

Unit 1: Digging into Decimals
5th Grade Math
15 Class Meetings

Written July 2025

Essential Questions

- How can we read, write, and represent decimals in different ways?
- How does the position of a digit in a number affect its value?
- What patterns do we see when multiplying or dividing by powers of ten?

Enduring Understandings with Unit Goals

EU 1: The value of a digit depends on its place in a number.

- Understand that each place in a number is ten times greater than the place to its right and one-tenth of the place to its left.
- Read, write, and compare decimals to the thousandths place.

EU 2: Patterns in powers of ten affect how we multiply and divide numbers.

- Explore patterns when multiplying and dividing by powers of ten and use whole-number exponents to express powers of ten.
- Understand how patterns affect the placement of the decimal point.

EU 3: Place value understanding supports rounding and estimating decimal numbers.

- Use knowledge of place value to round decimals to any place.
- Justify reasoning by using number sense and estimation strategies.

Standards

Common Core State Standards:

- **CCSS.3.NBT.A.1:** Use place value understanding to round whole numbers to the nearest 10 or 100.
- **CCSS.4.NBT.A.1:** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.
- **CCSS.4.NBT.A.2:** Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- **CCSS.4.NBT.A.3:** Use place value understanding to round multi-digit whole numbers to any place
- **CCSS.4.NF.B.4.A:** Understand a fraction a/b as a multiple of $1/b$. For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.
- **CCSS.4.NF.C.5:** Express a fraction with denominator 10 as an equivalent fraction with denominator 100 and use this technique to add two fractions with respective denominators 10 and 100. Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in

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general is not a requirement at this grade. For example, express $3/10$ as $30/100$, and add $3/10 + 4/100 = 34/100$.

- **CCSS.4.NF.C.6:** Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as $62/100$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.
- **CCSS.4.NF.C.7:** Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$.
- **CCSS.Math.Content.5.NBT.A.1:** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $1/10$ of what it represents in the place to its left.
- **CCSS.Math.Content.5.NBT.A.2:** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10 and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- **CCSS.Math.Content.5.NBT.A.3:** Read, write, and compare decimals to thousandths.
- **CCSS.Math.Content.5.NBT.A.3.a:** Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
- **CCSS.Math.Content.5.NBT.A.3.b:** Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- **CCSS.Math.Content.5.NBT.A.4:** Use place value understanding to round decimals to any place.

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

- **Digits Place in a Number**
 - Explore the structure of the base-ten number system and how the value of a digit is determined by its place within a number.
 - Read and write decimals to the thousandths using numerals, word form, and expanded form.
 - Develop the ability to compare two decimals based on the value of their digits and use symbols such as $>$, $<$, and $=$ to record their comparisons.
- **Patterns in Powers of Ten**
 - Recognize and apply patterns when multiplying and dividing by powers of ten (e.g., 10, 100, 1,000).
 - Observe how multiplying by a power of ten adds zeros to whole numbers and shifts the decimal point in decimals.

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- Explore how to use exponents to represent powers of ten.
- **Rounding and Estimating Decimal**
 - Apply understanding of decimal place value to accurately round decimals to any given place (tenths, hundredths, or thousandths).
 - Identify the place that is being rounded to, evaluate the digit to the right, and use rules and number sense to round appropriately.
 - Estimate sums, differences, and products using rounded numbers as a mental math strategy.

Vocabulary and Key Terms: digit, place value, whole number, decimal, tenths, hundredths, thousandths, word form, expanded form, standard form, compare, greater than ($>$), less than ($<$), equal to ($=$), value, number line, numeral, decimal point, base-ten system, power of ten, exponent, base, multiply, divide, pattern, shift, decimal point, zeroes, place shift, exponential notation, factor, multiple, round, estimate, approximate, place (tenths, hundredths, thousandths), rounding rule, nearest, mental math, sums, differences, products, reasonable, compatible numbers, number sense

Interdisciplinary Connection:

- ELA, Science

Daily Learning Objectives with *TWPS*

Students will be able to...

- Identify and describe the value of digits in whole numbers and decimals using place value charts.
 - *Why is the digit 7 worth more in 7.03 than in 0.73?*
- Explain how each place in a number is 10 times greater than the place to its right and 1/10 the value of the place to its left.
 - *If you move one place to the left in a number, how does the value change? Can you give an example?*
- Read and write decimals to the thousandths using numerals, word form, and expanded form.
 - *How does writing a decimal in expanded form help you understand its value better?*
- Represent decimals on place value charts and number lines.
 - *What makes number lines a helpful tool for visualizing decimals?*
- Compare two decimals to the thousandths using place value understanding and record comparisons with symbols.
 - *How do you decide which of two decimals is greater when the digits are similar?*
- Identify and explain patterns in the number of zeros when multiplying whole numbers by powers of ten.
 - *Why do we add a zero each time we multiply by ten? Will this always work?*
- Use whole-number exponents to represent powers of ten (e.g., 10^1 , 10^2 , 10^3).
 - *What does the exponent in a power of ten tell you?*
- Multiply decimals by powers of ten and explain how the decimal point moves.
 - *Why does the decimal point move to the right when you multiply by 10 or 100?*
- Divide decimals by powers of ten and explain how the decimal point moves.
 - *What patterns do you notice when dividing decimals by 10, 100, or 1,000?*
- Solve real-world problems involving multiplication and division of decimals by powers of ten.
 - *How could knowing how to multiply and divide by powers of ten help you when dealing with money or measurements?*
- Identify the place to which a decimal should be rounded (tenths, hundredths, thousandths).

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- *Why is it important to know exactly which place you are rounding to?*
- Use place value understanding to round decimals to the nearest tenth.
 - *When rounding to the nearest tenth, what do you look for in the number?*
- Use place value understanding to round decimals to the nearest hundredth or thousandth.
 - *What changes in your process when rounding to the hundredths place instead of the tenths?*
- Estimate sums and differences of decimals using rounding.
 - *How can rounding help you decide if your answer to an addition or subtraction problem is reasonable?*
- Apply rounding and estimation strategies to solve real-world problems involving decimals.
 - *When might it be better to estimate with decimals instead of solving exactly?*

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
- Completed notes

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- Homework
- Performance Task -- “Decimal Detectives” Performance Task
 - Teacher’s rubric/scoring guide

SUMMATIVE ASSESSMENTS:

- Quiz: Place Value with Decimals, Patterns in Powers of Ten, Rounding and Estimating Decimals (EU1, EU2, and EU3)
- IAB
- Unit Task: “Decimal Detectives” Performance Task (EU1, EU2 and EU3)

Unit Task

Unit Task Name: “Decimal Detectives” Performance Task

Description: Upon completion of the unit students will be asked to independently take on the role of forensic accountants and mathematicians hired to solve a financial mystery for a museum. They must analyze decimal clues, interpret place value, multiply and divide by powers of ten, and round data accurately to uncover the coordinates of a missing treasure. The scenario presented states that the Maritime History Museum is in trouble! A priceless shipwreck treasure has gone missing, and the only way to find it is by decoding the captain’s log—a series of math clues left behind in decimal form. The museum needs students math expertise to crack the code and locate the treasure’s GPS coordinates hidden in decimal values.

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