

Unit 2: Multi-Digit Multiplication

4th Grade Math

35 Class Meetings

Revised June 2026

Essential Questions

- How does understanding place value help us multiply large numbers?
- What strategies can we use to solve multi-digit multiplication problems efficiently?
- How does understanding patterns in multiplication help us solve real-world problems?

Enduring Understandings with Unit Goals

EU 1: Understanding that in multiplicative comparison one quantity is multiplied by a certain number of times to equal another quantity.

- Distinguish multiplicative comparison from additive comparison.
- Solve multiplicative comparison problems with a larger unknown.
- Solve multiplicative comparison problems with a smaller unknown.
- Solve multiplicative comparison problems with an unknown multiplier.
- Interpret a multiplication equation as a comparison.

EU 2: Utilizing an understanding of place value as a foundation for multiplying larger multi-digit numbers.

- Multiply 10, 100, and 1,000 by one- and two-digit numbers
- Multiply multiples of 10, 100, and 1,000 by one-digit numbers.
- Estimate multi-digit products by rounding numbers to their largest place value
- Multiply two-, three-, and four-digit numbers by one-digit numbers using a variety of strategies
- Multiply two-, three-, and four-digit numbers by one-digit numbers and assess the reasonableness of the product.

EU 3: Multiplying larger numbers requires utilizing multiple strategies and applications of properties.

- Multiply two-digit multiples of 10 by two-digit multiples of 10.
- Estimate multi-digit products by rounding numbers to their largest place value.
- Multiply two-digit multiples of 10 by two-digit numbers.
- Multiply two-digit numbers by two-digit numbers using a variety of strategies including four partial products.
- Multiply two-digit by two-digit numbers using two partial products and assess the reasonableness of the product.

EU 4: Understanding how to extract relevant details from word problems involving multiplication is essential for creating a mathematical equation to solve it.

- Abstract the formulas for area and perimeter and apply those formulas to real-world word problems involving multiplication.
- Solve two-step word problems involving multiplication, addition, and subtraction.

Unit 2: Multi-Digit Multiplication

4th Grade Math

35 Class Meetings

Revised June 2026

Standards

Common Core State Standards:

- **CCSS.Math.4.MD.A.3:** Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
- **CCSS.Math.4.NBT.B.5:** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- **CCSS.Math.4.OA.A.1:** Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
- **CCSS.Math.4.OA.A.2:** Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
- **CCSS.Math.4.OA.A.3:** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.

Competency 2: Speak to diverse audiences in an accountable manner.

Competency 3: Develop the behaviors needed to interact and contribute with others on a team.

Competency 4: Analyze and solve problems independently and collaboratively.

Competency 5: Be responsible, creative, and empathetic members of the community.

Unit Content Overview

1. Multiplicative Comparison

- Understand the concept of multiplicative comparison.
- Use multiplication to solve comparison problems.
- Interpret multiplication equations in comparison contexts.
- Apply reasoning to solve real-world problems.
- Model and explain comparisons visually.
- Use estimation to check the reasonableness of answers.

2. Place Value as a Foundation for Multi-digit Multiplication

- Explain the value of digits in multi-digit numbers.
- Break down multi-digit numbers into their place value components to simplify multiplication problems.

Unit 2: Multi-Digit Multiplication

4th Grade Math

35 Class Meetings

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- Accurately solve up to four-digit by one-digit multiplication problems.
- Apply the distributive property to break apart numbers and multiply.
- Round numbers and estimate products to ensure reasonability.
- Apply understanding of multi-digit multiplication to solve real world problems.
- Identify and use patterns to make multiplication more efficient.

3. Multiplying Larger Numbers

- Apply various strategies like array models commutative, associative, and distributive properties to multiply multi-digit by multi-digit problems
- Communicate reasoning and solution methods for how problems were solved

4. Solving Word Problems

- Recognize situations in real life that require multiplication
- Distinguish between multiplication and other operations when interpreting word problems
- Disregard irrelevant information in word problems
- Apply different strategies to solve multiplication word problems

Vocabulary and Key Terms: factor, product, multiplication, partial products, area model, distributive property, standard algorithm, estimate, place value, regrouping, array, multiple, equation, operation, algorithm, carry over, decompose, multiply, commutative property, associative property, rounding, place value, compatible numbers

Interdisciplinary Connection:

- ELA

Daily Learning Objectives with *TWPS*

Students will be able to...

- Solve basic multiplication problems using multiple strategies including equal groups, arrays, repeated addition, and skip counting.
 - *Which one doesn't belong?*
- Find the factors of numbers 0-100.
 - *How are they the same? How are they different?*
- Find the multiples of numbers 0-100.
 - *Would you rather have 10 groups of 4 pencils or 8 groups of 5 pencils?*
- Identify prime and composite numbers.
 - *Two truths and a lie: 34 is a multiple of 4. 1,2,5,10 are factors of 10. 3&8 are factor pairs of 24.*
 - *What is a number that is a factor of both 24 and 30?*
- Solve word problems involving multiplicative comparisons by using multiplication equations.
 - *Math Mobile*
- Translate phrases like "4 times as many" or "3 times as many" into multiplication equations.
 - *When rounding to the nearest thousand, which numbers round to 26,000?*
- Demonstrate an understanding of multiplicative comparisons to solve everyday problems that include comparing lengths, distances, and quantities.

Unit 2: Multi-Digit Multiplication

4th Grade Math

35 Class Meetings

Revised June 2026

- Check all that are true: 5 is 7 times as many as 35. 35 is 7 times as many as 5. 35 is 5 times as many as 7. 7 is 5 times as many as 35. 5 is 35 times as many as 7.
- Represent multiplicative comparisons using drawings, diagrams, and number lines to deepen their understanding. **
 - Would you rather have: An adult giraffe that is 4 times as tall as this baby giraffe? An adult python that is twice as long as this 2-year-old python?
- Identify patterns, like the power of 10, to make multiplication more efficient.
 - Mobile Math: Find the Values
- Estimate and round to ensure that their solutions to comparison problems make sense.
 - How many times greater is the 2 in 2,354 than the value of the 2 in 4,235?
- Apply the distributive property to break apart numbers and multiply each part separately.
 - Input output table: what is the rule?
- Use array models to accurately solve multi-digit multiplication problems.
 - Jane earned 200 tickets to spend at the school bookstore. Select all of the combinations of items that Jane could buy with her tickets.
- Use partial products as a strategy to solve multi-digit multiplication problems.
 - Find the mistake.
- Use the standard algorithm to solve multi-digit multiplication problems.
 - Which expression is the same as 54×8 ?
- Apply the distributive property to multiply a 2-digit number by another 2-digit number.
 - Which expression is equal to 364×9 ?
- Use array models to accurately multiply a 2-digit number by another 2-digit number.
 - Which expressions have the same unknown value as $12 \times \underline{\hspace{1cm}} = 72$? Select all that apply.
- Use partial products as a strategy to multiply a 2-digit number by another 2-digit number.
 - Look at the pattern: what would the 28th shape be?
- Use the standard algorithm to multiply a 2-digit number by another 2-digit number.
 - John turned on his video game system to continue a game he has saved. He started playing with 450 points. In three successive actions, he doubled his score, lost 250 points, then tripled his score. What was his final score after these three actions?
- Solve real world word problems using strategies that have been taught.
 - Select the statement that explains how the values of the numbers 70 and 7,000 are related.
 - What are all the multiples of 6 that are greater than 20 and less than 50? Are these numbers prime or composite?
- Apply commutative property to solve multi-digit by multi-digit multiplication problems.
 - Select the list of numbers that are all multiples of 8
- Apply the associative property to solve multi-digit by multi-digit multiplication problems.
 - Find a number that is a common factor of 36 and 18
- Identify key information in word problems and represent it mathematically using equations and visual models.
 - What is my number?
- Develop strategies for mental math when multiplying larger numbers.
 - Mobile Math: Balance the Triangle
- Practice reading word problems carefully to identify important details, such as quantities, units, and relationships between numbers.
 - Which expression is equal to 11×24 ?
- Disregard irrelevant information in problems and focus on what is necessary for solving the problem.

Unit 2: Multi-Digit Multiplication

4th Grade Math

35 Class Meetings

Revised June 2026

- *There are three shelves of books. The top shelf has 6 books. The middle shelf has 9 times as many books as the top shelf. The bottom shelf has 7 times as many books as the top shelf. How many total books are on all three shelves?*
- Translate word problems into multiplication equations and expressions, representing them using variables and numbers.
 - *Which one doesn't belong?*
- Apply different strategies (e.g., standard algorithm, area models, distributive property) to solve multiplication word problems.
 - *Math in Our World: Exercise by the Numbers*
- Solve word problems that require more than one step, combining multiplication with other operations such as addition, or subtraction.
 - *Find the Mistake*

Instructional Strategies/Differentiated Instruction

- Whole group instruction
- Paragraph frames and sentence starters
- Teacher modeling
- Think-write-pair-share and small-group discussions
- Graphic organizers
- Accountable talk
- Homework
- Word walls with visuals
- Small group instruction
- Visual exemplars with teacher and student critiques
- Text and video chunking
- Spiraling back to guiding questions

EL Differentiation Strategies

- Word Banks and Word Walls with visuals
- TWPS (Think, write, pair, share)
- Pre-reading strategies
- Culturally responsive teaching
- Explicit teacher modeling
- Key vocabulary
- Graphic organizers
- Strategic Grouping
- Non-verbal assessments

Assessments

FORMATIVE ASSESSMENTS:

- Do Now
- Academic Discourse
- Exit Slips
- Accountable Talk Discussions

Unit 2: Multi-Digit Multiplication
4th Grade Math
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- Completed notes
- Homework
- Performance Task -- “Lemonade Stand” Performance Task
 - Teacher’s rubric/scoring guide

SUMMATIVE ASSESSMENTS:

- Quiz: Multiplicative Comparisons, Multi-digit by Single-digit Multiplication, Multi-digit by Multi-digit Multiplication (EU1, EU2, and EU3)
- IAB
- Unit Task: “Math Land” Performance Task (EU1, EU2 and EU3)

Unit Task

Unit Task Name: “Math Land” Performance Task

- **Description:** Each student is responsible for planning an amusement park. Students must compare attraction sizes, figure out ticket sales, order supplies for concessions, and figure out how much material they need to build a maze.

Evaluation: Teacher’s Scoring Guide

Unit Resources

- Google Classroom
- Pear Assessment
- Math In Focus
- Math Antics
- State Common Core Standards Transition Tasks
- Match Fishtank
- Worksheets
- Individual White boards
- Interactive notebook
- Laptops
- SBAC Prep Online