th>6</th>
<th>7</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Solve the division problems below.

40 ÷ 5 = _______ 27 ÷ 3 = _______ 16 ÷ 4 = _______ 20 ÷ 5 = _______
64 ÷ 8 = _______ 32 ÷ 4 = _______ 18 ÷ 6 = _______ 9 ÷ 3 = _______

3. **CHALLENGE** Solve the division problems below.

a 47 ÷ 5 =

b 52 ÷ 6 =

c 82 ÷ 9 =

d 38 ÷ 3 =

e 75 ÷ 4 =
Sharing Problems

1. Kendra and Veronica’s aunt gave them $19 to spend at the store. If they split the money evenly, how much did they each get to spend? Use labeled sketches, numbers, or words to solve this problem. Show all your work.

2. Frank had 42 rocks that he wanted to share with his 4 friends. If he gave each friend the same number of rocks (and kept the same number of rocks for himself), how many rocks did each person get? Use labeled sketches, numbers, or words to solve this problem. Show all your work.

3. **CHALLENGE** Joe’s grandma lives 36 blocks up the street from Joe. On Saturday, Joe rode his bike two-thirds of the way to his grandma’s house and then realized he forgot the present he was going to give her. Joe rode back to his house, got the present, and rode all the way to his grandma’s house. Then he rode straight home. How many blocks did Joe ride in all? Use labeled sketches, numbers, or words to solve this problem. Show all your work.
Work Place Instructions 2D Remainders Win

Each pair of players needs:

- 1 Remainders Win Record Sheet to share (Note: There are three pages of Remainders Win Record Sheets. Use a different page each time you play this game.)
- 1 die numbered 4–9
- scratch paper (optional)
- pencils

1. Players each roll the die. The player with the higher number is Player 1. Players write their names on the record sheet.

2. Player 1 circles one of the arrays on the record sheet in pencil and then calculates the product of the multiplication problem. This number will be the dividend.

3. Then Player 1 rolls the 4–9 die to produce the divisor, the number by which the dividend will be divided.

4. Player 1 records the division equation on the record sheet and players work together to find the answer. They circle the remainder, if there is one.

```
Kathryn
27 ÷ 6 = 4 R3
```

5. Player 2 then repeats the steps with a new array.

6. Players take turns until all 10 arrays are used and 10 division equations are recorded on the record sheet (five for each player).

7. Players find the sums of their remainders. The player with the higher sum wins.

Game Variations

A. Players choose arrays for each other rather than choosing their own.

B. Instead of the higher remainder sum winning, the lower sum wins.

C. Players roll the die first to determine the divisor and then choose an array.

D. Players roll two dice (two 1–6 dice, two 4–9 dice, or one of each), add the two numbers rolled, and divide the array’s product by that number.
Multiplying with Money

1 Use the arrays of coins to help solve each multiplication problem below. Show all your work.

\[
\begin{array}{c}
\text{ex} \\
12 \\
\times 5 \\
60 \\
\end{array}
\]

Use the arrays of coins to help solve each multiplication problem below. Show all your work.

\[
\begin{array}{c}
a \\
15 \\
\times 5 \\
\end{array}
\]

\[
\begin{array}{c}
b \\
21 \\
\times 5 \\
\end{array}
\]

2 Challenge Solve the multiplication problems below. Show all your work.

\[
\begin{array}{c}
a \\
62 \\
\times 5 \\
\end{array}
\]

\[
\begin{array}{c}
b \\
63 \\
\times 5 \\
\end{array}
\]
Work Place Instructions 2E More or Less Multiplication  p. 1 of 2

Each pair of players needs:

• a 2E More or Less Multiplication Record Sheet
• 2 dice numbered 1–6
• 1 die numbered 4–9
• a more/less cube
• a calculator
• large base ten grid paper, if desired

1 Players take turns rolling the same die. The player with the higher number goes first.

2 Player 1 rolls the more/less cube to see if more or less is the goal and then circles the word on the record sheet.

3 Player 1 rolls the three numbered dice, records the numbers on the record sheet, and thinks about the best order for multiplying these three numbers.
   It may help to move the dice around.

4 Player 1 writes an expression to show the order to multiply the numbers.
   The two numbers that will be multiplied first are written in parentheses, with the third number outside the parentheses.

5 Player 1 multiplies the first two numbers inside the parentheses and writes the product, along with the third number, on the next line.

6 Player 1 finds the product and shows his work.
   • Players need to find a way to solve the problem using multiplication instead of repeated addition.
   • Players can use the base ten grid paper or multiplication facts they know to help.
   • Players cannot use the calculator for this part of the game.

(continued on next page)
### 2D More or Less Multiplication Record Sheet

#### Round 1
We played for (circle one) more / less.

**Player 1 rolled:** 6, 4, 3

\[
\frac{3 \times 4 \times 6}{12 \times 6} = \frac{72}{72} = 1
\]

**Show your work:**
\[
6 \times 4 = 24
\]
\[
60 + 12 = 72
\]

**Player 2 rolled:**

\[
\left( \frac{\text{___} \times \text{___}}{\text{___} \times \text{___}} \right)
\]

**Show your work:**

**Round 2:** We played for (circle one) more / less.

**Player 1 rolled:**

**Player 2 rolled:**

\[
\left( \frac{\text{___} \times \text{___}}{\text{___} \times \text{___}} \right)
\]

**Show your work:**

8. Player 2 takes a turn rolling the three numbered dice and finding the product.

9. Players compare their totals and circle the winner.

The lower total wins if players rolled “less” at the start of the round. The higher total wins if they rolled “more” at the start of the round.


### Game Variations

**A** Use two 4–9 dice and one 1–6 die instead so that players multiply larger numbers.

**B** Use the 2E More or Less Multiplication Challenge Record Sheet. Roll five dice and multiply three of the numbers together and then multiply the other two numbers together. Then decide if you want to add or subtract the two products. The winner is the player who gets closest to 150. For example:

Sage rolled a 5, 4, 8, 3, and 7. She decided to multiply the 3 and 7 and 8, then the 5 and 4. She subtracted the two products.

\[
(3 \times 7) \times 8 - (5 \times 4)
\]

\[
21 \times 8 = 168 \text{ and } (5 \times 4) = 20
\]

168 – 20 = 148
Fourth Grade Games

1. Conrad is playing More or Less Multiplication. He rolls “more” and 4, 7, and 6.
   a. How should Conrad order his numbers?

   b. How would you tell Conrad to multiply his numbers?

   c. Multiply Conrad’s numbers. Show your work.

2. Mariah is playing Moolah on My Mind. She rolled a 3 and 4 and spun a quarter.
   a. Write an expression that represents this problem.

   b. How much money did Mariah get in this turn? Show your work.
### Multiplication & Division Practice

1. Carrie says that she can solve $27 \times 20$ by first solving $27 \times 2$ and then multiplying the product of $27 \times 2$ by 10. Do you agree or disagree? Why?

2. Tarik has to solve the problem $14 \times 30$. He is not sure what to do.
   - a. How would you tell Tarik to solve the problem?
   - b. Solve $14 \times 30$.

3. There is a new pet store opening in the mall. They just got 52 tropical fish. They want to put 7 of these fish in each aquarium. How many aquariums will they need?
   - Use numbers, labeled sketches, or words to solve this problem.
   - Write the answer on the line below.

   The pet store will need _____ aquariums to hold 52 fish.
1. Fill in the missing numbers.

   \[
   \begin{array}{cccc}
   8 \times 4 & 6 \times 5 & 7 \times 7 & 6 \times 8 \\
   & & & 6 \times 6 \\
   56 & 63 & 25 & 42 \\
   & 72 & & \\
   \end{array}
   \]

2. Complete the multiplication tables below.

   \[
   \begin{array}{cccccccc}
   \times & 5 & 2 & 9 & 3 & 8 & 6 & 7 & 4 \\
   \text{ex} & 10 & 4 & 18 & 6 & 16 & 12 & 14 & 8 \\
   a & & & & & & & & \\
   b & & & & & & & & \\
   c & & & & & & & & \\
   \end{array}
   \]

3. Use what you know about multiplying by 10 to help solve these problems.

   \[
   \begin{array}{cccccccc}
   12 \times 10 & 12 \times 5 & 12 \times 9 & 18 \times 10 & 18 \times 5 & 18 \times 10 \\
   \end{array}
   \]
Mrs. Larsen was making gift bags for the 6 students in her reading group. She was putting little erasers in the bags. She had a bag of 20 erasers. How many erasers did each student get? Show all your work.

5 a The teacher wanted his class to work in groups of 4. After he divided them into groups, there were 6 groups of 4 and 1 group of 3. How many students were in the class? Show all your work.

b If the teacher wanted all the groups to be exactly the same size, how many students should be in each group? How many small groups would there be? Show all your work.
1. Fill in the missing numbers.

\[
\begin{array}{cccc}
7 & \times & \_ & \times & 6 & \times & \_ & \times & 3 & \times & 8 \\
42 & & 18 & & 81 & & 24 & & 36 & & 40 \\
5 & \times & \_ & \times & 9 & \times & \_ & \times & 6 & \times & 3 \\
10 & & 45 & & 32 & & 36 & & 27 & & \\
\end{array}
\]

2. Use multiplication and division to find the secret path through each maze. The starting and ending points are marked for you. You can only move one space up, down, over, or diagonally each time. Write four equations to explain the path through the maze.

- **Example (ex)**

  - Start at 3, move 4 to 12, then move 6 to 2, finally move 9 to 6.
  - Equations:
    - \(3 \times 4 = 12\)
    - \(12 \div 2 = 6\)
    - \(6 \times 6 = 36\)
    - \(36 \div 9 = 4\)

- **Part a**

  - Start at 81, move 9 to 36, then move 6 to 42, finally move 7 to 9.

- **Part b**

  - Start at 1, move 3 to 2, then move 6 to 9, finally move 3 to 18.

3. Complete the division table below.

\[
\begin{array}{cccccccc}
\div & 60 & 24 & 12 & 18 & 54 & 540 & 180 & 120 \\
6 & \_ & \_ & \_ & \_ & \_ & \_ & \_ & \_ \\
\end{array}
\]

(continued on next page)
Ryan bought 4 dozen eggs. His recipe for cookies calls for 3 eggs in each batch. How many batches of cookies can he make with the eggs he bought?

5 **CHALLENGE** Write a story problem to match the equation $36 \div 5 = 7$ R1.
Note to Families

For this Home Connection, you’ll play a game called Moolah on My Mind with your child. We have played the game in school, and your child can help you learn to play. You can also follow the directions below. The game is designed to provide practice multiplying large numbers using coin values, which are easier for many students to work with right now.

You’ll need two pencils and a paperclip to play Moolah on My Mind. Use your pencil and the paperclip as a spinner.

Instructions for Moolah on My Mind

1. Take turns spinning one of the number spinners with a partner. The player with the highest number goes first.

2. Spin both number spinners and the coin spinner.

3. Write an expression in the first column to show the results of your spins. You’ll add the two numbers and multiply by the value of the coin.

4. Multiply to find out how much money you collected and write that amount in the second column. Write it again in the last column so you can keep a running total of your money.

5. Take turns with your partner. Help each other make sure that you are adding your money accurately. In other words, be sure each other’s running totals are correct.

6. When both players have taken 10 turns, the game is over and the player with the most money wins.

7. Play another round if you like, using the optional record sheets.

Moolah on My Mind Spinner
# Moolah on My Mind Record Sheet

<table>
<thead>
<tr>
<th>Student</th>
<th>Multiplication Expression</th>
<th>Amount of Money You Got This Turn</th>
<th>Total So Far</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(   +   ) ×     ¢</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Family Member</th>
<th>Multiplication Expression</th>
<th>Amount of Money You Got This Turn</th>
<th>Total So Far</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(   +   ) ×     ¢</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(continued on next page)
**Moolah on My Mind Record Sheet** (optional second game)

<table>
<thead>
<tr>
<th>Multiplication Expression</th>
<th>Amount of Money You Got This Turn</th>
<th>Total So Far</th>
</tr>
</thead>
<tbody>
<tr>
<td>( + ) × ¢</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multiplication Expression</th>
<th>Amount of Money You Got This Turn</th>
<th>Total So Far</th>
</tr>
</thead>
<tbody>
<tr>
<td>( + ) × ¢</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>