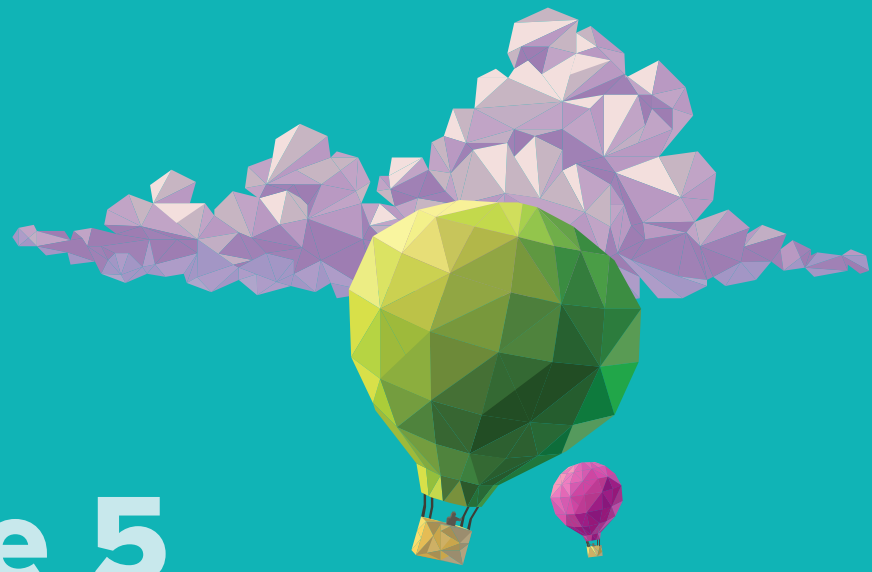# Reveal
# MATH ®

Reveal the Full Potential in Every Student

# Grade 5

## Unit 3:
## Place Value and Number Relationships

# Place Value and Number Relationships

**PACING: 12 days**

| LESSON | MATH OBJECTIVE | LANGUAGE OBJECTIVE | SOCIAL AND EMOTIONAL LEARNING OBJECTIVE |
|---|---|---|---|
| **Unit Opener**  IGNITE! Number Lines  Estimate decimal locations on open number lines. | | | |
| **3-1** Generalize Place Value | Students relate the value of a digit in a multi-digit whole number in one place value position to that of the same digit in the place to its right.  Students relate the value of a digit in a multi-digit whole number in one place value position to that of the same digit in the place to its left. | Students explain how the value of a digit compares to that of the same digit in a different place-value position while answering *Wh-* and yes/no questions and using the academic term *relationship*. | Students identify personal traits that make them good students, peers, and math learners. |
| **3-2** Extend Place Value to Decimals | Students relate the value of a digit in a decimal in one place value position to that of the same digit in the place to its right.  Students relate the value of a digit in a decimal in one place value position to that of the same digit in the place to its left. | Students discuss how the value of a digit in a decimal compares to that of the same digit in a different decimal place-value position, using the terms *hundredths* and *tenths*. | Students discuss and practice positive strategies for managing emotional reactions to stressful situations. |
| **3-3** Read and Write Decimals | Students read and write decimals to the thousandths place in standard form, expanded form, and word form. | Students explain how to read and write decimals to the thousandths place while making sure to include *and*. | Students actively listen without interruption as peers describe how they approached a complex mathematical task. |
| **3-4** Compare Decimals | Students compare two decimals to the thousandths place using place value and record the comparison using appropriate symbols. | Students explain how to use place value and number lines to compare two decimals, using the terms *greater than*, *less than*, and *equal to*. | Students recognize and respond appropriately to the emotions of others during collaborative math work. |
| **Math Probe**  Comparing Decimals  Compare two decimals by reasoning about the digits and their values based on place-value positions. | | | |
| **3-5** Use Place Value to Round Decimals | Students round decimals to any place value position.  Students identify situations that call for rounding decimals and determine the place to which to round. | Students identify place values to the nearest whole and tenths place using *about*. | Students demonstrate thoughtful reflection through identifying the causes of challenges and successes while completing a mathematical task. |
| **Unit Review Fluency Practice** | | | |
| **Unit Assessment Performance Task** | | | |

| LESSON | KEY VOCABULARY | | MATERIALS TO GATHER | RIGOR FOCUS | STANDARD |
|---|---|---|---|---|---|
| | **Math Terms** | **Academic Terms** | | | |
| **3-1** | digit<br>place value<br>place-value chart | cite<br>relationship | • *Place-Value Chart to Millions* Teaching Resource<br>• *10 × 10 Grids* Teaching Resource | Conceptual Understanding | 5.NBT.A.1 |
| **3-2** | decimal<br>decimal point<br>tenth<br>hundredth<br><mark>thousandth</mark> | contradiction<br>infer | • blank number cubes<br>• number cubes | Conceptual Understanding | 5.NBT.A.1 |
| **3-3** | expanded form<br>standard form<br>word form | expand<br>quality | • *Decimal Forms* Teaching Resources<br>• number cubes | Conceptual Understanding<br>Procedural Skill & Fluency | 5.NBT.A.3.a |
| **3-4** | greater than (>)<br>less than (<) | address<br>negate | • number cube | Conceptual Understanding<br>Procedural Skill & Fluency | 5.NBT.A.3.b |
| **3-5** | round<br>estimate | prove<br>variation | • *Number Cards 0–10* Teaching Resource<br>• number cubes | Conceptual Understanding<br>Procedural Skill & Fluency | 5.NBT.A.4 |

## Focus

### Decimal Concepts

Our number system is called a base-10 place-value system because it takes 10 of one unit to equal 1 unit in the place-value position to the left of the given unit.

Students in Grade 5 have several years of experience with whole-number place value and fraction concepts, and in Grade 4 they began to investigate decimals in tenths and hundredths. They learn that it takes 10 hundredths to equal 1 tenth, and it takes 10 tenths to equal 1.

As students learn more about decimals, they need every opportunity to tie current learning to established understanding. Lesson 3-1 of this unit reviews whole-number place value. Students are asked questions such as: "What pattern do you see as you move from one place to another?" "How does the value of the 3 in the thousands place compare to the value of the 3 in the hundreds place?"

Students learn that the value of a digit in a decimal, as its value in a whole number, depends upon its place in the number. So, the value of a digit is 10 times what it would be in the place to its right, and its value is $\frac{1}{10}$ what it would be to its left.

As students progress through the unit, you may want to provide them with place-value charts and digits cards to give them frequent opportunities to experience concrete correspondences among place values.

## Coherence

### What Students Have Learned

- **Whole Number Place Value** Students recognized that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. (Grade 4)
- **Volume** Students understood volume. (Unit 2)

### What Students Are Learning

- **Decimal Place Value** Students understand decimal place value.
- **Reading and Writing Decimals** Students read and write decimals in number, word, and expanded form.
- **Comparing Decimals** Students compare decimals using the same strategies used for whole numbers.
- **Rounding Decimals** Students round decimals using the same strategies used for whole numbers.

### What Students Will Learn

- **Add and Subtract Decimals** Students will add and subtract decimals. (Unit 4)
- **Add, Subtract, Multiply, and Divide Multi-Digit Decimals** Students will fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. (Grade 6)

## Rigor

### Conceptual Understanding

Students develop understanding of
- understanding decimal place value;
- using place value understanding to read and write decimals to the thousandths place;
- using number sense to extend place value concepts to rounding decimals;
- using rounding strategies to understand and use to solve problems.

### Procedural Skill and Fluency

Students build proficiency with
- comparing and rounding decimals.

### Application

Students apply their knowledge of
- understanding decimals to solve problems with real-world contexts;
- comparing and rounding decimals to solve problems with real-world contexts;

*Application is not a targeted element of rigor for the standards in this unit.*

# ETP Effective Teaching Practices

## Pose Purposeful Questions

Purposeful questioning facilitates effective assessment of what students know, helps advance their reasoning skills, and reinforces current learning while building bridges to future learning.

The power of purposeful questions can be as simple as the difference between asking "What answer did you get?" and "How did you find the solution?" The answer to the first question is a single number, which is either right or wrong. The answer to the second question describes a process of reasoning and action. The first is an end in itself, while the second reinforces strategies that have been used, with application to future problems and solutions.

Use the *Explore & Develop* questions to assess students' understanding and encourage discussion.

As the lessons progress, focus on process-oriented questioning. Look for questions that will lead to connections between known concepts and new concepts, and among different aspects of current learning, such as multiple representations of decimals.

Questions focused on reasoning and process can be adapted to meet the needs of all students. Provide conceptual scaffolding as needed by breaking questions into parts. Provide verbal scaffolding by providing sentence frames for English learners.

# MPP Math Practices and Processes

## Look For and Make Use of Structure

We use a base-ten number system, in which we can move from one place-value position to the next by multiplying or dividing by 10.

As students learn about decimals, they are applying and deepening their understanding of how place value works. They should already be comfortable with multiplying whole numbers by 10, 100, and 1,000. Helping them recall and practice that structure will help them gain facility with the parallel relationships among decimals.

To encourage proficiency, encourage students to find and describe structure in their own words, using their own reasoning, as much as possible.

Some suggestions include:

- Students work in pairs or groups in which each student chooses a different way to represent a decimal or series of decimals.
- Students discuss the similarities and differences between place value to the left of the decimal point and place values to the right of the decimal point.
- Students describe the structure of powers of 10, using general words and providing a specific number series as an example.
- Students write a verbal description of each place in a number with at least three places on each side of the decimal point.

# SEL Social and Emotional Learning

## What Skills Will We Develop?

- **Self-Awareness: Self-Confidence**  (Lesson 3-1): Self-confident students are more willing to take risks, allowing them to learn from mistakes.
- **Self-Regulation: Manage Stress**  (Lesson 3-2): Students who can regulate their stress are resilient and better prepared for academic success.
- **Responsible Decision-Making**  (Lesson 3-5): Students who can recognize others' emotions can respond in appropriate ways.

- **Social Awareness: Recognizing Emotions of Others**  (Lesson 3-4): Students who can recognize others' emotions can respond in appropriate ways.
- **Relationship Skills: Effective Communication**  (Lesson 3-3): Students who can communicate effectively are more likely to build strong relationships and contribute to a positive classroom culture.

## LOM Language of Math

### Vocabulary

Students will be using these key terms in this unit:

- **Decimal** (Lesson 4-2): Students were introduced to decimals in Grade 4. Draw a connection between the root *dec-* (*ten*) and our base-ten number system. Students may be familiar with the word *decade*, which uses the same root.

- **Thousandths***  (Lesson 4-2): *Tenths* and *hundredths* were introduced in Grade 4; *thousandths* is a new term. Students may need reinforcement with the *-ths* ending to distinguish the terms from tens, hundreds, and thousands.

*This is a new term.

## MLD Math Language Development

### A Focus on Decimal Vocabulary

Mathematical understanding and language usage may require different skills, but they can work together in students' learning of math concepts.

When learners can describe what they are learning, or teach someone else what they have learned themselves, the concepts are reinforced. Also, in describing an operation or conclusion, learners might discover a mistake in their own reasoning that they now have an opportunity to correct.

Using precise terminology—the correct word or phrase for each concept—also reinforces learning. For example, when students are referring to the decimal point, make sure they say, "decimal point" rather than simply, "decimal."

Consistently model usage of the vocabulary from each lesson, and provide consistent opportunities for students to use each word in discussion and answers to questions.

Help English learners develop fluency with math vocabulary by providing sentence frames and prompts. Frames and prompts should focus on the target vocabulary or concept, while limiting the need for the learner to articulate the less specific parts of a sentence.

Throughout this unit, make sure that students know how to refer to tenths, hundredths, and thousandths, and how to read decimals. You may want to point out that the decimal place values are *not* "symmetric" with respect to the decimal point. Rather, they are "symmetric" with respect to the *ones* place. So, 713.524 is read, "seven hundred thirteen and five hundred twenty-four *thousandths*." Some students incorrectly read it as, "seven hundred thirteen and five hundred twenty-four *hundredths* (because "hundreds contain three digits"—and there are three digits to the right of the decimal point). The decimal point is read "and" to separate the whole number portion from the decimal portion.

## EL English Language Learner

In this unit, students are provided with a number of scaffolds to support their comprehension of the language used to present and explain strategies related to place value and number relationships. Because many of the words (*related, compare, estimate, about*) and phrases (*one/another way, the same as, greater/less than*) used in this unit are likely unfamiliar or unknown to ELs, students are supported in understanding and using these words so that instruction is more accessible to them.

Lesson 3-1 – *one way, another way*
Lesson 3-2 – *related*
Lesson 3-3 – *the same as*
Lesson 3-4 – *greater than, less than, compare*
Lesson 3-5 – *estimate, about*

## Number Routines

**Build Fluency**  The number routines found at the beginning of each lesson help students build number sense and operational fluency. They also help students develop the thinking habits of mind that are important for proficient doers of math.

### Where Does It Go?

**Purpose:**  Build estimating skills using benchmarks.

**Overview:** Students place a target number on number lines with different endpoints and justify their placement. In some instances, as a challenge, the target number may not actually belong on one of the number lines.

### Decompose It!

**Purpose:** Build flexibility with numbers.

**Overview:** Students generate multiple (at least 3) ways to decompose given numbers and share their thinking for each decomposition. The teacher records decompositions and then facilitates a discussion of patterns in the decompositions.

### Find the Pattern, Make a Pattern

**Purpose:** Build efficiency with recognizing and building patterns.

**Overview:** Students determine the rule(s) for a given pattern, then use the rule(s) to create a new pattern. The teacher records students' new patterns and facilitates a discussion to validate the pattern and its rules.

## ? Sense-Making Routines

- **Which Doesn't Belong?**  (Lesson 3-1) For this Which Doesn't Belong? routine, students compare and contrast whole numbers. The purpose of this Which Doesn't Belong? is to get students to extend their understanding of whole-number place value and understand the realtionships among place values to the right and left.
- **Notice & Wonder: What do you notice? What do you wonder?**  (Lessons 3-2, 3-3) In Lesson 3-2, students discuss partially-filled decimal grids. The purpose of this Notice & Wonder extend students' understanding of whole-number place value to decimals.

- **Notice & Wonder: How are they the same? How are they different?**  (Lesson 3-4) Students compare and contrast the weights of backpacks. The purpose of this Notice & Wonder is to get students thinking about comparing decimals and how what they already know about whole-number place value that can help them compare decimals.
- **Notice & Wonder: What do you notice? What do you wonder?**  (Lesson 3-5) Students share thoughts on the estimated cost of popcorn. The purpose of this Notice & Wonder is to get students thinking about rounding decimals and how what they already know about whole-number place value that can help them round decimals.

## MLR Math Language Routines

The Mathematical Language Routines used in this unit give teachers a structured, yet adaptable format for amplifying and developing students' social and academic language. These routines can also be used as formative assessment opportunities as students develop proficiency in English and mathematical language. They can be used in ways that support real-time-, peer-, and self-assessment. For more information on the Math Language Routines, see the Appendix.

- **Lesson 3–1**  In order to cultivate conversation, students participate in MLR3: Critique, Correct, and Clarify.
- **Lesson 3–2**  In order to support sense-making, students participate in MLR2: Collect and Display.
- **Lesson 3–3**  In order to maximize linguistic and cognitive meta-awareness, students participate in MLR1: Stronger and Clearer Each Time.
- **Lesson 3–4**  In order to maximize linguistic and cognitive meta-awareness, students participate in MLR8: Discussion Supports.
- **Lesson 3–5**  In order to optimize output, students participate in MLR5: Co-Craft Questions and Problems.
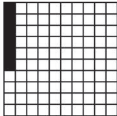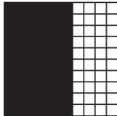
Unit **3**

## How Ready Am I?

Name _____

1. What is the number *fifty thousand, two hundred six* written in standard form?

   A. 52,600          B. 52,006

   C. 50,260          **D.** 50,206

2. What is the product?

   10 × 7,000

   **A.** 70,000          B. 7,000

   C. 700          D. 70

3. Which statement is *not* true?

   A. 15.15 < 15.20          **B.** 1.01 < 0.86

   C. 1,627.5 < 1,628.4          D. 35.7 > 34.9

4. Which of these represents 0.06?

   **A.**          B.

   C.          D.

5. Which of these shows 204,970 in expanded form?

   A. 2 × 10,000 + 4 × 1,000 + 9 × 10 + 7 × 10

   **B.** 2 × 100,000 + 4 × 1,000 + 9 × 100 + 7 × 10

   C. 2 × 100,000 + 4 × 10,000 + 9 × 100 + 7 × 10

   D. 2 × 10,000 + 4 × 1,000 + 9 × 100 + 7 × 10

6. Which number is ten times greater than 40?

   A. 4          B. 40

   **C.** 400          D. 4,000

7. Which number has an 8 in the ten thousands place, a 7 in the tenths place, and a 2 in the hundreds place?

   **A.** 184,259.73          B. 389,274.61

   C. 805,261.79          D. 846,213.57

8. Charley solved a multiplication problem and got 800 for his answer. He then checked his work and found that the answer was actually 8,000. How many times *greater* is the value of 8 in 8,000 than the value of 8 in 800?

   A. $\frac{1}{100}$ as much          **B.** 10 times as much

   C. $\frac{1}{10}$ as much          D. 1,000 times as much

9. Pitcher A contains six-tenths of a liter of milk. Pitcher B contains eight-hundredths of a liter of milk. Which statement about the pitchers is true?

   A. Pitcher B contains more milk than Pitcher A because 0.08 > 0.6.

   **B.** Pitcher A contains more milk than Pitcher B because 0.6 > 0.08.

   C. Pitcher B contains more milk than Pitcher A because 0.8 > 0.06.

   D. Pitcher A contains more milk than Pitcher B because 0.06 > 0.8.

10. Which number rounds to 800 when rounded to the nearest hundred?

    A. 738          **B.** 753

    C. 855          D. 882

Administer the Readiness Diagnostic to determine your students' readiness for this unit.
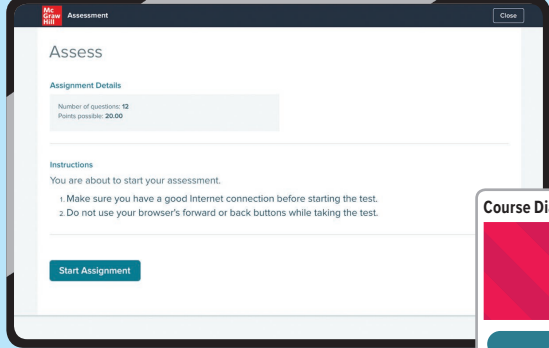
## Targeted Intervention

Use Guided Support Intervention lessons available in the Digital Teacher Center to provide targeted intervention.

### Item Analysis

| Item | DOK | Skill | Guided Support Intervention Lesson | Standard |
|------|-----|-------|-----------------------------------|----------|
| 1 | 1 | Write multi-digit numbers in standard form | Standard & Word Form through 999,999 | 4.NBT.A.2 |
| 2 | 1 | Multiply by factor of 10 | Ten Times as Great | 4.NBT.A.1 |
| 3 | 2 | Compare decimals to hundredths | Compare Fractions & Decimals in 100ths | 4.NF.C.7 |
| 4 | 1 | Represent decimals on a decimal grid | Decimal Fractions in 100ths | 4.NF.C.6 |
| 5 | 1 | Write multi-digit numbers in expanded form | Expanded Form through 999,999 | 4.NBT.A.2 |
| 6 | 2 | Number sense | Ten Times as Great | 4.NBT.A.1 |
| 7 | 2 | Place value | Compare & Order Numbers through 999,999 | 4.NBT.A.2 |
| 8 | 2 | Place value | Ten Times as Great | 4.NBT.A.1 |
| 9 | 2 | Compare decimals to hundredths | Compare Fractions & Decimals in 100ths | 4.NF.C.7 |
| 10 | 2 | Round multi-digit numbers | Round to Any Place | 4.NBT.A.3 |

Assign the digital Readiness Diagnostic to students or download and print PDFs from the Digital Teacher Center.

GO ONLINE

Assessment          Close

**Assess**

**Assignment Details**

Number of questions: **12**
Points possible: **20.00**

**Instructions**

You are about to start your assessment.

1. Make sure you have a good internet connection before starting the test.
2. Do not use your browser's forward or back buttons while taking the test.

Start Assignment

**Course Diagnostic**

✓

Assign

## Focus Question

Introduce the Focus Question, *How can I extend my knowledge of place value to understand decimals?*

Ask students to think about what they know about decimals.

- *What do you already know about decimals?*
- *What can decimals be used for?*
- *What do you already know about place value?*
- *What do think you will be doing in the unit?*

Remind students that at the end of the unit, they will reflect back on what they learned.

## 🏠 Family Letter

Each letter presents an overview of the math in the unit and home activities to support student learning.



**Place Value and Number Relationships**

**Focus Question**
How can I extend my knowledge of place value to understand decimals?

**Hi, I'm Haley.**
I want to be an astronomer. I will research comets to find how many miles they travel each second. It's important that I know how to write numbers correctly, so I can record accurate data. I will need to be able to use place value and decimals to do my job!

Unit 3

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## STEM in Action

### Videos

Students can watch the two STEM videos.

**STEM Career: Astronomer**  Haley talks about the work of astronomers.

**Haley Researches Comets**  Haley explains the place value positions of decimals.

### ⚙️ STEM Project Card

Students can complete the STEM project during their workstation time.

### ⚙️ STEM Adventure

Students can complete the STEM adventure during their workstation time.

**STEM Career: Astronomer**



**Haley Researches Comets**

## Ignite!

### Number Lines

Students develop number sense by estimating decimal locations on an open number line.

1. Have students work in pairs to discuss and record their ideas for Exercises 1–2. Then have students share ideas with the class.
   - What sort of real-world situations might the numbers represent?
   - What do you notice about the numbers?

2. Have students complete Exercise 3, writing each number as a whole number, fraction, or mixed number. You may want to mention that fractions with a denominator of 10 or 100 are called *decimal fractions*.

3. In Exercise 4, have students work in pairs to find an estimated location on the number line for each number.
   - What tick marks would be useful to add to the number line before plotting the points.

4. After students graph the points, have them tour the class to view the other students' work. Ask them note similarities and differences among the number lines.

5. Have students share what they observed with the class. Discuss any misconceptions.

6. Ask students to read the numbers from smallest to greatest. Encourage them to read the numbers correctly. For example, students should read 1.2 as *one and two tenths* (rather than, say, as *one point two*).
   - Explain why is 1.2 equal to 1.20.
   - How would you determine which two numbers are closest together (excluding the two numbers that are equal)?

---

**IGNITE!**

Name _____

**Number Lines**

**Consider the following numbers:**

1.2   1.20   0.7   2.30   2.03   0.25   0.52   1   3.00   1.5

1. What sort of real-world situations might the above numbers represent?

2. What do you notice about the numbers?

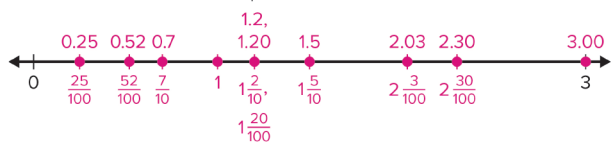3. Rewrite each number in the list as a whole number, fraction, or mixed number.

$$1\frac{2}{10} \quad 1\frac{20}{100} \quad \frac{7}{10} \quad 2\frac{30}{100} \quad 2\frac{3}{100} \quad \frac{25}{100} \quad \frac{52}{100} \quad 1 \quad 3 \quad 1\frac{5}{10}$$

4. Estimate the location of each number on the number line below. Draw a point for each number. Write the number as a decimal above the point; write the number as a whole number, fraction, or mixed number below the point.

## Workstations

*Reveal Math* offers rich and varied resources that teachers can use to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use.

| | Activity | Description | Use After Lesson |
|---|---|---|---|
| **Game Station** | Game Station | Students build proficiency with using decimal numbers. | |
| | | • **Value of a Digit Sort** | 3-1 |
| | | • **Place Value with Decimals Sort** | 3-2 |
| | | • **Reading and Writing Decimals Concentration** | 3-3 |
| | | • **Decimal Showdown** | 3-4 |
| | | • **Rounding Decimals Four in a Row** | 3-5 |
| **Digital Station** | Digital Game | **Factory Sort** Students practice adding and subtracting within 1,000,000. | 3-1 |
| **Application Station** | Have students complete at least one of the Use It! activities for this unit. | | |
| | STEM Project Card | **How Far?** Students research stars and create a model or drawing showing the stars and their distances from Earth. | 3-5 |
| | Connection Card | **On Your Mark, Get Set, Go!** Students create a list of times in a swimming meet and compare the times to the results of Olympic swimming events. | 3-4 |
| | Real World Card | **State Sales Tax** Student investigate and compare state sales tax rates. | 3-5 |

## Additional Resources

Use the resources below to provide additional support for this unit.

### Vocabulary

Use the vocabulary cards to help students learn the vocabulary in this unit. Encourage students to write their own definitions of the key terms on the front side of the card.

**thousandths**

### Foldables

Use the unit foldable with Lessons 3-2 and 3-3.

Explain what happens when the card is folded. Solve the equation.

$$78 \div 10 = \underline{\quad} \, .8$$
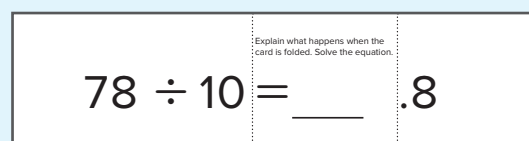
### Spiral Review

Students can complete the Spiral Review at any point during the unit as either a paper-and-pencil or digital activity.

### Spiral Review Content Focus

| Lesson | Standard |
|---|---|
| 3-1 | 4.NF.C |
| 3-2 | 4.OA.A |
| 3-3 | 4.NBT.A |
| 3-4 | 4.NBT.B |
| 3-5 | 4.NF.A |

# Generalize Place Value

## Learning Targets

- I can recognize that the value of a digit represents ten times as much as it represents in a place to its right.
- I can recognize that the value of a digit represents one-tenth as much as the place to its left.

## Standards ◇ Major △ Supporting ◯ Additional

**Content**

◇ **5.NBT.A**  Understand the place value system.

◇ **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 $\frac{1}{10}$ of what it represents in the place to its left.

**Math Practices and Processes**

**MPP**  Make sense of problems and persevere in solving them.

**MPP**  Look for and make use of structure.

## Vocabulary

| Math Terms | Academic Terms |
|---|---|
| digit | cite |
| place value | relationship |
| place-value chart | |

## Materials

The materials may be for any part of the lesson.

- *Place-Value Charts to Millions* Teaching Resource
- *10 × 10 Grids* Teaching Resource
- index cards

## Focus

| Content Objectives | Language Objectives | SEL Objective |
|---|---|---|
| • Students relate the value of a digit in a multi-digit whole number in one place value position to that of the same digit in the place to its right.<br><br>• Students relate the value of a digit in a multi-digit whole number in one place value position to that of the same digit in the place to its left. | • Students explain how the value of a digit compares to that of the same digit in a different place-value position while answering *Wh-* and yes/no questions and using the academic term *relationship*.<br><br>• In order to support cultivating conversation, ELs will participate in MLR3: Critique, Correct, and Clarify. | • Students identify personal traits that make them good students, peers, and math learners. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students recognized that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. (Grade 4) | • Students recognize that in a multi-digit whole number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left. | • Students recognize that in a decimal number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left. (Unit 3) |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students build on place-value concepts by comparing the value of a digit in one place-value position with the value of the same digit in another place-value position when the digits are adjacent or several places away. | • Students will gain some early experience developing proficiency.<br><br>*Procedural skill and fluency is not a targeted element of rigor for this standard.* | • Several problems are presented in a real-world context, and the applications for understanding place value will be further explored later in the unit.<br><br>*Application is not a targeted element of rigor for this standard.* |

## Number Routine
## Where Does it Go?

**GO ONLINE**

🕐 5–7 min

**Build Fluency**  Students determine the location of a decimal on two number lines with different marked endpoints.

Remind students that this is an estimation activity, and exact locations are not needed.

These prompts encourage students to talk about their reasoning:

- *What do you notice about the two marked endpoints?*
- *Will the point you mark on the top number line appear right above the point you mark on the bottom number line? Explain.*
- *What point on the second number line might you mark before you estimate where 0.3 should go?*
- *How do you know your answers are reasonable?*

**Purpose** Students compare and contrast numbers, thinking about the value each digit in a whole number represents.

## Which Doesn't Belong

- Which doesn't belong?

**Teaching Tip** Place-value charts may guide students towards comparing and contrasting these numbers by place value.

**ETP Pose Purposeful Questions**

The questions that follow are not intended to be asked in the sequence presented. They are meant to help advance students' thinking about the value each digit in a whole number represents and are based on possible comments and questions students may make during the share out.

- Which numbers have a 7 in the tens place? Explain what the digit 7 represents in those numbers.
- For the number that does not have a 7 in the tens place, explain what each digit 7 represents in that number.

**Math is...** **Mindset**

- How can you give positive feedback to your classmates today?

**SEL Self-Awareness: Self-Confidence**

Throughout the Which Doesn't Belong? routine, provide opportunities for students to feel confident in themselves. Model and encourage giving positive feedback for sharing ideas, good effort, or creative thinking. Make sure students understand that being good students can also include being helpful peers and active members of the classroom community. Remind students that some tasks are more challenging than others, and they can demonstrate self-confidence by speaking up and asking for help if they need it. Throughout their work with eneralizing place value, continue to find other opportunities to allow students to give positive feedback to their classmates.

**Transition to Explore & Develop**

Ask questions that focus students' attention on the value of each digit in a whole number.

**ETP Establish Goals to Focus Learning**

- Let's think about what each digit in a number represents and compare them.



Lesson **3-1**
**Generalize Place Value**

❓ **Be Curious**

**Which doesn't belong?**

5,173

3,073

370

70,713

**Math is...** **Mindset**
How can you give positive feedback to your classmates today?

Unit 3 • Place Value and Number Relationships **63**



❓ **Be Curious**

**Which doesn't belong?**

5,173

3,073

70,713

## Learn

**What are some ways to describe the relationship between the values of the digits in the number shown?**

| thousands | hundreds | tens | ones |
|---|---|---|---|
| 7 | 7 | 7 | 7 |

You can describe the relationship between the place-value positions.

▶ **One Way** Relate 7,000 to 700.

| thousands | hundreds | tens | ones |
|---|---|---|---|
| 7 | 7 | 7 | 7 |

$7{,}000 = 10 \times 700$

Each 7 is ten times the value of the 7 to the right.

▶ **Another Way** Relate 700 to 7,000.

| thousands | hundreds | tens | ones |
|---|---|---|---|
| 7 | 7 | 7 | 7 |

**Math is... Structure**

What ideas have we learned before that were helpful in understanding this relationship?

700 is $\frac{1}{10}$ of 7,000.

Each 7 is $\frac{1}{10}$ the value of the 7 to the left.

A digit represents 10 times as much as it represents in the place to the right. It also represents $\frac{1}{10}$ the value of what it represents in the place to its left.

### 🔄 Work Together

What are two different ways to describe the relationship between the values of each digit 4 in 449,035?

Sample answer: 400,000 is 10 times 40,000; 40,000 is $\frac{1}{10}$ of 400,000

# ❶ Pose the Problem

**ETP Pose Purposeful Questions**

- How does the place-value chart help you understand the problem?
- What patterns that you have seen before can help you solve this problem?
- Explain why the value of each digit is not 7.

# ❷ Develop the Math

**Choose the option that best meets your instructional goals.**

**MLR Critique, Correct, and Clarify**

Make a false claim for students to critique. Write 5,555 on the board. Say the 5 in the thousands place is $\frac{1}{10}$ the value of the 5 in the hundreds place. Ask, *Is this statement correct or incorrect? How do you know?* Have the class discuss how to correct your mistake.

# ❸ Bring It Together

**ETP Elicit Evidence of Student Thinking**

- How would you explain the relationships among the digits in a multi-digit whole number?

### Key Takeaway
- A digit in one place in a multi-digit whole number represents 10 times as much as it represents in the place to the right and $\frac{1}{10}$ of what it represents in the place to its left.

## Work Together

Students describe the relationships between the hundred thousands and ten thousands places. Make sure that students can describe the relationship in both directions. Students can work on the problem in pairs before sharing their work.

⚠ **Common Misconception** Students may think that the 9 should represent $\frac{1}{10}$ as much as the 4 in the ten thousands place. Make sure they understand that the relationships discussed in this lesson are for the same digit. So, for example, a digit in one place represents 10 times as much as that *same digit* would represent in the place to the right.

**LOM Language of Math**

A digit and the value it represents are different things. 6 is never $\frac{1}{10}$ or ten times 6. The *value a 6 represents* in one place is 10 times or $\frac{1}{10}$ of the value a 6 represents in a place to its ight or left in that number.

## Activity-Based Exploration

Students explore the relationship between place-value positions.

**Materials:** *10 × 10 Grids* Teaching Resource

**Directions:** Before comparing the values of each digit 7 in the Pose the Problem, have students take a closer look at the value of each place-value position. Provide multiple copies of *10 × 10 Grids* Teaching Resource to each pair or small group. Have students model 1,000, 100, 10, and 1.

**ETP Support Productive Struggle**

- Did you notice a pattern when determining how to use the 10 × 10 grids to model the numbers?
- How did you determine how many 10 × 10 grids are needed to make 1,000? Is there an operation you can use to explain this relationship?
- How did you determine how to partition the 10 × 10 grid to show 10? How can you explain this relationship using a fraction?

**Math is... Structure**

- What ideas have you learned before that were helpful in understanding this relationship?

Students are looking for and using the patterns they have already discovered in the structure of the base-ten system.

**Activity Debrief:** Have pairs or small groups share their strategies for determining how to model each number. Encourage students to use mathematically precise language, such as *10 times* or *one-tenth* when describing their strategies.

Have students revisit the Pose the Problem question and discuss answers.

- What are some ways to describe the relationship between the values of the digits in the number shown?

The PDF of the Teaching Resource is available in the Digital Teacher Center.

## Guided Exploration

Students extend their understanding of whole-number place value to the relationships place values represent to the right and to the left.

**ETP Use and Connect Mathematical Representations**

- How does a place-value chart help you understand the problem?
- Are you partitioning the thousand into equal parts? How does that help you describe the relationship as a fraction?
- **Think About It:** How can you show that 1 is $\frac{1}{10}$ of 10?
- How could another model, like expanded form, help you understand the problem?

Have students state as many relationships in 7,777 as they can.

**Math is... Structure**

- What ideas have you learned before that were helpful in understanding this relationship?

Students are looking for and using the patterns they have already discovered in the structure of the base-ten system.

**EL English Learner Scaffolds**

**Entering/Emerging** Support students in understanding the meaning of the word *way.* Using manipulatives, show students one way of doing a familiar task, such as grouping. Say, *This is one way.* Then, using the manipulatives again, show students another way of doing that task. Say, *This is another way.* Then, to confirm comprehension, show students one way of doing a new task. Say, *This is one way. Show me another way.*

**Developing/Expanding** Support students in understanding the meaning of the word *way.* Using manipulatives, show students one way of doing a familiar task. Say, *This is one way.* Then, using the manipulatives again, show students another way of doing that task. Say, *This is another way.* Then, to confirm comprehension, ask students to show you two ways to do a task of their choice, prompting them to use *one way* and *another way* in their descriptions.

**Bridging/Reaching** Ask students to explain the different strategies they can use to understand the problem. Support students with relevant language as needed, such as *one way* and *another way.*

## On My Own

**MATH REPLAY** | **GO ONLINE**

Name _____

**Use the place-value chart to complete the sentence.**

1. The value of the 6 in the hundreds place is **10** times the value of the 6 in the **tens** place.

| hundred thousands | ten thousands | thousands | hundreds | tens | ones |
|---|---|---|---|---|---|
| | 3 | 2 | 5 | 6 | 5 |
| | 7 | 3 | 6 | 1 | 0 |

**Complete the sentences to describe the relationship between the values of each digit 4 and each digit 9 in the number 447,699.**

2. The value of the digit 4 in the ten thousands place is $\frac{1}{10}$ the value of the digit 4 in the **hundred thousands** place.

3. The value of the digit 9 in the **tens** place is 10 times the value of the digit 9 in the **ones** place.

**Is each statement *true* or *false*?**

4. The digit 3 in 5,630, is 10 times the value of the digit 3 in 342.
   **false**

5. The digit 3 in 5,630, is $\frac{1}{10}$ the value of the digit 3 in 342.
   **true**

6. The digit 3 in 5,630, is 10 times the value of the 3 in 13.
   **true**

7. The digit 3 in 5,630, is $\frac{1}{10}$ the value of the digit 3 in 13.
   **false**

8. On Tuesday, 600 people attended a play at the Children's Theatre. The same play had 6,000 attendees on Saturday.

   When you compare 600 attendees to 6,000 attendees, 600 is $\frac{1}{10}$ as much as 6,000.

Unit 3 • Place Value and Number Relationships  **65**

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9. How does the value of the 2 in the hundred thousands place relate to the value of the 2 in the ten thousands place?

| hundred thousands | ten thousands | thousands | hundreds | tens | ones |
|---|---|---|---|---|---|
| 2 | 2 | 9 | 0 | 3 | 5 |

   **Sample answer: 200,000 is 10 times the value of 20,000.**

10. How does the value of the 7 in the thousands place relate to the value of the 7 in the ten thousands place?

| hundred thousands | ten thousands | thousands | hundreds | tens | ones |
|---|---|---|---|---|---|
| 4 | 7 | 7 | 3 | 0 | 0 |

    **Sample answer: 7,000 is $\frac{1}{10}$ the value of 70,000.**

11. **STEM Connection** Studies show that the first observation of Halley's comet was in 466 B.C. What are two different ways to describe the relationship between the digits 6 in 466?
    **Sample answer: 60 is 10 times 6; 6 is $\frac{1}{10}$ of 60.**

12. **Extend Your Thinking** Write a number so that the digit 5 has a value of 5,000 and is $\frac{1}{10}$ the value of the digit in the ten thousands place.
    **Sample answer: 855,482**

### 🔄 Reflect

How did I think like a mathematician today?
**Answers may vary.**

**Math is... Mindset**
How did you give positive feedback to your classmates today?

---

## Practice

**ETP** **Build Fluency from Understanding**

⚠ **Common Error: Exercise 8** Students may look only at the first digit in each number, which is a 6, and not see the $\frac{1}{10}$ relationship. Remind them that they need to look at the value of the digit 6.

### Practice Item Analysis

| Item | DOK | Rigor |
|---|---|---|
| 1–3 | 2 | Procedural Skill & Fluency |
| 4–7 | 3 | Conceptual Understanding |
| 8 | 3 | Application |
| 9–10 | 3 | Conceptual Understanding |
| 11 | 3 | Application |
| 12 | 4 | Conceptual Understanding |

## 🔄 Reflect

Students complete the Reflect question.
- How did I think like a mathematician today?

Ask students to share their reflections with their classmates.

**Math is... Mindset**
- How did you give positive feedback to your classmates today?

### Learning Targets

Ask students to reflect on the Learning Targets of the lesson.
- I can recognize that the value of a digit represents ten times as much as it represents in a place to its right.
- I can recognize that the value of a digit represents one-tenth as much as the place to its left.

To review today's lesson, have students watch the Math Replay video in their Digital Student Center.

Assign the On My Own practice to students from the Digital Teacher Center.

**GO ONLINE** — **MATH REPLAY**

## Exit Ticket ✓ Formative Assessment

The *Exit Ticket* assesses students' understanding of lesson concepts.

**Metacognitive Check** *Reflect on Your Learning* allows students to think about their level of understanding of the lesson content on a scale of 1 to 4 with 4 being the highest confidence.

### Exit Ticket Skill Tracker
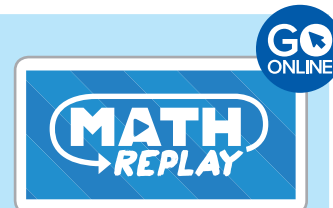
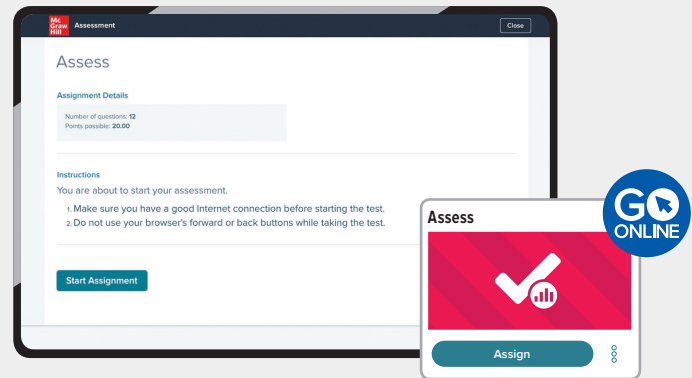| Item | DOK | Skill | Standard |
|------|-----|-------|----------|
| 1 | 2 | Compare the value of digits | 5.NBT.A.1 |
| 2 | 2 | Compare the value of digits | 5.NBT.A.1 |
| 3 | 2 | Compare the value of digits | 5.NBT.A.1 |

**📊 Data** Use students' scores on the *Exit Ticket* to assign the differentiated resources available. When students complete the *Exit Ticket* in the digital workspace, their responses are auto-scored.

### Exit Ticket Recommendations

| If students score | Then have students do |
|-------------------|------------------------|
| 3 of 3 | Additional Practice or any of the 🅑 or 🅔 activities |
| 2 of 3 | *Take Another Look* or any of the 🅑 activities |
| 1 or fewer of 3 | Small Group Intervention or any of the 🆁 activities |

### Key for Differentiation
🆁 Reinforce Understanding
🅑 Build Proficiency
🅔 Extend Thinking

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Assessment — Close

Assess

**Assignment Details**
Number of questions: **12**
Points possible: **20.00**

**Instructions**
You are about to start your assessment.
1. Make sure you have a good Internet connection before starting the test.
2. Do not use your browser's forward or back buttons while taking the test.

Start Assignment

Assess — GO ONLINE ✓📊 — Assign

---

Lesson **3-1**

### Exit Ticket

Name _____

1. Which statement correctly compares the digit 9 in 359,276 and 471,962?

   **A.** The value of the digit 9 in 359,276 is $\frac{1}{100}$ the value of the digit 9 in 471,962.

   **B.** The value of the digit 9 in 359,276 is $\frac{1}{10}$ the value of the digit 9 in 471,962.

   **C.** The value of the digit 9 in 359,276 is 10 times the value of the digit 9 in 471,962.

   **D.** The value of the digit 9 in 359,276 is 100 times the value of the digit 9 in 471,962.
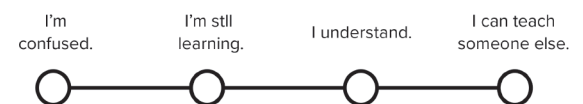
2. 

| hundreds | tens | ones | hundreds | tens | ones |
|----------|------|------|----------|------|------|
| 2 | 0 | 3 | 5 | 3 | 1 |
| 7 | 8 | 6 | 3 | 9 | 8 |

   Which of these correctly compares the values of the digit 3 in the numbers? Choose all that apply.

   **A.** 300 is $\frac{1}{10}$ of 3,000     **B.** 3,000 is 10 times 300

   **C.** 30 is $\frac{1}{10}$ of 3,000     **D.** $\frac{1}{10}$ of 300 is 30

3. Abigail travels 2,000 miles to visit her aunt. Then she travels 200 miles to visit her grandparents. How can you complete the statement to correctly compare the two distances?

   2,000 miles is __10__ times as far as 200 miles.

**Reflect On Your Learning**

I'm confused.   I'm stll learning.   I understand.   I can teach someone else.

○————○————○————○

Assessment Resource Book **33**

## R · Reinforce Understanding

### That's the Way!

Distribute two index cards marked "× 10" and "× $\frac{1}{10}$" to each student. Display a large number that includes a blank space for one of the digits. Draw an arrow below a digit that is adjacent to the blank space. Ask students to raise the card that shows the multiplication that they would have to be performed to "move" that digit to the blank space. Have students explain their thinking. Repeat with other numbers and arrows. If students have difficulty, ask them to multiply 20 by 10 and describe the result, and then divide by 20 by 10 and describe the result.

### Take Another Look Lessons

Assign the interactive lessons to reinforce targeted skills.

• One-Tenth as Much
• Digits to the Left and Right
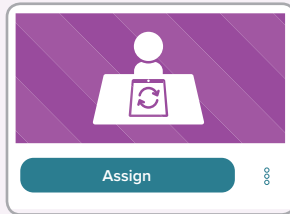
**Assign**
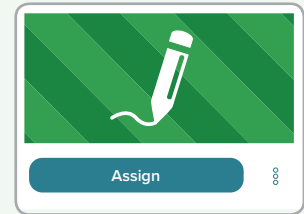
**Differentiation Resource Book, p. 11**

Lesson **3-1** • **Reinforce Understanding**
### Generalize Place Value

Name _____

**Review**

Compare the 5s in 35,512.

**35,512**

The value of the 5 in the thousands place is 10 times the value of the 5 in the hundreds place.

The value of the 5 in the hundreds place is $\frac{1}{10}$ the value of the 5 in the thousands place.

1. How does an 8 in the hundreds place compare with an 8 in the thousands place? **Sample answer: An 8 in the hundreds place is $\frac{1}{10}$ the value of an 8 in the thousands place; an 8 in the thousands place is 10 times the value of an 8 in the hundreds place.**

Write one relationship comparing the value of the 3s in each pair of numbers.

2. 3,576 and 5,389
**Sample answer: The 3 in 3,576 is 10 times the value of the 3 in 5,389; the 3 in 5,389 is $\frac{1}{10}$ the value of the 3 in 3,576.**

3. 4,023 and 6,731
**Sample answer: The 3 in 4,023 is $\frac{1}{10}$ the value of the 3 in 6,731; the 3 in 6,731 is 10 times the value of the 3 in 4,023.**

Differentiation Resource Book

## B · Build Proficiency

### Practice It! Game Station

**Value of a Digit Sort**

Students practice comparing the values of digits in adjacent places within whole numbers.

### Interactive Additional Practice

Assign the digital version of the Student Practice Book.

**Assign**

**Student Practice Book, pp. 11–12**

Lesson **3-1**
### Additional Practice

Name _____

**Review**

You can recognize that the value of a digit represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ as much as it represents in the place to its left.

How does the value of the digit 4 in the thousands place compare to the value of the digit 4 in the hundreds place?

| Billions Period | | | Millions Period | | | Thousands Period | | | Ones Period | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| hundreds | tens | ones | hundreds | tens | ones | hundreds | tens | ones | hundreds | tens | ones |
| | | | | | | 7 | 8 | 9 | 4 | 4 | 1 | 2 |

The value of the digit 4 in the thousands place is 4,000. The value of the digit 4 in the hundreds place is 400. 4,000 is 10 times as much as 400. 400 is $\frac{1}{10}$ the value of 4,000.

1. Compare the value of the digit 3 in the ten thousands place to the digit 3 in the thousands place.

The value of the digit 3 in the ten thousands place is ___**10**___ times as much as the value of the digit 3 in the **thousands** place.

The digit 3 in the thousands place is $\frac{1}{10}$ **times** the value of the 3 in the ten thousands place.

| Thousands Period | | | Ones Period | | |
|---|---|---|---|---|---|
| hundreds | tens | ones | hundreds | tens | ones |
| 1 | 3 | 3 | 8 | 9 | 5 |

Student Practice Book

## Own It! Digital Station

**Build Fluency** **Games**

Assign the digital game to develop fluency with adding and subtracting within 1,000,000.

Assign

## E Extend Thinking

## Use It! Application Station
**On Your Mark, Get Set, Go!** Students create a list of times in a swimming meet and compare the times to the results of Olympic swimming events. *The content of this card has concepts covered later in Lesson 3-4. You may want to assign this card to students ready to explore content covered later in this unit.*
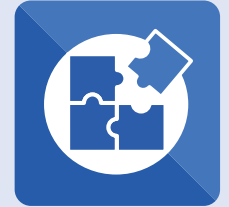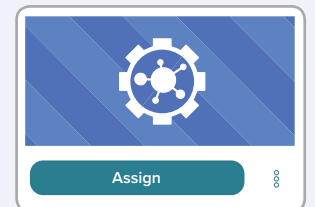
## Spiral Review

Assign the digital Spiral Review to students or download and print PDFs of the Spiral Review from the Digital Teacher Center.
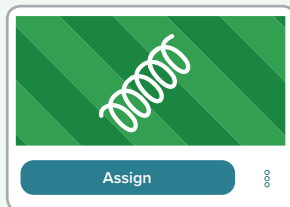
Assign

## Websketch Exploration

Assign a websketch exploration to apply skills and extend thinking.

Assign

## Student Practice Book, pp. 11–12

**2.** Compare the value of the digit 7 in each number.

| Thousands Period | | | Ones Period | | |
|---|---|---|---|---|---|
| hundreds | tens | ones | hundreds | tens | ones |
| 9 | 1 | 4 | 5 | 7 | 2 |
| | | 9 | 3 | 6 | 7 |

The value of the digit 7 in the tens place is ___**10**___ times as much as the value of the digit 7 in the ___**ones**___ place.

**3.** A teacher has 600 stickers. 60 of the stickers are small. How much of the original 600 stickers do the 60 small stickers represent?

The 60 small stickers represent ___$\frac{1}{10}$___ the value of all the stickers.

**4.** Which of the following are correct? Choose all that apply.
  - **(A.)** The digit 3 in 9,328 is 10 times as much as the digit 3 in 7,031.
  - **(B.)** The digit 3 in 9,328 is $\frac{1}{10}$ the value as the digit 3 in 3,064.
  - **(C.)** The digit 3 in 9,328 is 10 times as much as the digit 3 in 1,039.
  - **D.** The digit 3 in 9,328 is $\frac{1}{10}$ the value as the digit 3 in 4,930.
  - **E.** The digit 3 in 9,328 is 10 times as much as the digit 3 in 4,253.

**Math @ Home Activity**

Create a place-value chart with your child. Using sticky notes for each digit, add numbers to the chart. Make sure that only two digits repeat within the number. Have your child compare the values of the two repeated digits. Repeat with a different number.

Student Practice Book

## Differentiation Resource Book, p. 12

Lesson **3-1** • Extend Thinking
### Generalize Place Value

Name _____

Carter, Linda, Jovan, and Gloria all collect marbles. The number of marbles that each has is shown in the table.

| Name | Number of Marbles |
|---|---|
| Carter | 3,000 |
| Linda | 300,000 |
| Jovan | 30 |
| Gloria | 300 |

**1.** Compare the number of marbles that Linda has to the number of marbles that Carter has.

**Linda has 100 times the number of marbles that Carter has.**

**2.** Who has $\frac{1}{100}$ the number of marbles that Carter has?

**Jovan**

**3.** Who has 1,000 times the number of marbles that Gloria has?

**Linda**

**4.** Dino has 30,000 marbles. How does the number of marbles Dino has compare with the number of marbles that:

  **a.** Carter has?

  **Dino has 10 times the number of marbles that Carter has.**

  **b.** Jovan has?

  **Dino has 1,000 times the number of marbles that Jovan has.**

Differentiation Resource Book

# Extend Place Value to Decimals

## Learning Targets

- I can extend the place value relationship to decimal numbers.
- I can explain the relationship of place values in decimal numbers.

## Standards ◇ Major △ Supporting ◯ Additional

### Content

◇ **5.NBT.A** Understand the place value system.

◇ **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 $\frac{1}{10}$ of what it represents in the place to its left.

### Math Practices and Processes

**MPP** Model with mathematics.

**MPP** Look for and make use of structure.

## Vocabulary

| Math Terms | Academic Terms |
|---|---|
| decimal | contradiction |
| decimal point | infer |
| tenth | |
| hundredth | |
| <mark>thousandth</mark> | |

## Materials

The materials may be for any part of the lesson.

- blank number cubes
- number cubes

## Focus

| Content Objective | Language Objectives | SEL Objective |
|---|---|---|
| • Students relate the value of a digit in a decimal in one place value position to that of the same digit in the place to its right or left. | • Students discuss how the value of a digit in a decimal compares to that of the same digit in a different decimal place-value position, using the terms *hundredths* and *tenths*.<br><br>• In order to support sense-making, ELs will participate in MLR2: Collect and Display. | • Students discuss and practice positive strategies for managing emotional reactions to stressful situations. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students recognized that in a multi-digit whole number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left. (Unit 3) | • Students recognize that in a multi-digit decimal number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left. | • Students read and write decimals to thousandths using standard form, word form, and expanded form. (Unit 3) |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students deepen and extend their understanding of place-value patterns by reading and writing decimals, and by making multiplicative comparisons by 10 of decimals. | • Students have some early experiences developing proficiency.<br><br>*Procedural skill and fluency is not a targeted element of rigor for this standard.* | • Students apply their understanding of place value to solve contextual problems.<br><br>*Application is not a targeted element of rigor for this standard.* |

## Number Routine
## Decompose It! ⏱ 5–7 min

**Build Fluency** Students strengthen place-value understanding by decomposing decimal numbers. Students are given a decimal and break it apart in three different ways such that the sum of the parts is equal to the original decimal.

Remind students that there is more than one solution to the problem. As solutions are given, record them for students to evaluate and compare.

These prompts encourage students to talk about their reasoning:

- *What strategy to break apart a decimal do you typically think about first?*

- *How could you break apart this number to show the sum of the values of the digits? What do you call that decomposition of the number?*

- *How can a pattern help you find new "break aparts?"*

**Purpose** Students share thinking about patterns among $1$, $\frac{1}{10}$ and $\frac{1}{100}$.

## Notice & Wonder™

- What do you notice?
- What do you wonder?

**Teaching Tip** You may want to have students record things they notice and wonder before sharing their ideas with the class.

**ETP** **Pose Purposeful Questions**

The questions that follow are not intended to be asked in the sequence presented. They are meant to help advance students' noticing of the representations presented and are based on possible comments and questions students may make during the share out.

- How does the amount shaded change from square to square?
- Have you seen this type of representation before? If so, when did you use it?

**Math is...** **Mindset**

- What are some ways you can avoid or manage stress?

**SEL** **Self-Regulation: Manage Stress**

After students have completed the Notice & Wonder routine, invite them to share what may have caused them stress. For example, students may have experienced stress if they did not understand a peer's reasoning for the patterns they notice or struggled with describing the patterns they noticed. Discuss ways students can avoid that stress in the future as well as how they can manage or relieve it now. Strategies such as developing a manageable plan, getting organized, taking breaks, and asking for help can help students manage emotional reactions to stress.

**Transition to Explore & Develop**

Ask questions that focus students' attention on the part of the whole square that is shaded.

**ETP** **Establish Goals to Focus Learning**

- Let's think about what part of the squares are shaded and ways we can represent place value in decimal numbers.



Lesson **3-2**
**Extend Place Value to Decimals**

[?] **Be Curious**

**What do you notice? What do you wonder?**

**Math is...** **Mindset**
What are some ways you can avoid or manage stress?

Unit 3 • Place Value and Number Relationships **67**



[?] **Be Curious**

**What do you notice? What do you wonder?**

## Learn

Keagan thinks that the value of each digit 1 is the same.

| ones | tenths | hundredths | thousandths |
|------|--------|------------|-------------|
| 1 | 1 | 1 | 1 |

**How can you help Keagan make sense of this number?**

Use a representation to show the value of each digit 1.

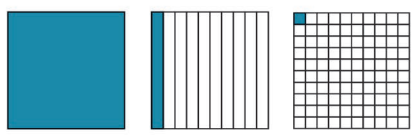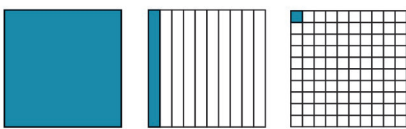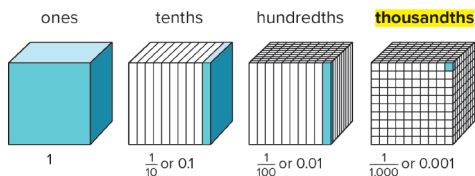| ones | tenths | hundredths | **thousandths** |
|------|--------|------------|-------------|

1     $\frac{1}{10}$ or 0.1     $\frac{1}{100}$ or 0.01     $\frac{1}{1,000}$ or 0.001

The value of the digit 1 depends on its position in the number.

**Math is... Patterns**
How is the name of the position related to the fractional part of the whole?

A digit in one place in a decimal number represents 10 times as much as it represents in the place to its right. It also represents $\frac{1}{10}$ the value of what it represents in the place to its left.

### Work Together

What are two different ways to describe the relationship between the 0.8 and 0.08?

**Sample answer: 0.8 is ten times 0.08; 0.08 is $\frac{1}{10}$ of 0.8**

---

## ❶ Pose the Problem

### MLR Collect and Display

As students discuss the questions, write key words and phrases you hear, such as decimal point, fraction, tenth, hundredth, thousandth, and patterns. Display the words and phrases for student reference and use the student-generated expressions to help make connections between student language and math vocabulary. Update the collection with new understandings as the lesson progresses.

### ETP Pose Purposeful Questions

- What does the place-value chart tell you?
- What mathematical patterns about whole number place value do you know? Explain how you could use them to improve Keagan's thinking.
- Could other models or tools help improve Keagan's thinking? Explain how.

## ❷ Develop the Math

**Choose the option that best meets your instructional goals.**

## ❸ Bring It Together

### ETP Elicit Evidence of Student Thinking

- Explain the pattern you see in place values as you move to the right in a decimal number. Explain the pattern you see in place values as you move to the left.
- How could you describe the relationship between hundredths and thousandths? Tenths and thousandths? Ones and thousandths?

**Key Takeaways**
- The relationship between adjacent place value positions in decimal numbers is the same as in whole numbers. A digit in one place in a decimal number represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.
- Thousandths are $\frac{1}{1,000}$ of one whole.

### Work Together

Students describe the relationships among the tenths and hundredths places in a decimal number in both directions. Students can work on the problem in pairs before sharing their work.

⚠️ **Common Misconception** Students may think that tenths, hundredths, thousandths go from right to left as tens, hundreds, thousands do for the whole number part of a decimal. Point out that to the right of the decimal point, they go the opposite way.

### LOM Language of Math

Decimal is from the Latin word *decem* meaning *ten*. Students should see *ten*'s role in place value. Other words from the same root are *December* (which was the tenth month) and *decagon* (a 10-sided polygon).

## Activity-Based Exploration

Students construct arguments to support their thinking about the values of the digits in decimal numbers.

**Directions:** Have students work in pairs or small groups to construct arguments to support their responses to Pose the Problem. Explain to students that they need to have at least two examples to support their arguments. Suggest that they may want to make use of base-ten blocks, drawings, or a place-value chart in their arguments.

**ETP** **Implement Tasks that Support Reasoning and Problem Solving**
- What do you notice about the value of a digit when it is in different place-value positions in a number?
- How does the place-value chart help explain the relationship of the values of a digit in different positions in a number?
- What relationship did you notice between the values of the digits in your examples?

**Math is...** **Patterns**
- How is the name of the position related to the fractional part of the whole?

Students are seeing the connections between the name of the place and the fraction that represents it.

**Activity Debrief:** Have students share their arguments. Look for examples such as the digit 1 in the tenths place has a value of 0.1, which is $\frac{1}{10}$ the value of the digit 1 in the ones place. Encourage students to use precise language, such as *decimal*, *decimal point*, *tenths*, *hundredths*, and *thousandths*.

Have students revisit the Pose the Problem question and discuss answers.
- How can you help Keagan make sense of this number?

## Guided Exploration

Students extend their understanding of whole-number place value to decimal numbers.

**ETP** **Facilitate Meaningful Discourse**
- Why do 0.1 and $\frac{1}{10}$ represent the same quantity?
- **Think About It:** How does the representation show that 0.1 is $\frac{1}{10}$ of 1?
- **Think About It:** How does the representation show that 0.01 is $\frac{1}{10}$ of 0.1?

Have students discuss patterns representing the tenths and hundredths, such as partitioning into 10 equal parts and shading 1 of those parts.

**Math is...** **Patterns**
- How is the name of the position related to the fractional part of the whole?

Students are seeing the connections between the name of the place and the fraction that represents it.

- How could you explain to Keagan the difference between the digit 1 and the values of each digit 1 in 1.111?

Explore & Develop

**EL** **English Learner Scaffolds**

**Entering/Emerging** Support students in understanding the meaning of the word *related*. Using manipulatives, show two objects that are related in some way. Say *I'm going to show you how these items are related to each other.* Then explain to students how the items are related. Show another pair of objects that are related somehow. Give one statement that correctly explains how the objects are related to each other, and one statement that does not. Ask students after each sentence, *Did I explain how they are related to each other?*

**Developing/Expanding** Support students in understanding the meaning of the word *related*. Using manipulatives, show two objects that are related in some way. Say *I'm going to show you how these items are related to each other.* Then explain to students how the items are related. Show another pair of objects that are related somehow. Give one statement that correctly explains how the objects are related to each other, and one statement that does not. Ask students after each sentence, *Did I explain how they are related to each other?* Ask them to explain how they know and provide a sentence frame for students who may need more help or prompting.

**Bridging/Reaching** To support students in answering the questions, ask them to explain how two objects of their choice can be related to each other. Allow students to interject, pointing out any mistakes that they may catch in meaning or understanding. For example, *No, that doesn't show how they relate to each other...* or *No, that's not correct because...*

## On My Own

**MATH REPLAY | GO ONLINE**

Name _____

1. Which of the following statements is *true*?
   A. 0.009 is ten times 0.09
   **B.** 0.09 is ten times 0.009
   C. 0.09 is $\frac{1}{10}$ of 0.009
   D. 9 is $\frac{1}{10}$ of 0.9

2. Which of the following statements is *true*?
   **A.** 0.003 is $\frac{1}{10}$ of 0.03
   B. 0.03 is $\frac{1}{10}$ of 0.003
   C. 0.3 is ten times 0.003
   D. 3 is ten times 0.03

Marcella has $5.00, Niko has $0.50, and Benjamin has $0.05. Use this information to complete each sentence.

3. Benjamin has **$\frac{1}{10}$ of** the money Niko has.

4. Marcella has **10 times** the money Niko has.

Complete each sentence.

5. $9.00 is **10 times** $0.90.

6. $0.90 is **$\frac{1}{10}$ of** $9.00.

7. What are two different ways to describe the relationship between the values of each digit 4 in 3.244?
   **Sample answer: 0.04 is ten times 0.004; 0.004 is $\frac{1}{10}$ of 0.04**

8. What are two different ways to describe the relationship between the values of each digit 2 in 2.257?
   **Sample answer: 2 is ten times 0.2; 0.2 is $\frac{1}{10}$ of 2**

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9. **Error Analysis** Toby writes the number 23.2 and says that the value of the digit 2 in the tens place is 10 times the value of the digit 2 in the tenths place. How do you respond to him?
   **Sample answer: I do not agree. 20 is not 10 times 0.2; 20 is 10 times 2; the value of the tens place is 10 times the value of the ones place.**

10. For which numbers is the value of the digit 8 ten times the value of the digit 8 in the number 4.984?
    **A.** 3.814          B. 5.820
    C. 6.982          D. 8.492

11. **STEM Connection** The world's biggest submarine can sail at a speed of about 25.5 miles per hour on the surface. How can you describe the relationship between 5 and 0.5?
    **Sample answer: 5 is ten times 0.5; 0.5 is $\frac{1}{10}$ of 5**

12. **Extend Your Thinking** Using only the digits 1, 4, and 5, write a number so that the value of the digit 5 is ten times the value of the digit 5 in the number 1.45. Write another number so that the value of the digit 4 is $\frac{1}{10}$ the value of the digit 4 in 1.45.
    **Sample answer: 1.54**

### 🔄 Reflect

How is the relationship between the values of digits in a decimal the same as the relationship between the values of digits in a whole number?
**Answers may vary.**

**Math is... Mindset**
What did you do to avoid or manage stress today?

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# Practice

**ETP** Build Fluency from Understanding

❗ **Common Error: Exercises 3–6** Students may extend *10 times* to $\frac{1}{10}$ *times*. While correct ($\frac{1}{10}$ of a number is $\frac{1}{10}$ times that number), students are not aware of why yet. Encourage the use of $\frac{1}{10}$ *of*.

## Practice Item Analysis

| Item | DOK | Rigor |
|------|-----|-------|
| 1–6 | 2 | Procedural Skill & Fluency |
| 7–8 | 3 | Conceptual Understanding |
| 9 | 4 | Conceptual Understanding |
| 10 | 3 | Conceptual Understanding |
| 11 | 3 | Application |
| 12 | 4 | Conceptual Understanding |

# 🔄 Reflect

Students complete the Reflect question.
- How is the relationship between the values of digits in a decimal the relationship between the values of digits in a whole number?

Ask students to share their reflections with their classmates.

**Math is... Mindset**
- What did you do to avoid or manage stress today?

## Learning Targets

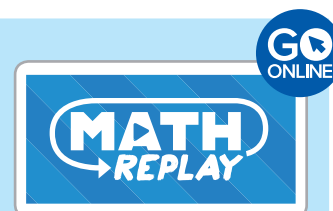Ask students to reflect on the Learning Targets of the lesson.
- I can extend the place value relationship to decimal numbers.
- I can explain the relationship of place values in decimal numbers.

To review today's lesson, have students watch the Math Replay video in their Digital Student Center.

Assign the On My Own practice to students from the Digital Teacher Center.

**GO ONLINE**
**MATH REPLAY**

## Exit Ticket ✓ Formative Assessment

The *Exit Ticket* assesses students' understanding of lesson concepts.

**Metacognitive Check** *Reflect on Your Learning* allows students to think about their level of understanding of the lesson content on a scale of 1 to 4 with 4 being the highest confidence.

### Exit Ticket Skill Tracker

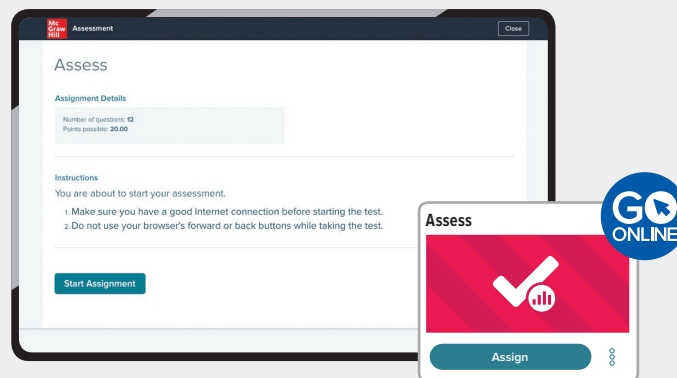| Item | DOK | Skill | Standard |
|------|-----|-------|----------|
| 1 | 2 | Compare the value of digits of decimals | 5.NBT.A.1 |
| 2 | 2 | Compare the value of digits of decimals | 5.NBT.A.1 |
| 3 | 2 | Compare the value of digits of decimals | 5.NBT.A.1 |

📊 **Data** Use students' scores on the *Exit Ticket* to assign the differentiated resources available. When students complete the *Exit Ticket* in the digital workspace, their responses are auto-scored.

### Exit Ticket Recommendations

| If students score | Then have students do |
|-------------------|------------------------|
| 3 of 3 | Additional Practice or any of the 🅑 or 🅔 activities |
| 2 of 3 | *Take Another Look* or any of the 🅑 activities |
| 1 or fewer of 3 | Small Group Intervention or any of the 🅡 activities |

### Key for Differentiation

🅡 Reinforce Understanding
🅑 Build Proficiency
🅔 Extend Thinking

---

Lesson **3-2**

## Exit Ticket

Name _____

**1.**

| hundreds | tens | ones | hundreds | tens | ones |
|----------|------|------|----------|------|------|
| 2 | 0 | 3 | 5 | 3 | 1 |
| 7 | 8 | 6 | 3 | 9 | 8 |

Which of these correctly compares the value of the digits 5 in 95.56? Choose all that apply.

Ⓐ The value of the digit 5 in the ones place is 10 times the value of the digit 5 in the tenths place.

Ⓑ The value of the digit 5 in the tenths place is 10 times the value of the digit 5 in the ones place.

Ⓒ The value of the digit 5 in the tenths place is $\frac{1}{10}$ the value of the digit 5 in the ones place.

Ⓓ The value of the digit 5 in the ones place is $\frac{1}{10}$ the value of the digit 5 in the tenths place.

**2.** Which statements are True? Which statements are False?

| | | |
|---|---|---|
| 0.03 is 10 times 0.3 | True | ⟨False⟩ |
| 0.1 is $\frac{1}{10}$ of 0.01 | True | ⟨False⟩ |
| 0.2 is $\frac{1}{10}$ of 2 | ⟨True⟩ | False |
| 9 is 10 times 0.9 | ⟨True⟩ | False |

**3.** Trinity's ribbon is 0.7 meter long. Hadley's ribbon is $\frac{1}{10}$ as long. How can you complete the statement to make it true?

Hadley's ribbon is **0.07** meter long.

### Reflect On Your Learning

I'm confused.   I'm still learning.   I understand.   I can teach someone else.

○——○——○——○
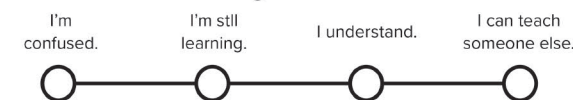
## R Reinforce Understanding

**SMALL GROUP**

### Is It a Challenge or Not?

Work with students in small groups. Each student writes 0.0 on a piece of paper. The first student rolls a number cube and writes the number rolled as a digit to the left or right, then rolls an "operation cube" that has $\times 10$ and $\times \frac{1}{10}$ on its faces. That student rewrites the number, moving the digit to the appropriate place. Help the group discuss how to confirms the answer. The next student repeats this process. If students have difficulty, encourage them to think about whether the product will be greater than or less than the original number.

**GO ONLINE**

### Take Another Look Lesson

Assign the interactive lesson to reinforce targeted skills.

- One-Tenth & 10 Times as Much (Decimals)

**Assign**

**INDEPENDENT WORK**
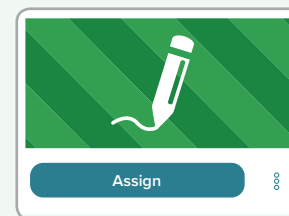
**Differentiation Resource Book, p. 13**

Lesson **3-2** • Reinforce Understanding
#### Extend Place Value to Decimals

Name _____

**Review**

Compare the 9s in 9.987.

**9.987**

The value of the 9 in the ones place is 10 times the value of the 9 in the tenths place.

The value of the 9 in the tenths place is $\frac{1}{10}$ the value of the 9 in the ones place.

1. How do the 7's in the number 5.779 compare to one another?
   **Sample answer: The 7 in the tenths place is 10 times the value of the 7 in the hundredths place; the 7 in the hundredths place is $\frac{1}{10}$ the value of the 7 in the tenths place.**

2. How do the 2's in the number 2.235 compare to one another?
   **Sample answer: The 2 in the ones place is 10 times the value of the 2 in the tenths place; the 2 in the tenths place is $\frac{1}{10}$ the value of the 2 in the ones place.**

3. How does the 3 in 6.983 compare to the 3 in 2.138?
   **Sample answer: The 3 in 6.983 is $\frac{1}{10}$ the value of the 3 in 2.138; the 3 in 2.138 is 10 times the value of the 3 in 6.983.**

Differentiation Resource Book

## B Build Proficiency

**WORKSTATIONS**

### Practice It!  Game Station
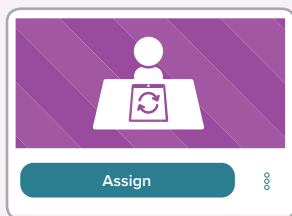
**Place Value with Decimals Sort**
Students practice comparing the values of digits in adjacent places within decimal numbers.

**GO ONLINE**

### Interactive Additional Practice

Assign the digital version of the Student Practice Book.

**Assign**

**INDEPENDENT WORK**

**Student Practice Book, pp. 13–14**

Lesson **3-2**
#### Additional Practice

Name _____

**Review**

**You can use place value to find the relationships between decimal values.**

Using the number 1.66, compare the value of the digit 6 in the tenths place to the value of the digit 6 in the hundredths place.

| hundreds | tens | ones | tenths | hundredths | thousandths |
|---|---|---|---|---|---|
| | | 1 | ⑥ | ⑥ | |

The value of the digit 6 in the tenths place is 10 times the value of the digit 6 in the hundredths place.

The value of the digit 6 in the hundredths place is $\frac{1}{10}$ the value of the digit 6 in the tenths place.

1. Leandra records the weights 7.00 pounds, 0.70 pound, and 0.07 pound. Use this information to complete each sentence.

   The weight 0.70 pound is ___$\frac{1}{10}$___ times as much as 7.00 pounds.

   The weight 0.70 pound is ___10___ times as much as 0.07 pound.

2. Marva swims eight lengths of a pool in 4.68 minutes. Loren swims eight lengths in 5.87 minutes. Compare the value of the digit 8 in each time.

| tens | ones | tenths | hundredths |
|---|---|---|---|
| | 4 | 6 | 8 |

   The digit 8 in 4.68 is ___$\frac{1}{10}$___ the value of the digit 8 in 5.87.

| tens | ones | tenths | hundredths |
|---|---|---|---|
| | 5 | 8 | 7 |

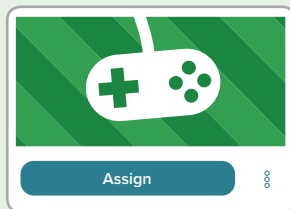Student Practice Book

## Own It! Digital Station

Build Fluency Games

Assign the digital game to develop fluency with adding and subtracting within 1,000,000.

Assign

## E Extend Thinking

## Use It! Application Station

**State Sales Tax** Student investigate and compare state sales tax rates. *The content of this card has concepts covered later in Lesson 3-5. You may want to assign this card to students ready to explore content covered later in this unit.*
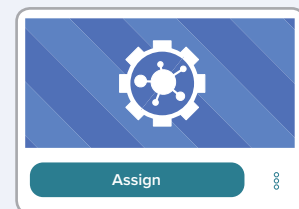
## Spiral Review

Assign the digital Spiral Review to students or download and print PDFs of the Spiral Review from the Digital Teacher Center.
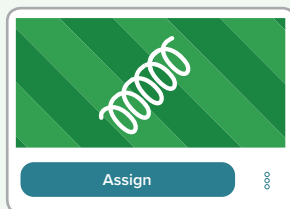
Assign

## Websketch Exploration

Assign a websketch exploration to apply skills and extend thinking.

Assign

## Student Practice Book, pp. 13–14

3. A bracelet is 8.0 inches long. One bead on the bracelet is 0.8 inch long.

   One bead is $\frac{1}{10}$ times the length of the bracelet.

4. Which of the following are correct? Choose all that apply.

   (A) 0.09 is $\frac{1}{10}$ times as much as 0.90.

   B. 9.00 is 10 times as much as 0.09.

   (C) 0.009 is $\frac{1}{10}$ times as much as 0.09

   D. 0.9 is 10 times as much as 9.00.

5. Herma has $0.40 in her change purse. Laquanda has $4.00 in her change purse.

   Compare the value of the digit 4 in each number. Choose all that apply.

   A. Laquanda has $\frac{1}{10}$ times as much money as Herma.

   B. Herma has 10 times as much money as Laquanda.

   (C) Laquanda has 10 times as much money as Herma.

   (D) Herma has $\frac{1}{10}$ times as much money as Laquanda.

6.

| tens | ones | tenths | hundredths | thousandths |
|------|------|--------|------------|-------------|
| 9 | 7 | 3 | 3 | 8 |

   Find the correct value to complete the sentence.

   The value of the digit 3 in the tenths place is **10** times as much as the value of the digit 3 in the hundredths place.

7. What are two different ways to describe the relationship between the values of each digit 8 in 3.884?

   **Sample answer: 0.8 is ten times the 0.08; 0.08 is $\frac{1}{10}$ the value of 0.8**

   **Math @ Home Activity** Use pennies to show different decimal values, such as $0.02 and $0.20. Have your child write both values, one above the other. Then have him or her use words to compare the values, as done in the Review section. Continue the activity with different sets of monetary values.

   Student Practice Book

## Differentiation Resource Book, p. 14

Lesson **3-2** • Extend Thinking

### Extend Place Value to Decimals

Name _____

Melinda, Penelope, Donovan, and Alexander are practicing for a race. The table shows the distance each of them ran this week.

| Name | Distance in Miles |
|------|-------------------|
| Melinda | 6.271 |
| Penelope | 21.867 |
| Donovan | 7.128 |
| Alexander | 18.562 |

1. Whose distance has the number 2 with a value 100 times the value of the number 2 in Alexander's distance? **Melinda**

2. Whose distance has the number 1 with a value $\frac{1}{100}$ the value of the number 1 in Donovan's distance? **Melinda**

3. How does the 2 in the distance Penelope ran compare with the 2 in the distance Donovan ran? **The 2 in the distance Penelope ran is 1,000 times the value of the 2 in the distance Donovan ran.**

4. How does the 6 in the distance Penelope ran compare with the 6 in the distance Melinda ran? **The 6 in the distance Penelope ran is $\frac{1}{100}$ the value of the 6 in the distance Melinda ran.**

5. Diego is also practicing for the race. The number of miles he ran has a 7 with the value 10 times the value of the 7 in the distance Melinda ran, a 2 with the value $\frac{1}{1000}$ the value of the 2 in the distance Penelope ran, an 8 with the value 1,000 times the value of the 8 in the distance Donovan ran, and a 5 with the value $\frac{1}{100}$ the value of the 5 in the distance Alexander ran. What is a possible distance Diego ran? **Sample answer: 8.725 miles**

Differentiation Resource Book

# Read and Write Decimals

## Learning Targets
- I can read and write decimals to thousandths using standard form, expanded form, and word form.
- I can make sense of decimals to the thousandths place.

## Standards ◇ Major △ Supporting ○ Additional

**Content**

◇ **5.NBT.A** Understand the place value system.

◇ **5.NBT.A.3.a** Read and write decimals to thousandths using base-ten numerals, number names, and expanded **form.**

**Math Practices and Processes**

**MPP** Construct viable arguments and critique the reasoning of others.

**MPP** Attend to precision.

## Vocabulary

| Math Terms | Academic Terms |
|---|---|
| expanded form | expand |
| standard form | quality |
| word form | |

## Materials

The materials may be for any part of the lesson.
- *Decimal Forms* Teaching Resource
- number cubes

## Focus

| Content Objective | Language Objectives | SEL Objective |
|---|---|---|
| • Students read and write decimals to the thousandths place in standard form, expanded form, and word form. | • Students explain how to read and write decimals to the thousandths place while make sure to include *and*. <br><br> • In order to support maximizing meta-awareness, ELs will participate in MLR1: Stronger and Clearer Each Time. | • Students actively listen without interruption as peers describe how they approached a complex mathematical task. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students wrote multi-digit whole numbers using standard form, word form, and expanded form. (Grade 4) <br><br> • Students explain the relationship of the value of digits in different place value positions. (Unit 3) | • Students read and write decimals to thousandths using standard form, word form, and expanded form. | • Students apply their understanding of decimals to compare decimals. (Unit 3) |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students build on their understanding of place-value patterns to read and write decimals to the thousandths place. | • Students build proficiency with decimals to the thousandths. | • Students apply understanding of decimals to solve real-world problems. <br><br> *Application is not a targeted element of rigor for this standard.* |

## Number Routine
### Decompose It! 🕐 5–7 min

**Build Fluency** Students build place-value understanding as they decompose decimal numbers. Students decompose the given decimal in at least three different ways.

As students offer solutions, record them for students to evaluate and compare.

These prompts encourage students to talk about their reasoning:

- What strategy to break apart a decimal do you typically think about first?

- How could you decompose this number to show the sum of the values of the digits? What do you call that decomposition of the number?

- What pattern do you see as you compare the value relationship between two adjacent places?

- How can a pattern help you find new "break aparts?"

**Purpose** Students discuss decimal numbers, thinking about ways to read and write decimal numbers.

## Notice & Wonder™

- What do you notice?
- What do you wonder?

**Teaching Tip** Encourage students to add onto another student's idea. This promotes opportunities for participation from a variety of students. You can ask questions, such as *Would someone like to add on?* to help elicit more discussion when few students are talking.

**ETP Pose Purposeful Questions**

The questions that follow are not intended to be asked in the sequence presented. They are meant to help advance students' thinking about ways to read and write decimal numbers and are based on possible comments and questions students may make during the share out.

- How can you read the weight of the strawberries?
- If the decimal point were changed to a comma, do you think the number is a reasonable weight for the strawberries?

**Math is... Mindset**

- Why is active listening important?

**SEL Relationship Skills: Effective Communication**

As students engage in collaborative discourse around the Notice & Wonder routine, encourage them to actively and respectfully listen to one another. Invite students to think about and share what active listening looks and sounds like. As students discuss reading and writing decimals, encourage classmates to listen as well as provide thoughtful feedback. Capitalize on opportunities to also model these behaviors when students are speaking.

**Transition to Explore & Develop**

Ask questions that focus students' attention on ways to read and write decimal numbers.

**ETP Establish Goals to Focus Learning**

- Let's think about ways to read and write decimal numbers.



Lesson 3-3
**Read and Write Decimals**

❓ **Be Curious**

**What do you notice? What do you wonder?**

34.618

**Math is... Mindset**
Why is active listening important?

Unit 3 • Place Value and Number Relationships    71



❓ Be Curious

**What do you notice? What do you wonder?**

34.618

### Learn

**How can you read the mass of the strawberries?**

`34.618`

You can use a place-value chart to help you identify the value of each digit.

Decimal numbers can be written in expanded form.

| tens | ones | tenths | hundredths | thousandths |
|------|------|--------|------------|-------------|
| 3 | 4 | 6 | 1 | 8 |

$$30 + 4 + 0.6 + 0.01 + 0.008$$
$$30 + 4 + \frac{6}{10} + \frac{1}{100} + \frac{8}{1,000}$$

Standard form uses digits and a decimal point.

34.618

The word form helps you read decimal numbers.

**Math is... Precision**

Why is it important to include *and* when reading a decimal number?

| tens | ones | tenths | hundredths | thousandths |
|------|------|--------|------------|-------------|
| 3 | 4 | 6 | 1 | 8 |

thirty-four and six hundred eighteen thousandths

Reading and writing decimal numbers follows the same patterns as reading and writing whole numbers.

#### Work Together

Carly wrote 0.83 in expanded form using multiplication. Is her work correct? Explain your reasoning.

$$8 \times \frac{1}{10} + 3 \times \frac{1}{100}$$

**Yes; Check students' explanations.**

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## ❶ Pose the Problem

### ETP Pose Purposeful Questions

- Based on what you already know, can you make a conjecture about how to read the decimal? Explain what you base your conjecture on.
- What tool might you use to help you read the decimal? Why do you think it would help you?
- Explain how you could use patterns about place value to help you read the decimal.

## ❷ Develop the Math

**Choose the option that best meets your instructional goals.**

### MLR Stronger and Clearer Each Time

Ask students to write about how a place-value chart can help them identify the value of digits in decimals. Then have students share their writing with a partner, comparing their sentences, and if needed, make corrections.

## ❸ Bring It Together

### ETP Elicit and Use Evidence of Student Thinking

- What is the last word in the word form for 34.27? Explain why.
- In word form, how are place values the same before and after the *and*? How are they different?
- Billy said expanded form can be written using just multiplication. Is he correct? Explain why or why not.

#### Key Takeaways

- Reading and writing decimals to thousandths in word form follows the same pattern as reading and writing numbers to 999, but are always followed by the least place value position.
- The word *and* indicates the location of the decimal point when reading and writing decimals in word form.
- Expanded form can be written using multiplication to show the value of each digit.

### Work Together

Students explore writing a decimal in expanded form using multiplication. Students can work on the problem in pairs before sharing their work.

⚠ **Common Misconception** Students may be confused by the use of multiplication in this expanded form, and may need a quick refresh on multiplying a fraction by a whole number. Remind them that $\frac{6}{10}$ is the same as $6 \times \frac{1}{10}$.

### LOM Language of Math

Any zero digits that occur to the right of the last non-zero digit in a decimal number are called *trailing zeros*. Five and four-hundred fifty thousandths, 5.450, has a trailing zero. 007 has two *leading zeros*.

## Activity-Based Exploration

Students use their understanding of different forms of whole numbers to identify different forms of decimals.

**Materials:** *Decimal Forms* Teaching Resource

**Directions:** Cut and distribute each pair or small group a set of *Decimal Forms* Teaching Resource. Students should match the standard form, word form, and expanded form for each decimal.

**ETP** **Support Productive Struggle**

- What knowledge can you use to help you get started?
- When have you used word form or expanded form before?
- What if you started with a different number?
- What patterns do you see in the word form of each decimal number?
- What is the same about the expanded form of a decimal number and the expanded form of a whole number? What is different?

**Math is...** ◄ **Precision**

- Why is it important to include *and* when reading a decimal number?

Students practice communicating precisely to others.

**Activity Debrief:** After students have completed the activity, display their work for a gallery walk. Have students compare solutions. Facilitate a discussion to identify patterns to develop an understanding of writing decimals in different forms.

Have students revisit the Pose the Problem question and discuss answers.

- How can we read the mass of the strawberries?

The PDF of the Teaching Resource is available in the Digital Teacher Center.

## Guided Exploration

Students extend their understanding of word form, standard form, and expanded form to decimal numbers.

**ETP** **Use and Connect Mathematical Representations**

- Why is thirty-four and six hundred eighteen *tenths* incorrect?
- How are word form, standard form, and expanded form for decimal numbers the same as they are for whole numbers? How are they different?
- Describe the patterns you see in the denominators of the fractions in the expanded form of a decimal number using fractions.

🗨 Have students share strategies for writing a number given in expanded form in standard form. Make sure they can explain their strategies clearly and that they can understand other students' strategies.

**Math is...** ◄ **Precision**

- Why is it important to include *and* when reading a decimal number?

Students practice communicating precisely to others.

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**EL** **English Learner Scaffolds**

**Entering/Emerging** Support students' understanding of the phrase *the same as* using manipulatives. Show students two objects that are exactly the same. Say *This one is the same as that one.* Show two objects that are related but different from each other. Point to one of the objects and say *This one is not the same as that one. They have differences.*

**Developing/Expanding** Support students' understanding of the phrase *the same as* using manipulatives.

Choose two pairs of objects, one pair being exactly the same, and one pair being different. Ask students to choose the pair of objects that are the same and explain how they know. Provide a sentence frame as needed.

**Bridging/Reaching** Ask students to explain how different forms for decimals are the same for whole numbers. Allow students to interject, pointing out any mistakes that they may catch in meaning or understanding.

For example, *I disagree because...* or *No, that's not correct because...*

## On My Own

**MATH REPLAY** | **GO ONLINE**

Name _____

**What is the word form of the decimal?**

1. 8.2 **eight and two tenths**

2. 8.02 **eight and two hundredths**

3. 0.82 **eighty-two hundredths**

4. 0.082 **eighty-two thousandths**

**What is the standard form of the decimal?**

5. $0.9 + 0.03 + 0.007$ **0.937**

6. $20 + 0.7 + 0.08 + 0.006$ **20.786**

7. $5 + 0.01 + 0.009$ **5.019**

8. $7 + \frac{4}{10} + \frac{5}{1,000}$ **7.405**

**What is each decimal in standard form?**
**What is each decimal in expanded form?**

9. ninety-three and six thousandths

**93.006; 90 + 3 + 0.006**

10. three and eight hundred forty-six thousandths

**3.846; 3 + 0.8 + 0.04 + 0.006**

11. two hundred twelve and fifteen thousandths

**212.015; 200 + 10 + 2 + 0.01 + 0.005**

12. seven hundred fifty-one thousandths

**0.751; 0.7 + 0.05 + 0.001**

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Unit 3 • Place Value and Number Relationships **73**

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13. **STEM Connection** The Andromeda galaxy is 2.537 million light years from Earth. How can you write this decimal number in expanded form and in word form?

**2 + 0.5 + 0.03 + 0.007; two and five hundred thirty-seven thousandths**

14. Kole wrote the decimal 34.821 in word form as *thirty-four eight hundred twenty-one thousandths*. Is he correct? Explain why or why not.

**No; Sample answer: Kole forgot to add "and" after thirty-four.**

15. **Extend Your Thinking** Write the word forms of 321,578 and 321.578. What is the same? Explain why those similarities exist.

**Sample answer: Both have three hundred twenty-one because both have the digits 321 in either the thousands period or ones period; both have five hundred seventy-eight because both have the digits 578 in either the ones period or in the decimal positions.**

🔄 **Reflect**

How is place value used when writing decimal numbers in expanded form?

**Answers may vary.**

**Math is... Mindset**
What have you done to be an active listener today?

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## Practice

**ETP** **Build Fluency from Understanding**

⚠ **Common Error: Exercise 7** Students may think that there is only a 1 and 9 in the decimal part of the number and write 5.19. Make sure they remember that thousandths have 3 decimal places and that they need to include a zero.

### Practice Item Analysis

| Item | DOK | Rigor |
|------|-----|-------|
| 1–12 | 2 | Procedural Skill & Fluency |
| 13 | 3 | Application |
| 14–15 | 4 | Conceptual Understanding |

## 🔄 Reflect

Students complete the Reflect question.
- How is place value used when writing decimal numbers in expanded form?

Ask students to share their reflections with their classmates.

**Math is... Mindset**
- What have you done to be an active listener today?

### Learning Targets

Ask students to reflect on the Learning Targets of the lesson.
- I can read and write decimals to thousandths using standard form, expanded form, and word form.
- I can make sense of decimals to the thousandths place.

To review today's lesson, have students watch the Math Replay video in their Digital Student Center.

Assign the On My Own practice to students from the Digital Teacher Center.

**GO ONLINE**
**MATH REPLAY**

## Exit Ticket ✓ Formative Assessment

The *Exit Ticket* assesses students' understanding of lesson concepts.

**Metacognitive Check** *Reflect on Your Learning* allows students to think about their level of understanding of the lesson content on a scale of 1 to 4 with 4 being the highest confidence.

### Exit Ticket Skill Tracker
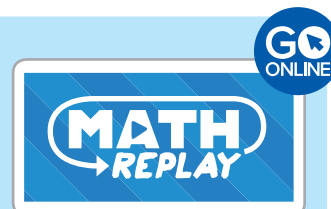
| Item | DOK | Skill | Standard |
|------|-----|-------|----------|
| 1 | 1 | Write decimals in word form | 5.NBT.A.3.a |
| 2 | 2 | Write decimals in standard form | 5.NBT.A.3.a |
| 3 | 2 | Write decimals in expanded form | 5.NBT.A.3.a |
| 4 | 2 | Write decimals in standard form | 5.NBT.A.3.a |
| 5 | 2 | Match fractions and decimal fractions | 5.NBT.A.3.a |

📊 **Data** Use students' scores on the *Exit Ticket* to assign the differentiated resources available. When students complete the *Exit Ticket* in the digital workspace, their responses are auto-scored.

### Exit Ticket Recommendations

| If students score | Then have students do |
|-------------------|----------------------|
| 5 of 5 | Additional Practice or any of the 🅱 or 🅴 activities |
| 3 or 4 of 5 | *Take Another Look* or any of the 🅱 activities |
| 2 or fewer of 5 | Small Group Intervention or any of the 🆁 activities |

### Key for Differentiation

🆁 Reinforce Understanding
🅱 Build Proficiency
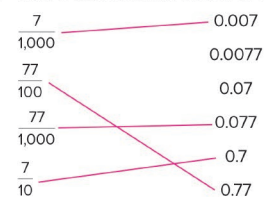🅴 Extend Thinking

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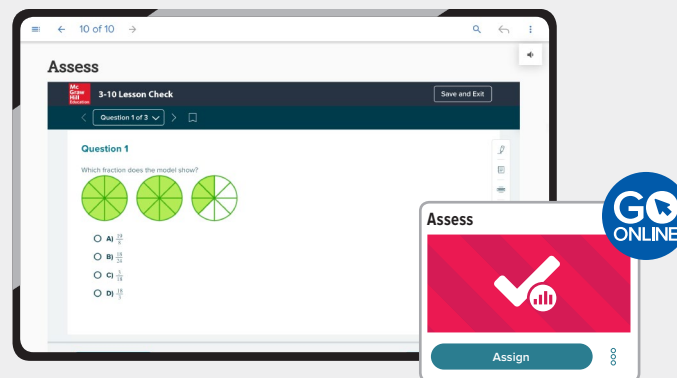
Lesson **3-3**
## Exit Ticket

Name _____

1. What is the correct word form of 0.287?
   A. twenty-eight and seven hundredths
   B. two hundred eight-seven hundredths
   C. twenty-eight and seven thousandths
   (D.) two hundred eighty-seven thousandths

2. Complete the sentence.
   In standard form, the number *seventy-two and two hundred thirty-one thousandths* is written as ____**72.231**____.

   **What is each decimal number in standard form?**

3. $4 + 0.3 + 0.003 =$ ____**4.303**____

4. $30 + 0.1 + 0.02 + 0.009 =$ ____**30.129**____

5. How is each decimal written as a fraction? Draw a line to match.

   $\frac{7}{1,000}$          0.007

   $\frac{77}{100}$          0.0077

   $\frac{77}{1,000}$          0.07

   $\frac{7}{10}$          0.077

                   0.7

                   0.77

### Reflect On Your Learning

| I'm confused. | I'm still learning. | I understand. | I can teach someone else. |
|---|---|---|---|
| ○ | ○ | ○ | ○ |

# Differentiate

🕐 **10 min** Select resources based on your classroom set up, or your students' needs.
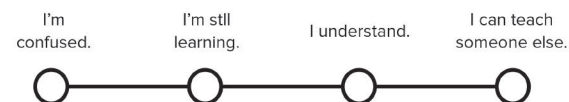
## R Reinforce Understanding

**SMALL GROUP**

### Roll and Expand

Provide pairs of students with a number cube. Have the students roll three numbers. They record each roll, placing the decimal point so the decimal is to the hundredths. Students then work together to write the decimal in expanded form. Make sure students understand the meaning of the decimal point and the value of each digit. After five successful turns, have students roll four numbers. This time, ask them to place the decimal point so the decimal is to the thousandths. Then have them write each decimal in expanded form.

**GO ONLINE**

### Take Another Look Lessons

Assign the interactive lessons to reinforce targeted skills.

- Standard & Word Form (Large Numbers)
- Expanded Form of Decimal Powers of Ten

**Assign**

**INDEPENDENT WORK**
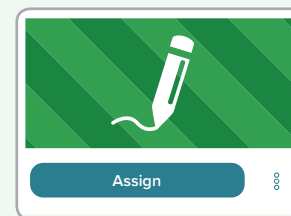
**Differentiation Resource Book, p. 15**

Lesson **3-3** • Reinforce Understanding
**Read and Write Decimals**

Name _____

**Review**

Decimal numbers can be written in standard form, word form, and expanded form.

Standard form: 12.528

Word form: twelve and five hundred twenty-eight thousandths

Expanded form: $10 + 2 + 0.5 + 0.02 + 0.008$

$$10 + 2 + \frac{5}{10} + \frac{2}{100} + \frac{8}{1000}$$

*Notice the word and goes where the decimal point is when reading a decimal number or writing a decimal number in word form.*

Write each of the expressions in standard form.

1. forty-two and seventy-three hundredths **42.73**
2. $58 + 0.1 + 0.03 + 0.009$ **58.139**

Write each of the expressions in word form.

3. 89.058 **eighty-nine and fifty-eight thousandths**

4. $70 + 1 + \frac{4}{10} + \frac{3}{100} + \frac{7}{1000}$

 **seventy-one and four hundred thirty-seven thousandths**

Write each of the expressions in expanded form.

5. ninety-seven and five hundred forty-eight thousandths **$90 + 7 + 0.5 + 0.04 + 0.008$ or $90 + 7 + \frac{5}{10} + \frac{4}{100} + \frac{8}{1000}$**

6. 2.064 **$2 + 0.06 + 0.004$ or $2 + \frac{6}{100} + \frac{4}{1000}$**

Differentiation Resource Book

## B Build Proficiency

**WORKSTATIONS**

### Practice It! Game Station

**Reading and Writing Decimals Concentration**
Students practice matching the word form, standard form, and expanded form of decimal numbers.

**GO ONLINE**

### Interactive Additional Practice

Assign the digital version of the Student Practice Book.

**Assign**

**INDEPENDENT WORK**

**Student Practice Book, pp. 15–16**

Lesson **3-3**
**Additional Practice**

Name _____

**Review**

You can write decimals to the thousandths using standard form, expanded form, and word form.

| tens | ones | tenths | hundredths | thousandths |
|------|------|--------|------------|-------------|
| 2 | 7 | 5 | 4 | 9 |

In the chart, 27.549 is written in standard form. Write the number in expanded form and word form.

Remember to write the decimal point as "and" when writing the number in word form.

twenty-seven and five hundred forty-nine thousandths

When writing the number in expanded form, multiply each digit by its place value in decimal form.

$(2 \times 10) + (7 \times 1) + (5 \times 0.1) + (4 \times 0.01) + (9 \times 0.001)$

1. A piece of ribbon is 3.75 feet long. Write 3.75 in expanded form using fractions. **$3 + \frac{7}{10} + \frac{5}{100}$**

2. Write 59.107 in expanded form. Use the place-value chart to find the value of each digit.

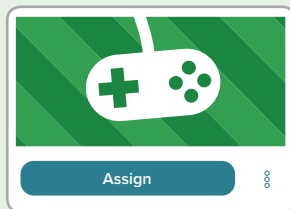| tens | ones | tenths | hundredths | thousandths |
|------|------|--------|------------|-------------|
| 5 | 9 | 1 | 0 | 7 |

**$50 + 9 + 0.1 + 0.007$**

**$50 + 9 + \frac{1}{10} + \frac{7}{1,000}$**

Student Practice Book

## Own It! Digital Station

**Build Fluency** Games

Assign the digital game to develop fluency with adding and subtracting within 1,000,000.
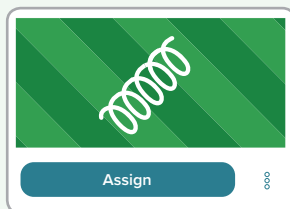
Assign

## Use It! Application Station

**How Far?** Students research stars and create a model or drawing showing the stars and their distances from Earth. *The content of this card has concepts covered later in Lesson 3-5. You may want to assign this card to students ready to explore content covered later in this unit.*
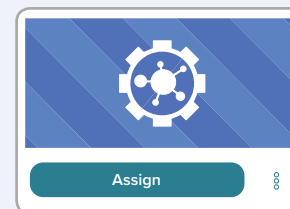
## Spiral Review

Assign the digital Spiral Review to students or download and print PDFs of the Spiral Review from the Digital Teacher Center.

Assign

## Websketch Exploration

Assign a websketch exploration to apply skills and extend thinking.

Assign

## Student Practice Book, pp. 15–16

**3.** Write each decimal in word form.

a. 13.5 = **thirteen and five tenths**

b. 1.35 = **one and thirty-five hundredths**

c. 0.135 = **one hundred thirty-five thousandths**

d. 0.013 = **thirteen thousandths**

**4.** Write each decimal in standard form.

a. two and nine tenths = **2.9**

b. twenty-nine and six hundredths = **29.06**

c. six and twenty-five thousandths = **6.025**

d. eight hundred forty-one thousandths = **0.841**

**5.** Write the standard form of each number written in expanded form.

a. $3 + \frac{8}{10} + \frac{2}{1,000}$ = **3.802**

b. $30 + 8 + \frac{9}{100}$ = **38.09**

c. $70 + 0.08 + 0.002$ = **70.082**

d. $1 + 0.5 + 0.09$ = **1.59**

**6.** Colby says that $\frac{27}{100}$ written in word form is twenty-seven thousandths. Do you agree? Explain.

**No; Sample answer: Since the denominator is 100, the fraction written in word form is twenty-seven hundredths.**

**Math @ Home Activity**

With your child, create a chart with three columns and multiple rows. Label the three columns Standard Form, Expanded Form, and Word Form. Take turns with your child filling in the chart. For example, have him or her start by writing a decimal in the Standard Form column. Then you can write both the expanded form and the word form to finish the row. Next write a decimal in standard form, and have your child fill in the rest of the row.

Student Practice Book

## Differentiation Resource Book, p. 16

Lesson **3-3 • Extend Thinking**

### Read and Write Decimals

Name

The table shows the weight of Martin's textbooks.

| Textbook | Weight (lb) |
|---|---|
| Math | $3 + \frac{2}{10} + \frac{8}{100}$ |
| English | 3.208 |
| History | $3 + 0.02 + 0.008$ |
| Science | three and twenty-eight hundredths |

**1.** Which two books weigh the same amount?

**the math and science books**

**2.** Which book(s) weigh(s) 3.28 pounds?

**the math and science books**

**3.** Which book(s) weigh(s) 3.028 pounds?

**the history book**

**4.** Which book(s) has/have a 2 in the tenths place?

**the math book, English book, and the science book**

**5.** Which book(s) has/have a 2 in the hundredths place?

**the history book**

**6.** Which book(s) has/have an 8 in the hundredths place?

**the math and science books**

Differentiation Resource Book

# Compare Decimals

## Learning Targets

- I can compare two decimals to the thousandths place using place value.

## Standards ◇ Major △ Supporting ◯ Additional

### Content

◇ **5.NBT.A** Understand the place value system.

◇ **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.

### Math Practices and Processes

**MPP** Reason abstractly and quantitatively.

**MPP** Use appropriate tools strategically.

## Vocabulary

| **Math Terms** | **Academic Terms** |
|---|---|
| greater than ($>$) | address |
| less than ($<$) | negate |

## Materials

The materials may be for any part of the lesson.

- number cube

## Focus

| Content Objective | Language Objectives | SEL Objective |
|---|---|---|
| • Students compare two decimals to the thousandths place using place value and record the comparison using appropriate symbols. | • Students explain how to use place value and number lines to compare two decimals, using the terms greater than, less than, and equal to.<br><br>• In order to support cultivating conversation, ELs will participate in MLR8: Discuss Supports. | • Students recognize and respond appropriately to the emotions of others during collaborative math work. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students compared two multi-digit numbers based on meanings of the digits in each place, using $>$, $<$, and $=$ symbols to record the results of comparisons. (Grade 4)<br><br>• Students read and wrote decimals to thousandths using standard form, word form, and expanded form. (Unit 3) | • Students apply their understanding of decimals to compare decimals. | • Students use place value understanding to round decimals to any place. (Unit 3) |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students build on their number sense by examining patterns that extend place-value concepts from previous lessons to decimals in the thousandths. | • Students build proficiency in comparing decimals to the thousandths place using $>$, $<$, and $=$ symbols to record the results of comparisons. | • Students apply their knowledge of using patterns to compare decimals based on real-world contexts.<br><br>*Application is not a targeted element of rigor for this standard.* |

### GO ONLINE

## Number Routine
## Find the Pattern, Make a Pattern ⏱ 5–7 min

**Build Fluency** Students build number sense as they determine a pattern and find missing terms. Students then create a new sequence that follows the pattern but uses different numbers.

Remind students that there is more than one way to create a new sequence based on the pattern.

These prompts encourage students to talk about their reasoning:

- *What did you notice first?*

- *What did you do first? What did you do next? How do you know your pattern works?*

- *How did you choose your numbers for the new pattern?*

**Purpose** Students compare and contrast backpacks, thinking about how to compare decimal numbers.

## Notice & Wonder™

- How are they the same?
- How are they different?

**Teaching Tip** You may want to implement a Turn and Talk routine, which allows students to think about the problem and then turn to a classmate to talk about their thinking. This provides students an opportunity to engage in student-to-student discourse before sharing ideas with the whole group.

**ETP** **Pose Purposeful Questions**

The questions that follow are not intended to be asked in the sequence presented. They are meant to help advance students' thinking about how to compare decimal numbers and are based on possible comments and questions students may make during the share out.

- How are the place values of the numbers similar? How are they different?
- How did you decide that the bags have different weights?

**Math is...** **Mindset**

- How can you recognize and respond to the emotions of others?

**SEL** **Social Awareness: Recognize Emotions of Others**

After the Notice & Wonder routine, invite students to share and discuss the emotions they have experienced as they compared the weights of the bookbags. Collectively discuss how these emotions may make them feel or behave. Engaging in open discourse about their feelings can help students recognize, understand, and respond appropriately to the emotions of others

**Transition to Explore & Develop**

Ask questions that focus students' attention on how to compare decimal numbers.

**ETP** **Establish Goals to Focus Learning**

- Let's think about how to compare decimal numbers.



Lesson **3-4**
**Compare Decimals**

? **Be Curious**

**How are they the same? How are they different?**

3.281 kg    3.095 kg    3.9 kg

**Math is...** **Mindset**
How can you recognize and respond to the emotions of others?

Unit 3 • Place Value and Number Relationships   **75**



? **Be Curious**

**How are they the same? How are they different?**

3.281 kg    3.095 kg

## Learn

**Which bag weighs more?**

3.281 kg     3.095 kg

Compare the digits in each place starting with the greatest place-value position.

| ones | tenths | hundredths | thousandths |
|------|--------|------------|-------------|
| 3 | 2 | 8 | 1 |
| 3 | 0 | 9 | 5 |

Both numbers have 3 ones.          2 tenths > 0 tenths

**Math is... Thinking**

Why was it not necessary to compare the hundredths place?

3.281 > 3.095. So, the purple bag weighs more than the red bag.

You can compare decimals the same way you compare multi-digit numbers.

### 🌐 Work Together

Compare the weights of these bags.

| ones | tenths | hundredths | thousandths |
|------|--------|------------|-------------|
| 3 | 2 | 8 | 1 |
| 3 | 9 | | |

3.281 kg     3.9 kg

3.281 < 3.9

---

## ❶ Pose the Problem

### MLR Discussion Supports

As students engage in discussing the answers to the questions, prompt them to think about how what they learned about comparing whole numbers can help them to compare decimal numbers. Encourage students to challenge each other's ideas when warranted, as well as to elaborate on their ideas and give examples.

### ETP Pose Purposeful Questions

- Based on what you know, can you make a conjecture about how to compare decimal numbers? Explain how you would do it and why you think it would work.
- What tools do you think would help you compare decimal numbers? Explain why you think they would help.
- What symbols do you think are used to compare decimal numbers? Explain why.

## ❷ Develop the Math

**Choose the option that best meets your instructional goals.**

## ❸ Bring It Together

### ETP Elicit Evidence of Student Thinking

- How would you explain to a friend how to use a place-value chart to compare decimal numbers?

**Key Takeaway**

- Comparing decimals follows the same process as comparing multi-digit numbers; one compares digits in the same place value position starting with the greatest place value.

## Work Together

Students use place value to compare decimal numbers. Students can work on the problem in pairs before sharing their work. Ask students to write the comparison statement they have found another way.

**⚠ Common Misconception** Students may be confused by there being no digits in the hundredths or thousandths places in the lower number. It may help them to write 3.9 as 3.900 and compare, 281 thousandths to 900 thousandths.

### LOM Language of Math

Exercise 9 provides an opportunity to discuss metric prefixes and their relationships and how they are similar to place value. A *kilo*meter is 1,000 meters. A *centi*meter is $\frac{1}{100}$ of a meter.

## Activity-Based Exploration

Students extend their understanding of comparing whole numbers using place value to decimal numbers.

**Materials:** number cube

**Directions:** Each student rolls a number cube five times. Students use those five digits to create the greatest possible number that includes a digit in each position from tens to thousandths. If time permits, have students complete the activity to create the least possible number.

**ETP** **Implement Tasks that Support Reasoning and Problem Solving**
- What strategies did you use to determine the best position for each digit? Will your strategy always work?
- How would you change your strategy if you could not use the same digit twice?
- How would you change your strategy if you could not use the same digit as your partner?

**Math is... Thinking**
- How did your understanding of place value relationships help you determine the best position for each digit?

Students are making sense of quantities and their relationships.

**Activity Debrief:** Have students share their strategies for creating the greatest possible decimal. Identify similarities in their strategies, such as placing the greatest digit in the greatest place value position.

Have students revisit the Pose the Problem question and discuss answers.
- Which bag weighs more?

## Guided Exploration

Students extend their understanding of comparing whole numbers using place value to decimal numbers.

**ETP** **Pose Purposeful Questions**
- What different ways can you write the comparison statement? How are they the same? How are they different? Explain your reasoning.
- **Think About It:** Are there other models or tools you could use to compare decimal numbers? How could writing them in expanded form help?

Have students work in pairs or groups to share tips or mnemonic devices to remember whether to use > or < in a comparison statement, e.g., *one side of the sign is bigger... that side goes by the greater number.*

**Math is... Thinking**
- Why was it not necessary to compare to the hundredths place?

Students are making sense of quantities and their relationships.


Explore & Develop

**EL** **English Learner Scaffolds**

**Entering/Emerging** Use manipulatives such as counting chips to support students' understanding of the terms *greater than, less than,* and *compare.* Put two unequal groups of counting chips on the table. Say, *I'm going to compare these two groups.* Count each group and say the numbers aloud. Point to the group with more and say *This group has more chips. [5] is greater than [3].* Point to the group with fewer chips and say *This group has fewer chips. [3] is less than [5].* Repeat the task, and ask *Is [4] greater than or less than [6]?*

**Developing/Expanding** Use manipulatives such as counting chips to support students' understanding of the terms *greater than, less than,* and *compare.* Put two unequal groups of counting chips on the table. Say *I'm going to compare these two groups.* Count each group and say the numbers aloud. Point to the group with more and say *This group has more chips. [5] is greater than [3].* Point to the group with fewer chips and say *This group has fewer chips. [3] is less than [5].* Have students repeat the task, using the counting chips, by having them compare two groups using *greater than* or *less than.*

**Bridging/Reaching** To support students in responding to questions regarding comparing digits, ask students to explain the meaning of the word *compare* and how it relates to decimal numbers. Allow students to interject, pointing out any mistakes that they may catch in meaning or understanding. For example, *No, to compare means to....* and, *No, you compare the numbers by....*

## On My Own

**MATH REPLAY | GO ONLINE**

Name _____

**Write >, <, or = in each ◯ to make a true comparison.
You can use a place-value chart to help.**

1. 7.790 ◯< 8.7
2. 1.021 ◯< 1.095
3. 6.55 ◯> 5.66
4. 9.9 ◯> 0.99
5. 3.41 ◯= 3.41
6. 2.563 ◯< 2.573

**For exercises 7–9, use the cost of each school supply.**

$1.15 Pens   $1.47 Pencils   $1.90 Highlighters

7. Do the pencils or the highlighters cost more?
   **highlighters**

8. Write a comparison statement for the cost of the pens and the pencils.
   **Sample answer: 1.15 < 1.47**

9. Which school supply is the most expensive? Which school supply is the least expensive? Explain how you know.
   **Highlighters are the most expensive; Pens are the least expensive; Sample answer: 9 tenths is greater than 4 tenths and greater than 1 tenth.**

10. **Error Analysis** An astronomer calculated that a comet traveled 192.40 kilometers. The astronomer wrote 192.4 kilometers on a chart. How do you respond to the astronomer?
    **Sample answer: I agree with the astronomer because 192.40 = 192.4.**

11. Write a comparison statement that compares the speed of a quarter horse to the speed of a lion.
    **Sample answer: 88.5 > 80.5**
    88.5 km per hour     80.5 km per hour

12. Which of the following comparisons are *true*?
    A. 0.773 > 1.773
    B. 101.020 = 101.02
    C. 0.04 < 0.4
    D. 0.321 < 0.0123

13. **Extend Your Thinking** Use the digits 5, 7, 8, and 9 to create the greatest possible decimal number.
    **9 . 8 7 5**

### 🔵 Reflect

How is comparing decimals similar to comparing whole numbers?
**Answers may vary.**

**Math is... Mindset**
How did you recognize and respond to the emotions of others?

## Practice

### ETP Build Fluency from Understanding

⚠ **Common Error: Exercises 1–6** Students often neglect the whole number part of decimal numbers and will conclude that 6.55 < 5.66 because the first decimal place in 5.66 is greater. Make sure they compare the whole number part first, and, if they are different, the comparison can be made without looking at the decimal part at all.

### Practice Item Analysis

| Item | DOK | Rigor |
|------|-----|-------|
| 1–6 | 2 | Procedural Skill & Fluency |
| 7–8 | 3 | Application |
| 10 | 4 | Application |
| 11 | 3 | Application |
| 12 | 3 | Conceptual Understanding |
| 13 | 4 | Conceptual Understanding |

## 🔵 Reflect

Students complete the Reflect question.
- How is comparing decimals similar to comparing whole numbers?
Ask students to share their reflections with their classmates.

**Math is... Mindset**
- How did you recognize and respond to the emotions of others?

### Learning Target
Ask students to reflect on the Learning Target of the lesson.
- I can compare two decimals to the thousandths place using place value.

To review today's lesson, have students watch the Math Replay video in their Digital Student Center.

Assign the On My Own practice to students from the Digital Teacher Center.

**GO ONLINE**
**MATH REPLAY**

## Exit Ticket ✓ Formative Assessment

The *Exit Ticket* assesses students' understanding of lesson concepts.

**Metacognitive Check** *Reflet on Your Learning* allows students to think about their level of understanding of the lesson content on a scale of 1 to 4 with 4 being the highest confidence.

### Exit Ticket Skill Tracker

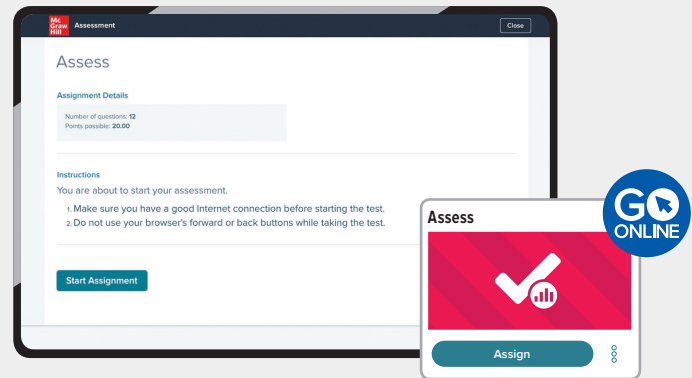| Item | DOK | Skill | Standard |
|------|-----|-------|----------|
| 1 | 2 | Compare decimals | 5.NBT.A.3.b |
| 2 | 2 | Compare decimals | 5.NBT.A.3.b |
| 3 | 2 | Compare decimals | 5.NBT.A.3.b |
| 4 | 3 | Compare decimals | 5.NBT.A.3.b |

📊 **Data** Use students' scores on the *Exit Ticket* to assign the differentiated resources available. When students complete the *Exit Ticket* in the digital workspace, their responses are auto-scored.

### Exit Ticket Recommendations

| If students score | Then have students do |
|-------------------|------------------------|
| 4 of 4 | Additional Practice or any of the **B** or **E** activities |
| 3 of 4 | *Take Another Look* or any of the **B** activities |
| 2 or fewer of 4 | Small Group Intervention or any of the **R** activities |

### Key for Differentiation

**R** Reinforce Understanding
**B** Build Proficiency
**E** Extend Thinking

---

Assessment

Assess

Assignment Details
Number of questions: 12
Points possible: 20.00

Instructions
You are about to start your assessment.
1. Make sure you have a good Internet connection before starting the test.
2. Do not use your browser's forward or back buttons while taking the test.

Start Assignment

Assess

**GO ONLINE**

Assign

---

Lesson **3-4**

# Exit Ticket

Name _____

Is each comparison True or False?

| | | True | False |
|---|---|------|-------|
| **1.** | 0.8 < 0.79 | | ✓ |
| **2.** | 0.17 = 0.017 | | ✓ |
| **3.** | 0.113 > 0.109 | ✓ | |
| **4.** | 0.222 < 0.31 | ✓ | |

The table shows the amount of rainfall over 4 days.

| Day | Amount of Rainfall (cm) |
|-----|--------------------------|
| Monday | 2.35 |
| Tuesday | 2.09 |
| Wednesday | 2.41 |
| Thursday | 2.4 |

**How can you compare the decimals? Complete with >, <, or =.**

**5.** 2.35 $>$ 2.09

**6.** 2.09 $<$ 2.41

**7.** 2.41 $>$ 2.4

**8.** 2.35 $<$ 2.4

**9.** Sam swims one length of the pool in 48.51 seconds. Jason swims one length of the pool in 48.46 seconds. Who swims faster? **Jason**

### Reflect On Your Learning

I'm confused.    I'm stll learning.    I understand.    I can teach someone else.

○———○———○———○

**36** Assessment Resource Book

# Differentiate

🕐 **10 min**   Select resources based on your classroom set up, or your students' needs.
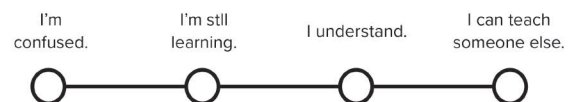
## R Reinforce Understanding

**SMALL GROUP**

### Place Value War

Work with students in pairs. Provide each student with a stack of number cards between 0–9. Each student draws 3 cards from the stack and places them in numerical order. Have students determine which number is greater. Remind students to compare place values from left to right. If students have difficulty comparing the numbers, help them draw a place-value chart for tenths, hundredths, and thousandths and place their cards inside the chart. Repeat until all cards have been played.

**GO ONLINE**
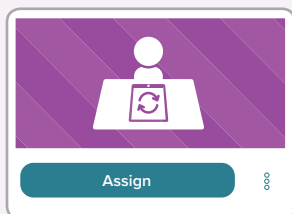
### Take Another Look Lessons
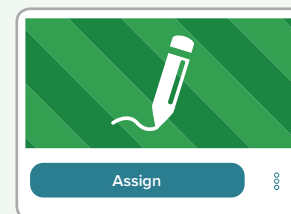
Assign the interactive lessons to reinforce targeted skills.

- Compare Decimal Numbers in Tenths
- Compare Decimal Numbers (100ths)

**Assign**

**INDEPENDENT WORK**

**Differentiation Resource Book, p. 17**

Lesson **3-4** • Reinforce Understanding
#### Compare Decimals

Name _____

**Review**

When comparing decimals, go from left to right comparing digits in the same place.

$$7.1\ 5\ 6$$
$$\uparrow\ \uparrow\ \uparrow$$
$$=\ =\ <$$
$$\downarrow\ \downarrow\ \downarrow$$
$$7.1\ 8\ 3$$
$$5 < 8$$
$$\underline{7.156 < 7.183}$$

**Circle the words that complete each mathematical sentence.**

1. 5.783 is greater than / less than / equal to 5.781. **greater than**
2. 0.45 is greater than / less than / equal to 0.450 **equal to**
3. 19.06 is greater than / less than / equal to 19.058. **greater than**
4. 7.23 is greater than / less than / equal to 0.723. **greater than**

**Select the true statement.**

5. A. 1.568 < 1.497
   B. 3.589 < 4.089
   C. 0.56 > 3.1
   D. 0.025 > 0.03

6. A. 2.567 > 2.576
   B. 12.3 < 12.039
   C. 6.75 < 6.706
   D. 9.5 > 9.050

Differentiation Resource Book

## B Build Proficiency

**WORKSTATIONS**

### Practice It!  Game Station

**Decimal Showdown**

Students practice comparing decimals.

**GO ONLINE**

### Interactive Additional Practice

Assign the digital version of the Student Practice Book.

**Assign**

**INDEPENDENT WORK**

**Student Practice Book, pp. 17–18**

Lesson **3-4**
#### Additional Practice

Name _____

**Review**

**You can compare two decimals to the thousandths place.**

Lulu runs a mile in 9.375 minutes, and Kindra runs a mile in 9.376 minutes. Compare the two decimals.

Line up the numbers on the decimal point so all the place values will be lined up. Both numbers have 9 ones, 3 tenths, and 7 hundredths.

Since the digits in the thousandths place are different, compare those two digits.

$$9.3\ 7\ 5$$
$$9.3\ 7\ 6$$

$$9.375 < 9.376$$

1. Efren has 0.3 ounce of water and 0.38 ounce of salt. Line up the numbers on the decimal point to determine which amount is less than the other amount.

$$0.3$$
$$0.38$$

0.3 ounce $\boxed{<}$ 0.38 ounce

2. Write thirty-seven and forty-nine hundredths in standard form. __**37.49**__

Is the number greater than or less than 37.45?

thirty-seven and forty-nine hundredths $\boxed{>}$ 37.45

Student Practice Book
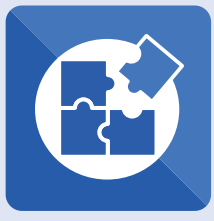
## Own It! Digital Station

**Build Fluency** Games

Assign the digital game to build fluency with adding and subtracting within 1,000,000.

Assign

## Use It! Application Station

**On Your Mark, Get Set, Go!** Students create a list of times in a swimming meet and compare the times to the results of Olympic swimming events.

## Spiral Review

Assign the digital Spiral Review to students or download and print PDFs of the Spiral Review from the Digital Teacher Center.
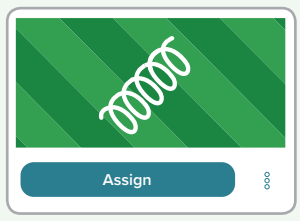
Assign

## Websketch Exploration

Assign a websketch exploration to apply skills and extend thinking.

Assign

### Student Practice Book, pp. 17–18

3. Write a decimal that is equal to 1.5. Explain your answer.
**Sample answer: 1.50 is equal to 1.5 because inserting a 0 to the right of 5 does not change the value of the decimal.**

4. Which of the following are correct? Choose all that apply.
(A.) 0.09 > 0.009
B. 1.26 < 1.258
(C.) 29.99 = 29.990
(D.) 37.48 > 37.461
E. 5.908 = 5.980

5. Lorinda has $10.81 in her piggy bank. Thi has $10.18 in his piggy bank. Compare the amounts.
$10.81 (>) $10.18

6. Lincoln bikes 24.28 miles on Monday and 24.385 miles on Tuesday. Compare the distances.
24.28 (<) 24.385

7. Jewel and Karl are playing a game. Jewel has 15.42 points. Karl has 15.428 points. Compare the number of points. Who has the greater number of points?
15.42 (<) 15.428
__Karl__ has the greater number of points.

8. Zina is 4.25 feet tall. Her cousin Sam is 4.175 feet tall. Compare the heights. Who is taller?
4.25 (>) 4.175
__Zina__ is taller.

**Math @ Home Activity**
Give your child three index cards, and have him or her write >, <, and = on them. Identify numbers around your home that are written in decimal form. Ask your child to hold up the correct card to compare the numbers. The cards can also be used at a park to compare lengths of trails, at a gas station to compare prices of gasoline, or at a grocery store to compare prices of food items.

Student Practice Book

### Differentiation Resource Book, p. 18

Lesson **3-4** • **Extend Thinking**
## Compare Decimals

Name _____

The table shows the distance Kendal drove each day on his trip.

| Day | Distance (miles) |
|---|---|
| Monday | 200 + 50 + 8 + 0.5 + 0.03 |
| Tuesday | 258.6 |
| Wednesday | two-hundred fifty-eight and four hundred six thousandths |
| Thursday | 200 + 40 + 9 + 0.8 + 0.009 |
| Friday | two-hundred forty-nine and nine tenths |

1. On which day did Kendal drive the least number of miles? **Thursday**

2. On which day did Kendal drive the greatest number of miles? **Tuesday**

3. Did Kendal drive more or less miles on Monday than he did on Tuesday? __less__

4. Write a comparison statement using the distances Kendal traveled on Tuesday and Wednesday. Write the numbers in standard form and use <, >, or =.
**Sample answer: 258.6 > 258.406; 258.406 < 258.6**

5. Write a comparison statement using the distances Kendal traveled on Thursday and Friday. Write the numbers in standard form and use <, >, or =.
**Sample answer: 249.809 < 249.9; 249.9 > 249.809**

6. Put the distances Kendal drove in order from least to greatest in standard form. **249.809; 249.9; 258.406; 258.53; 258.6**

Differentiation Resource Book

## Unit 3
## Comparing Decimals

CHERYL TOBEY
MATH PROBES

Name _____

Compare the decimals by choosing >, <, or =.

**1.** 0.035 ☐ 0.35

Circle the symbol that goes in the ☐.

>    **(<)**    =

Explain or show why you chose that symbol.

**Explanations may vary.**

**2.** 0.27 ☐ 0.235

Circle the symbol that goes in the ☐.

**(>)**    <    =

Explain or show why you chose that symbol.

**Explanations may vary.**

Unit 3 • Place Value and Number Relationships    79

**3.** 0.4 ☐ 0.575

Circle the symbol that goes in the ☐.

>    **(<)**    =

Explain or show why you chose that symbol.

**Explanations may vary.**

**4.** 0.47 ☐ 0.470

Circle the symbol that goes in the ☐.

>    <    **(=)**

Explain or show why you chose that symbol.

**Explanations may vary.**

**Reflect On Your Learning**

I'm confused.    I'm still learning.    I understand.    I can teach someone else.

○——○——○——○

# Analyze The Probe ✓ Formative Assessment

**Targeted Concept** Compare two decimals by reasoning about the digits and their values based on place-value positions.

⚠ **Targeted Misconceptions** Compare two decimals by reasoning about the digits and their values based on place-value positions.

## Authentic Student Work
Below are examples of correct student work and explanations.

### Sample A

**2.**

**0.27** ☐ **0.235**

Circle the symbol that goes in the ☐.

>    ≤    =

Explain or show why you chose that symbol.

0.235
0.27

0.235 is bigger because it has 1 more number than 0.27

### Sample B

**3.**

**0.4** ☐ **0.575**

Circle the symbol that goes in the ☐.

**(>)**    <    =

Explain or show why you chose that symbol.

$\frac{0}{575} = 1000^{th}$    $\frac{0}{2} = 10^{th}$

Fractions 10th bigger

### Sample C

**4.**

**0.47** ☐ **0.470**

Circle the symbol that goes in the ☐.

>    **(<)**    =

Explain or show why you chose that symbol.

47 is smaller than 470

# Collect and Assess Student Work

Collect and review student response to determine possible misconceptions. See examples in If-Then chart.

| IF incorrect... | THEN the student likely... | Sample Misconceptions | |
|---|---|---|---|
| 1. > <br> 2. < <br> 4. < | thinks that the decimal that contains more digits to the right of the decimal point is the *greater* decimal. This student does not compare decimals by first considering the digits in the greatest place-value position. Note that this misconception leads to the correct answer for Exercise 3. | 4. <br> **0.47** ⬜ **0.470** <br><br> Circle the symbol that goes in the ⬜. <br><br> >   <   = | Explain or show why you chose that symbol. <br> .47   .470 <br> something really <br> like .4 and .40 <br> 4 tenth   40 hundredth |
| 3. > | thinks that the decimal that contains more digits to the right of the decimal point is the *smaller* decimal. The student reasons that because 0.4 extends only to the tenths place, it is therefore greater than 0.575 that extends to the thousandths place (because thousandths are smaller than tenths). This student does not compare decimals by first considering the digits in the greatest place-value position. Note that this misconception leads to the correct answers for Exercises 1 and 2. | 1. <br> **0.035** ⬜ **0.35** <br><br> Circle the symbol that goes in the ⬜. <br><br> >   <   = | Explain or show why you chose that symbol. <br> .035 = 3¢   about <br> .35 = 35¢ ← 35 is a greater number of cents |
| 1. = <br> 4. > or < | thinks that inserting a 0 to the left of a digit in the decimal portion of a number does not change the number's value; <br> OR <br> does not realize that annexing a 0 to the right of a decimal does *not* change its value. For example, in Exercise 4, a 0 can be annexed to the right of 0.47 without changing its value (0.47 = 0.470). However, in Exercise 1, inserting a 0 to the left of the 3 in 0.35 changes its value (0.035 ≠ 0.35). | | |

Many of the above difficulties result in a combination of correct and incorrect responses.
For correct responses, be sure to check for sound reasoning.

## Take Action

Choose from the following resources or suggestions:

- Revisit a place-value chart, number lines, and other representations in Lessons 3-2 and 3-3 to build decimal place-value ideas and the comparison of decimals.

- Support students in representing decimals with money and interpreting the meaning of digits in various place-value positions.

- Build place-value ideas by using language that reinforces place value. For example, rather than reading 3.45 as *three point four five*, students should read it as *three and forty-five hundredths*.

- Provide a variety of decimals with 0s in different locations. Discuss cases where inserting a 0 changes the value of a number (such as the 0 in 1.405) and cases where it does not (such as the 0 in 1.450).

Revisit the Probe after additional instruction. Have students review their initial answers to the Probe. Use these questions for discussion:

- Are there any answers you would like to change? Explain why you might want to change them.
- Are there any questions that you still have about any of the exercises on this Probe?

**Metacognitive Check** *Reflect on Your Learning* allows students to think about their level of understanding of the lesson content on a scale of 1 to 4 with 4 being the highest confidence.

# Use Place Value to Round Decimals

## Learning Targets

- I can use rounding strategies to round decimals.
- I can explain how to apply rounding strategies to decimals.

## Standards  ◇ Major  △ Supporting  ○ Additional

**Content**

◇ **5.NBT.A**  Understand the place value system.

◇ **5.NBT.A.4**  Use place value understanding to round decimals to any place.

**Math Practices and Processes**

**MPP**  Attend to precision.

**MPP**  Look for and express regualrity in repeated reasoning.

## Vocabulary

| Math Terms | Academic Terms |
|---|---|
| round | prove |
| estimate | variation |

## Materials

The materials may be for any part of the lesson.

- number cubes
- *Number Cards 0–10* Teaching Resource

## Focus

| Content Objectives | Language Objectives | SEL Objective |
|---|---|---|
| • Students round decimals to any place value position. <br> • Students identify situations that call for rounding decimals and determine the place to which to round. | • Students identify place values to the nearest whole and tenths place using *about*. <br> • In order to support optimizing output, ELs will participate in MLR5: Co-Craft Questions and Problems. | • Students demonstrate thoughtful reflection through identifying the causes of challenges and successes while completing a mathematical task. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students used place value understanding to round multi-digit whole numbers to any place. (Grade 4) <br> • Students applied their understanding of decimals to compare decimals. (Unit 3) | • Students use place value understanding to round decimals to any place. | • Students add and subtract decimals. (Unit 4) |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students learn that rounding decimals can make them easier to understand and use to solve problems. | • Students build proficiency with rounding decimals using a place value. | • Students apply their understanding of rounding decimals based on real-world contexts. <br><br> *Application is not a targeted element of rigor for this standard.* |

## Number Routine
### Find the Pattern, Make a Pattern  🕐 5–7 min

**Build Fluency**  Students build number sense as they determine the pattern and find missing terms. Students then create a new sequence that follows the pattern but uses different numbers.

These prompts encourage students to talk about their reasoning:

- *How do you know your pattern works?*
- *How did you choose your numbers for the new pattern?*
- *Will other numbers fit into this pattern? Explain.*

**Purpose** Students share thoughts on estimated cost of popcorn.

# Notice & Wonder™

- What do you notice?
- What do you wonder?

**Teaching Tip** You may want to encourage other students to repeat other's ideas by asking *Can you repeat what they just said in your own words?*

**ETP** **Pose Purposeful Questions**

The questions that follow are not intended to be asked in the sequence presented. They are meant to help advance students' thinking about how to round decimal numbers and are based on possible comments and questions students may make during the share out.

- Why do you think they are using the word *about*?
- What do you think the cost of the popcorn might be?

**Math is...** **Mindset**

- What was challenging for you? What have you enjoyed?

**SEL** **Responsible Decision-Making: Reflection**

After working through the Notice & Wonder routine, allow students time to thoughtfully reflect on their work. Invite them to think about what may have been challenging as well as the ways in which they were successful and why. Encourage students to also consider what parts of the Notice & Wonder routine that they enjoyed and why.

**Transition to Explore & Develop**

Ask questions that focus students' attention on thinking about how to round decimal numbers.

**ETP** **Establish Goals to Focus Learning**

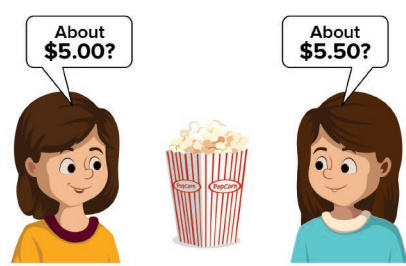- Let's think about how to round decimal numbers.



Lesson **3-5**
**Use Place Value to Round Decimals**

⍰ **Be Curious**

**What do you notice? What do you wonder?**

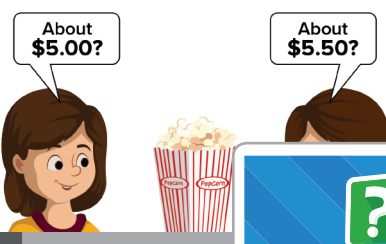About $5.00?    About $5.50?

**Math is...** **Mindset**
What was challenging for you? What have you enjoyed?

Unit 3 • Place Value and Number Relationships    81



⍰ Be Curious

**What do you notice? What do you wonder?**

About $5.00?    About $5.50?

GO ONLINE

## Learn

Maya and her sister want to buy a medium popcorn.

**About how much money do they need?**

You can round decimals to get a good estimate.

**POPCORN**
SMALL $4.25
MEDIUM $5.45
LARGE $5.99

▶ **One Way** Use a number line

Round to the ones.

5.45

5.00 ——— 6.00
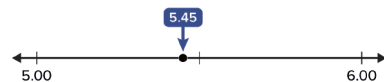
The bag of popcorn costs about $5.00.

**Math is...** Precision
What do you notice about the estimate when rounding to lesser place value positions?

▶ **Another Way** Use place value

| to the ones | to the tenths |
|---|---|
| **5.45** | **5.45** |
| ⬇ | ⬇ |
| **5.00** | **5.50** |

Rounding to the nearest tenths gives a better estimate.
Maya and her sister need about $5.50 to buy a medium popcorn.

You can round decimals using number lines or place value to make reasonable estimates. Think about how precise the estimate needs to be when deciding to which place you should round to.

### Work Together

What is the weight of the pumpkin rounded to the nearest whole number? nearest tenth?

**9 lb; 8.6 lb**

8.62 lb

## ❶ Pose the Problem

### ETP  Pose Purposeful Questions
- How have you rounded whole numbers in the past?
- Based on what you know, can you make a conjecture about how to round decimal numbers? Explain how you would do it and why you think it would work.
- What tools do you think would help you round decimal numbers? Explain why you think they would help.

## ❷ Develop the Math

**Choose the option that best meets your instructional goals.**

### MLR  Co-Craft Questions and Problems
Have pairs co-create a problem similar to the one on the student page. Have them work together to solve their problem and then trade their problem with another pair.

## ❸ Bring It Together

### ETP  Elicit Evidence of Student Thinking
- How is rounding decimals based on place value the same as rounding whole numbers based on place value?

**Key Takeaway**
- Rounding decimals to any place follows the same process as rounding multi-digit numbers.

### Work Together

Students round a decimal number to the ones and tenths places. Students can work on the activity in pairs before sharing their work.

⚠ **Common Misconception** Students may use front-end estimation to round to the nearest one by ignoring the decimal part of 8.62 and finding 8. That is a reasonable estimate, but it is not the process of rounding.

### LOM  Language of Math
*Estimate* and *round* are two different things. An estimate is a reasonable guess. Estimates of the weight of an 18.62 pound pumpkin could be *about 18 pounds* (front-end), *about 19 pounds* (rounding to the ones place), or *about 20 pounds* (rounding to the tens place). Even *about 15 pounds* is a reasonable estimate. Rounding is a very specific process. 18.62 rounded to the nearest whole number is exactly 19.

## Activity-Based Exploration

Students look for patterns when rounding decimals.

**Material:** *Number Cards 0–10* Teaching Resource

**Directions:** Using only the digits 0–9, each student selects one card to create a decimal number between 4 and 5. Students will sort their decimals into two categories; decimals that are closer to 4 and decimals that are closer to 5.

**ETP Implement Tasks that Support Reasoning and Problem Solving**

- What strategies did you use to determine whether your decimal number was closer to 4 or closer to 5? Will it always work?
- What generalizations can you make about decimal numbers that are closer to 4 than to 5?
- How can you use your generalizations to write rules for rounding decimals?

**Math is... Precision**

- What language can you use to explain your generalizations to others?

Students are thinking about precise language when explaining their reasoning.

**Activity Debrief:** Have students look for patterns of decimals that are closer to 4 and decimals that are closer to 5. Discuss methods for rounding decimals.

Have students revisit the Pose the Problem question and discuss answers.

- About how much money do they need?

The PDF of the Teaching Resource is available in the Digital Teacher Center.

## Guided Exploration

Students extend their understanding of rounding whole numbers using place value to decimal numbers.

**ETP Facilitate Meaningful Discourse**

- **Think About It:** What are some tools and strategies you used to help round whole numbers?
- **Think About It:** What if the price of the medium popcorn was $5.65, would you round to $5.00 or $6.00?
- **Think About It:** Is $5.50 a useful estimate?

Have students explain why $5.00 is a good estimate, even though it is not useful for this problem.

**Math is... Precision**

- What do you notice about the estimate when rounding to lesser place value positions?

Students are thinking about the degree of precision appropriate for a problem context.
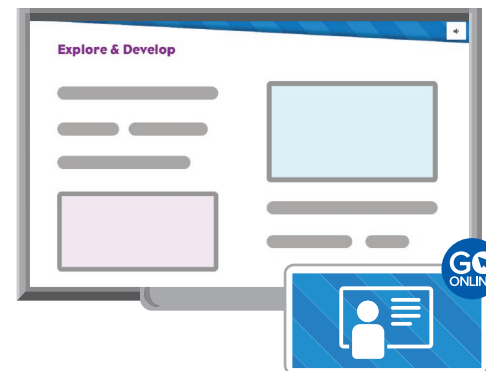


**EL English Learner Scaffolds**

**Entering/Emerging** Support students in their comprehension of the word *about* as it is used when estimating. Put $4.65 on the table. Say, *I'm going to give an estimate. This is about $5.00.* Then count the money. Say *This is $4.65. That's close to, or about, $5.00.* Repeat the task again with a new amount, giving both the estimated amount using the word *about,* and the actual amount. Ask students, *Which number is the estimate?*

**Developing/Expanding** Support students in their comprehension of the word *about* as it is used in estimating. Put $4.65 on the table. Say *I'm going to give an estimate. This is about $5.00.* Then count the money. Say *This is $4.65. That's close to, or about, $5.00.* Repeat the task again with a new amount, giving both the estimated amount using the word *about*, and the actual amount. Ask students which number is the estimate and to explain how they know. Provide sentence frames to students who need more prompting or support.

**Bridging/Reaching** To support students in using the word *about* when expressing an estimate. Ask students to talk about similar-meaning words that they may have already learned in the past that are appropriate for both math and everyday language. Examples may include *approximately, not exactly, close to,* and *around.*

## On My Own

Name _____

**What is each decimal rounded to the nearest whole number?**
**You can use a number line or place value.**

1. 78.39 **78**

2. 4.07 **4**

3. 12.7 **13**

4. 15.55 **16**

**What is each decimal rounded to the nearest tenth?**
**You can use a number line or place value.**

5. 42.89 **42.9**

6. 3.65 **3.7**

7. 16.12 **16.1**

8. 98.17 **98.2**

9. Danica rounded a number to the nearest tenth to get 14.7. What number could she have rounded to get this answer?
   **Sample answer: 14.65**

10. Which statements are *true*?
    A. The decimal 43.678 rounded to the nearest tenth is 43.6.
    Ⓑ. The decimal 43.678 rounded to the nearest tenth is 43.7.
    Ⓒ. The decimal 43.678 rounded to the nearest hundredth is 43.68.
    D. The decimal 43.678 rounded to the nearest hundredth is 43.67.

11. The masses of five different dogs are shown. Round each mass to the nearest whole number.
    **23; 25; 27; 26; 27**

    22.8 kg 25.4 kg 27.1 kg 25.8 kg 26.7 kg

12. **STEM Connection** The mass of the sun takes up about 99.86% of the mass of our solar system. What is 99.86 rounded to the nearest tenth?
    **99.9**

13. Which of the following numbers are closer to 100? Which are closer to 99?

    99.03  99.87  99.49  99.27  99.72

    **99.87, 99.72 are closer to 100; 99.03, 99.49, 99.27 are closer to 99**

14. **Extend Your Thinking** The price of a container of orange juice, rounded to the nearest one is $3.00. Between what two amounts could the actual price be?
    **Between $2.50 and $3.49**

### ⊘ Reflect

How is rounding decimals similar to rounding whole numbers?
**Answers may vary.**

**Math is... Mindset**
What have you done well today? What did you do that helped you?

---

## Practice

### ⓔ Build Fluency from Understanding

⚠ **Common Error: Exercises 5–8** Students may incorrectly identify the range in which the decimal numbers fall on a number line. Writing the decimal in expanded form and focusing on the value of the digit in the tenths place can help students identify the lesser end point of the range.

### Practice Item Analysis

| Item | DOK | Rigor |
|------|-----|-------|
| 1–8 | 2 | Procedural Skill & Fluency |
| 9–10 | 3 | Conceptual Understanding |
| 11–12 | 3 | Application |
| 13 | 3 | Conceptual Understanding |
| 14 | 4 | Conceptual Understanding |

## ⊘ Reflect

Students complete the Reflect question.
- How is rounding decimals similar to rounding whole numbers?

Ask students to share their reflections with their classmates.

**Math is... Mindset**

- What have you done well today? What did you do that helped you?
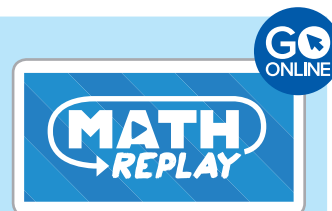
### Learning Targets

Ask students to reflect on the Learning Targets of the lesson.
- I can use rounding strategies to round decimals.
- I can explain how to apply rounding strategies to decimals.

To review today's lesson, have students watch the Math Replay video in their Digital Student Center.

Assign the On My Own practice to students from the Digital Teacher Center.

## Exit Ticket ✓ Formative Assessment

The *Exit Ticket* assesses students' understanding of lesson concepts.

**Metacognitive Check** *Reflect on Your Learning* allows students to think about their level of understanding of the lesson content on a scale of 1 to 4 with 4 being the highest confidence.

### Exit Ticket Skill Tracker

| Item | DOK | Skill | Standard |
|------|-----|-------|----------|
| 1 | 1 | Round decimals | 5.NBT.A.4 |
| 2 | 2 | Round decimals | 5.NBT.A.4 |
| 3 | 2 | Round decimals | 5.NBT.A.4 |
| 4 | 2 | Round decimals | 5.NBT.A.4 |

📊 **Data** Use students' scores on the *Exit Ticket* to assign the differentiated resources available. When students complete the *Exit Ticket* in the digital workspace, their responses are auto-scored.

### Exit Ticket Recommendations

| If students score | Then have students do |
|-------------------|------------------------|
| 4 of 4 | Additional Practice or any of the **B** or **E** activities |
| 3 of 4 | *Take Another Look* or any of the **B** activities |
| 2 or fewer of 4 | Small Group Intervention or any of the **R** activities |

### Key for Differentiation

**R** Reinforce Understanding
**B** Build Proficiency
**E** Extend Thinking

---

Assessment

Assignment Details
Number of questions: 12
Points possible: 20.00

Instructions
You are about to start your assessment.
1. Make sure you have a good Internet connection before starting the test.
2. Do not use your browser's forward or back buttons while taking the test.

Start Assignment

Assess

GO ONLINE

Assign

---

Lesson **3-5**

## Exit Ticket

Name _____

**What is each rounded decimal?**

1. 0.849 rounded to the nearest tenth is __0.8__.
2. 0.849 rounded to the nearest hundredth is __0.85__.

**Do the decimals round to 6.9 when rounded to the nearest tenth? Choose Yes or No.**

| | | Yes | No |
|---|------|-----|-----|
| 3. | 6.853 | ✓ | |
| 4. | 6.96 | | ✓ |
| 5. | 6.83 | | ✓ |
| 6. | 6.909 | ✓ | |
| 7. | 6.871 | ✓ | |

**What is each decimal rounded to the nearest whole number?**

8. 9.72 rounds to __10__.
9. 3.109 rounds to __3__.
10. 7.64 rounds to __8__.
11. 18.53 rounds to __19__.

12. Rounded to the nearest dollar, Gina spent about $14.00 at the store. Which could have been the actual amount she spent? Choose all that apply.

    A. $13.39          Ⓒ. $13.64
    Ⓑ. $14.08          D. $14.49

**Reflect On Your Learning**

I'm confused.   I'm still learning.   I understand.   I can teach someone else.

○——————○——————○——————○

## R Reinforce Understanding

**SMALL GROUP**

### On a Roll!

Work with students in pairs. Have students roll a number cube three times to create a number. The first digit rolled goes in the ones place, the second digit goes in the tenths place, and the third digit goes in the hundredths place. Have students round the number to the nearest whole number and to the nearest tenth. Make sure students recognize that the process for rounding decimals is the same as the process for rounding whole numbers. Repeat for other rolls.

## B Build Proficiency

**WORKSTATIONS**

### Practice It! Game Station
**Rounding Decimals Four in a Row**
Students practice rounding decimals.

---

**GO ONLINE**

### Take Another Look Lessons

Assign the interactive lessons to reinforce targeted skills.

- Round Decimals to Nearest Whole > 1
- Round Decimals to Nearest Tenth > 1
- Round Decimals to Nearest Hundredth
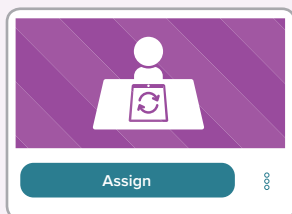
**Assign**

**GO ONLINE**

### Interactive Additional Practice

Assign the digital version of the Student Practice Book.

**Assign**

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**INDEPENDENT WORK**
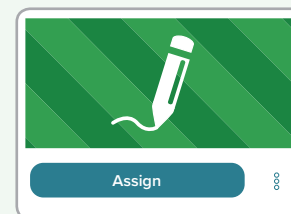
**Differentiation Resource Book, p. 19**

Lesson **3-5** • Reinforce Understanding
#### Use Place Value to Round Decimals

Name _____

**Review**

When rounding decimals, look to the number that is to the right of the place you are rounding. Round 5.842 to the nearest tenth.

**5. 8 4 2**

tenths   The 4 rounds the number down to 5.8.

Rounding Tip: If the number is 5 or greater, round up. If less than 5, round down.

To round to the nearest tenth, look at the hundredths place.

The number of hundredths is less than 5. Round down to 5.8

**Complete each mathematical sentence.**

1. When rounding to the nearest whole number, look to the number in the __**tenths**__ place.

2. When rounding to the nearest hundredth, look to the number in the __**thousandths**__ place.

**Round the numbers to the nearest whole number.**

3. 7.456 __**7**__     4. 0.573 __**1**__

**Round the numbers to the nearest tenth.**

5. 16.785 __**16.8**__     6. 49.02 __**49.0**__

**Round the numbers to the nearest hundredth.**

7. 3.495 __**3.50**__     8. 2.371 __**2.37**__

Differentiation Resource Book

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**INDEPENDENT WORK**

**Student Practice Book, pp. 19–20**

Lesson **3-5**
#### Additional Practice

Name _____

**Review**

**You can round decimals.**

Marg has 14.875 feet of rope. Round the length of the rope to the nearest tenth.

14.8   14.85   14.9
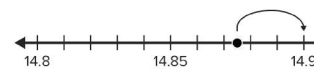
14.875 feet rounded to the nearest tenth is 14.9 feet.

1. Round each decimal to the nearest whole number.

   a. 0.948 __**1**__     b. 34.972 __**35**__

   c. 4.013 __**4**__     d. 48.671 __**49**__

   e. 9.05 __**9**__     f. 56.143 __**56**__

   g. 12.489 __**12**__     h. 66.701 __**67**__

   i. 20.87 __**21**__     j. 79.862 __**80**__

   k. 26.187 __**26**__     l. 92.557 __**93**__

2. Round each decimal to the given place value.

   a. Round 1.521 to the nearest tenth. __**1.5**__

   b. Round 4.037 to the nearest hundredth. __**4.04**__

   c. Round 19.232 to the nearest tenth. __**19.2**__

   d. Round 41.691 to the nearest hundredth. __**41.69**__

   e. Round 83.888 to the nearest tenth. __**83.9**__

Student Practice Book

## Own It! Digital Station

**Build Fluency** ames

Assign the digital game to develop fluency with adding and subtracting within 1,000,000.

**Assign**

## Spiral Review

Assign the digital Spiral Review to students or download and print PDFs of the Spiral Review from the Digital Teacher Center.

**Assign**

## E Extend Thinking

### Use It! Application Station

**State Sales Tax** Student investigate and compare state sales tax rates.

### Websketch Exploration

Assign a websketch exploration to apply skills and extend thinking.

**Assign**
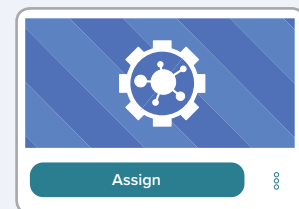
## Student Practice Book, pp. 19–20

3. Round each decimal to the given place.
   a. 0.143    tenths: **0.1**
              hundredths: **0.14**

   b. 10.976   ones: **11**
              hundredths: **10.98**

   c. 39.183   ones: **39**
              tenths: **39.2**

   d. 71.565   tenths: **71.6**
              hundredths: **71.57**

4. A puppy weighs 10.49 pounds. To the nearest tenth, *about* how much does the puppy weigh?
   **10.5** pounds

5. Dona says that 35.284 rounded to the nearest hundredth is 35.29. Do you agree? Explain.
   **No; Sample answer: I disagree because 35.284 rounded to the nearest hundredth is 35.28.**

6. There is $78.69 in a checking account. The amount needs to be rounded to the nearest whole dollar. Wally says there is about $78 in the account, and Tu says there is about $79 in the account. Who is correct? Explain.
   **Tu; Sample answer: Since $78.69 is closer to $79 than to $78, the amount rounded to the nearest whole dollar is $79.**

**Math @ Home Activity**

Discuss instances where rounding can be helpful around your home. For example, if you need 0.75 gallon of milk, you can round up and buy 1 gallon of milk. Then ask your child to round different decimal values. Practice rounding the values to the nearest whole number, tenth, and hundredth.

Student Practice Book

## Differentiation Resource Book, p. 20

Lesson **3-5** • **Extend Thinking**

### Use Place Value to Round Decimals

Name _____

Quentin drives 632.074 miles from Sacramento, California to Las Vegas, Nevada one day and then drives 632.32 miles from Las Vegas to Santa Fe, New Mexico the next day.

1. a. When rounded to the nearest whole number, which day did Quentin drive the greater distance? **They are the same.**

   b. When rounded to the nearest tenth, which day did Quentin drive the greater distance? **the second day**

2. a. Round the distance Quentin traveled on the first day to the nearest tenth. **632.1**

   b. Round the distance Quentin traveled on the first day to the nearest hundredth. **632.07**

   c. Which number is greater? **632.1**

3. If the distance Quentin traveled on the first day was rounded to 632.074, what is a possible distance he could have traveled on that day?
   **Sample answer: 632.0735 (any number that is less than 632.0745 and equal to or greater than 632.0735)**

4. If the distance Quentin traveled on the second day was rounded to 632.32, what is a possible distance he could have traveled on that day?
   **Sample answer: 632.324 (any number that is less than 632.325 and equal to or greater than 632.315)**

Differentiation Resource Book

## Unit Review  Name _____

### Vocabulary Review

Choose the correct word(s) to complete each sentence.

| | |
|---|---|
| decimal | tenths |
| place value | hundredths |
| decimal point | thousandths |

1. A _____**decimal point**_____ is a period that separates the ones and the tenths in a decimal number. (Lesson 3-2)

2. _____**Thousandths**_____ is a place value position. It represents $\frac{1}{1,000}$ of a whole. (Lesson 3-2)

3. _____**Hundredths**_____ is a place value position. It represents $\frac{1}{100}$ of a whole. (Lesson 3-2)

4. The value given to a digit by its position in a number is called _____**place value**_____ . (Lesson 3-1)

5. A number that has a digit in the tenths place, hundredths place, and beyond is called a _____**decimal**_____ . (Lesson 3-2)

6. _____**Tenths**_____ is a place value position. It represents $\frac{1}{10}$ of a whole. (Lesson 3-2)

Unit 3 • Place Value and Number Relationships   85

### Review

7. Which statement correctly compares values of the digit 8 in 284,560 and 128,773? (Lesson 3-1)

   A. The value of the digit 8 in 284,560 is $\frac{1}{10}$ the value of the digit 8 in 128,773.

   **B.** The value of the digit 8 in 284,560 is 10 times the value of the digit 8 in 128,773.

   C. The value of the digit 8 in 284,560 is 10,000 times the value of the digit 8 in 128,773.

8. Complete the sentence. (Lesson 3-3)

   In standard form, the number *thirty-six and eight hundred fourteen thousandths is written* as __**36.814**__

9. Determine whether each comparison is *true* or *false*. (Lesson 3-4)

| | True | False |
|---|---|---|
| 0.49 < 0.5 | ✓ | |
| 0.304 > 0.333 | | ✓ |
| 0.019 < 0.09 | ✓ | |
| 0.08 > 0.81 | | ✓ |
| 0.111 < 0.11 | | ✓ |
| 0.68 = 0.068 | | ✓ |

10. Complete each sentence. (Lesson 3-5)

    0.737 rounded to the nearest hundredth is __**0.74**__ .

    0.737 rounded to the nearest tenth is __**0.7**__ .

11. Do the numbers round to 8.1 when rounded to the nearest tenth? Choose *yes* or *no*. (Lesson 3-5)

| | Yes | No |
|---|---|---|
| 7.99 | | ✓ |
| 8.162 | | ✓ |
| 8.074 | ✓ | |
| 8.13 | ✓ | |
| 8.012 | | ✓ |

12. The table show the lengths of the tracks at Valley High School and Eastside High School. (Lesson 3-4)

| School | Length of Track (in meters) |
|---|---|
| Valley H.S. | 398.25 |
| Eastside H.S. | 398.09 |

Write a comparison using >, <, or =. **Sample answer: 398.25 > 398.09**

86   Unit 3 • Review

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Students can complete the **Unit Review** to prepare for the **Unit Assessment.** Students may complete the Review in their Interactive eBook in the Digital Student Center.

## Vocabulary Review

### Item Analysis

| Item | Lesson |
|---|---|
| 1 | 3-2 |
| 2 | 3-2 |
| 3 | 3-2 |
| 4 | 3-1 |
| 5 | 3-2 |
| 6 | 3-2 |

## Review

### Item Analysis

| Item | DOK | Lesson | Standard |
|---|---|---|---|
| 7 | 2 | 3-1 | 5.NBT.A.1 |
| 8 | 2 | 3-3 | 5.NBT.A.3.a |
| 9 | 2 | 3-4 | 5.NBT.A.3.b |
| 10 | 2 | 3-5 | 5.NBT.A.4 |
| 11 | 2 | 3-5 | 5.NBT.A.4 |
| 12 | 2 | 3-4 | 5.NBT.A.3.b |

To review the lessons in this unit, have students watch the Math Replay video in their Digital Student Center.

Assign the Unit Review practice to students from the Digital Teacher Center.

GO ONLINE

MATH REPLAY
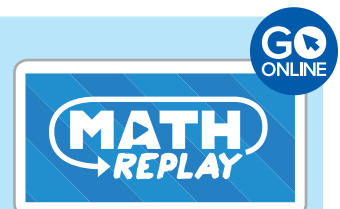
## Item Analysis (continued)

| Item | DOK | Lesson | Standard |
|------|-----|--------|----------|
| 13 | 2 | 3-2 | 5.NBT.A.1 |
| 14 | 2 | 3-2 | 5.NBT.A.1 |
| 15 | 2 | 3-2 | 5.NBT.A.1 |
| 16 | 2 | 3-3 | 5.NBT.A.3.a |
| 17 | 2 | 3-3 | 5.NBT.A.3.a |
| 18 | 2 | 3-3 | 5.NBT.A.3.a |
| 19 | 2 | 3-5 | 5.NBT.A.4 |
| 20 | 2 | 3-3 | 5.NBT.A.3.a |

## Performance Task

**Standards:** 5.NBT.A.3.a; 5.NBT.A.3.b

**Rubric** (4 points)

| Part A – 2 points | |
|---|---|
| **2 POINTS** | Student's work reflects a proficiency in reading and writing decimals. The student can write a number in word and expanded form. |
| **1 POINT** | Students work reflects developing proficiency in reading and writing decimals. The student can write a number in either word or expanded form. |
| **0 POINTS** | Student's work reflects a poor understanding in reading and writing decimals. The student cannot write a number in word or expanded form. |

| Part B – 2 points | |
|---|---|
| **2 POINTS** | Student's work reflects a proficiency in comparing decimals. The student's solution is accurate and can explain their answer. |
| **1 POINT** | Student's work reflects developing proficiency in comparing decimals. The student's solution may be accurate but may not be able to explain their answer. |
| **0 POINTS** | Student's work reflects a weak understanding of comparing decimals. The student's solution is inaccurate, and they are not able explain their answer. |

### 🔄 Reflect

The Reflect question provides an opportunity for students to express their understanding of the unit level focus question.

---

**13.** Which of the following statements is *true*? (Lesson 3-2)

  **A.** 0.002 is 10 times 0.02

  **B.** 0.02 is $\frac{1}{10}$ of 0.002

  **(C.)** 0.02 is 10 times 0.002

  **D.** 2 is $\frac{1}{10}$ of 0.2

**14.** Complete the sentence. (Lesson 3-2)

  7 is **10 times** 0.7.

**15.** Complete the sentence. (Lesson 3-2)

  0.05 is **$\frac{1}{10}$ of** 0.5.

**16.** Complete the expanded form of the number 8.207. (Lesson 3-3)

  $8 + 2 \times \underline{\frac{1}{10}} + \underline{7} \times \frac{1}{1,000}$

**17.** Write the decimal number in standard form. (Lesson 3-3)

  $3 \times \frac{1}{100} + 9 \times \frac{1}{1,000}$

  **0.039**

**18.** Write 44.259 in word form. (Lesson 3-3)

  **forty-four and two hundred fifty-nine thousandths**

**19.** List three different decimal numbers that, when rounded to the nearest tenth, round to 3.2. (Lesson 3-5)

  **Sample answer: 3.21; 3.219; 3.18**

**20.** Show two different ways to write the expanded form of the number 3.48. (Lesson 3-3)

  **Sample answer:**
  **3 + 0.4 + 0.08;**
  **3 + $\frac{4}{10}$ + $\frac{8}{100}$**

### Performance Task

There are eight planets in our solar system. Each planet orbits the sun at different speeds. Some planets have no moons and some planets have multiple moons!

**PART A.** The table shows length of time it takes Jupiter and Saturn to orbit the Sun in relation to Earth's orbit. Complete the table to show the word form and the expanded form of each speed.

| Name | Orbit Speed (in Earth years) | | |
|------|---------------|-----------|---------------|
| | **Standard Form** | **Word Form** | **Expanded Form** |
| Jupiter | 11.86 | **eleven and eighty-six hundredths** | **10 + 1 + 0.8 + 0.06** |
| Saturn | 29.4 | **twenty-nine and four tenths** | **20 + 9 + 0.4** |

**PART B.** Jupiter has 67 confirmed moons. Each moon orbits at different speeds. One moon takes 259.22 Earth days to orbit Jupiter and another one takes 259.653 Earth days. Use $>$, $<$, or $=$ to compare the orbit speeds. Explain your answer.

**259.22 $<$ 259.653; Sample answer: 0.6 is greater than 0.2**

### 🔄 Reflect

Explain how place value helps you understand the relationship between decimal places.

**Answers may vary.**

# Fluency Practice

Unit **3**

## Fluency Practice

Name _____

### Fluency Strategy

You can use an **algorithm** to add. Add the digits in the same place value.
Add the ones, tens, hundreds, then thousands.

Sometimes it is necessary to regroup.

```
  2,431            ⁺¹ ⁺¹ ⁺¹
+ 3,247            1,367
  5,678          + 4,856
                   6,223
```

### Fluency Flash

**What is the sum?**

**1.**

| 3 | 5 | 0 | 2 |
|---|---|---|---|
| + 4 | 1 | 9 | 6 |
| **7** | **6** | **9** | **8** |

**2.**

| 6 | 4 | 2 | 8 |
|---|---|---|---|
| + 1 | 2 | 5 | 3 |
| **7** | **6** | **8** | **1** |

### Fluency Check

**What is the sum or difference?**

**3.** 1,397 + 248 = **1,645**

**4.** 597 − 462 = **135**

**5.** 899 − 654 = **245**

**6.** 12,947 + 8,126 = **21,073**

**7.** 34,510 + 21,468 = **55,978**

**8.** 259 + 346 = **605**

**9.** 2,345 + 7,413 = **9,758**

**10.** 219 + 684 = **903**

**11.** 2,468 + 3,579 = **6,047**

**12.** 192 + 354 = **546**

### Fluency Talk

Explain to a friend how you know if you have to regroup when adding using an algorithm.
**Answers may vary.**

How is adding using partial sums similar to adding using an algorithm?
**Answers may vary.**

---

Fluency practice helps students develop procedural fluency, that is, the "ability to apply procedures accurately, efficiently, and flexibly." Because there is no expectation of speed, students should not be timed when completing the practice activity.

**Build Fluency**   **Objective**   Students practice using an algorithm to add.

### Fluency Progression

| Unit | Skill | Standard |
|---|---|---|
| 1 | Use Partial Sums to Add | 4.NBT.B.4 |
| 2 | Decompose by Place Value to Subtract | 4.NBT.B.4 |
| **3** | **Use an Algorithm to Add** | **4.NBT.B.4** |
| 4 | Use an Algorithm to Subtract | 4.NBT.B.4 |
| 5 | Choose a Strategy to Add | 4.NBT.B.4 |
| 6 | Choose a Strategy to Subtract | 4.NBT.B.4 |
| 7 | Multiply by Multiples of 10 | 5.NBT.B.5 |
| 8 | Multiply by Multiples of 100 | 5.NBT.B.5 |
| 9 | Divide Multiples of 10 | 5.NBT.B.6 |
| 10 | Divide Multiples of 100 | 5.NBT.B.6 |
| 11 | Use an Algorithm to Multiply (2- and 3-Digit Numbers by 1-Digit Numbers) | 5.NBT.B.5 |
| 12 | Use an Algorithm to Multiply (2-Digit Numbers by 2-Digit Numbers) | 5.NBT.B.5 |
| 13 | Choose a Strategy to Multiply | 5.NBT.B.5 |
| 14 | Choose a Strategy to Multiply | 5.NBT.B.5 |

### Fluency Expectations

**Grade 4**
• Add and subtract within 1,000,000.

**Grade 5**
• Multiply multi-digit whole numbers.

**Grade 6**
• Divide multi-digit numbers using the standard algorithm.
• Add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

## A Trip to the Movies

Student draw on their understanding of decimal place value and number relationships. Use the rubric shown to evaluate students' work.

Standards 5.NBT.A.1, 5.NBT.A.3.a, 5.NBT.A.3.b, 5.NBT.A.4

### Rubric  (10 points)

**Part A – 2 points**

| | |
|---|---|
| **2 POINTS** | Student's explanation reflects a proficiency with understanding rounding in context. |
| **1 POINT** | Student's explanation reflects developing proficiency with understanding rounding products in context. |
| **0 POINTS** | Student's explanation reflects a poor understanding of rounding products in context. |

**Part B – 2 points**

| | |
|---|---|
| **2 POINTS** | Student's work shows proficiency in extending place value to decimals. The student's explanation is reasonable. |
| **1 POINT** | Student's work shows developing proficiency in extending place value to decimals. The student's explanation is reasonable. |
| **0 POINTS** | Student's work shows weak proficiency in extending place value to decimals. The student's explanation is incorrect. |

**Part C – 2 points**

| | |
|---|---|
| **2 POINTS** | Student's work identifies correct range of place values for rounding decimals. The student's explanation is reasonable. |
| **1 POINT** | Student either identifies correct range of place values for rounding decimals or has a reasonable explanation. |
| **0 POINTS** | Student does not identify the correct range of place values for rounding decimals. The student's explanation is not reasonable. |

**Part D – 2 points**

| | |
|---|---|
| **2 POINTS** | Student's work shows proficiency in generalizing place value. The student's explanation is reasonable. |
| **1 POINT** | Student's work shows developing proficiency in generalizing place value. The student's explanation is reasonable. |
| **0 POINTS** | Student's work shows weak proficiency in generalizing place value. The student's explanation is incorrect. |

**Part E – 2 points**

| | |
|---|---|
| **2 POINTS** | Student's explanation shows proficiency in generalizing place value. |
| **1 POINT** | Student's explanation shows developing proficiency in generalizing place value. |
| **0 POINTS** | Student's explanation does not show proficiency in generalizing place value. |

---

Unit **3**

## Performance Task

Name _____

### A Trip to the Movies

Jackson and Frank go to a movie. Before finding a seat, they stop by the snacks counter.

**Part A**

Jackson estimates a large drink costs about $5. The actual price is $5.75. Is Jackson's estimate reasonable? Explain your answer.

**Sample answer: No because $5 would not be enough to purchase a large drink. $6 would have been a much more reasonable guess in this instance, as it would be more than enough.**

**Part B**

Jackson pays $9.79 for his snacks, while Frank pays $7.62. Show two different ways to describe the relationship between the values of the digit 7 in each number. Explain your answer.

**Sample answer: The 7 in the tenths place of $9.79 is $\frac{1}{10}$ the value of the 7 in the ones place of $7.62. The 7 in the ones place of $7.62 is 10 times the value of 7 in the tenths place of $9.79.**

**Part C**

Jackson and Frank have $30 combined and the tickets cost $14.99 each. Do Jackson and Frank have enough money for their snacks and movie tickets? Use rounding of decimals to explain your answer.

**Sample answer: After rounding, they will spend all $30 on tickets and will not have enough money left to purchase snacks.**

---

**Part D**

Last week, the movie theater sold 13,819 tickets. This week, the movie theater sells 13,694 tickets. When determining which week sold more tickets, why is it *not* necessary to compare the digits in the tens place? Explain your answer.

**Sample answer: The values in the respective hundred's places differ. 8 > 6**

**Part E**

Jackson's and Frank's ticket stubs each have a five-digit code. Jackson's five-digit code has the digit 8 in the thousands place which has a value ten times greater than the digit 8 in Frank's code. The digit 6 in Frank's code has a value of 60,000, which is one hundred times the value of the 6 in Jackson's code. Write an example of a five-digit code that fits the description for each boy using only the digits 0, 1, 2, 3, 4, and 5 one time each for the remaining places. Whose code is greater? Explain your answer.

**Sample answer: Jackson - 58,643, Frank – 62,810; A fully correct response will be any five-digit number with the underlined digits in the given places. The value of the digit 6 in Frank's code is greater than any possible given digit that could be used in the ten thousands place of Jackson's code. So, Frank's code is greater.**

# Unit Assessment

Two forms of the Unit Assessment, Form A and Form B, are available for either print or digital administration. The items on the two assessments are parallel items, assessing the same concept and standard. The table below provides the item analysis for both forms.

Both Unit Assessments are available in the Assessment Resource Book or as downloadable files from the Digital Teacher Center.
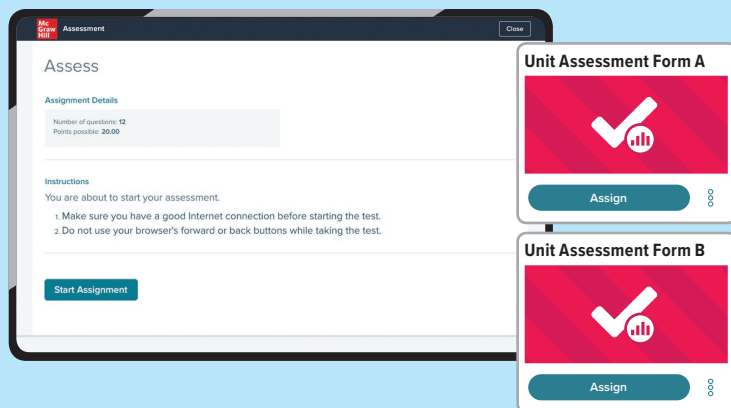
**Data** When students complete the Unit Assessment in the Digital Student Center, their responses are auto-scored.

## Item Analysis

| Item | DOK | Lesson | Guided Support Intervention Lesson | Standard |
|---|---|---|---|---|
| 1 | 2 | 1 | Digits to the Left and Right | 5.NBT.A.1 |
| 2 | 1 | 3 | Standard & Word Form (Large Numbers) | 5.NBT.A.3.a |
| 3 | 2 | 1 | Digits to the Left and Right | 5.NBT.A.1 |
| 4 | 2 | 2 | One-Tenth & 10 Times as Much | 5.NBT.A.1 |
| 5 | 2 | 4 | Compare Decimal Numbers (1,000ths) | 5.NBT.A.3.b |
| 6 | 2 | 2 | One-Tenth & 10 Times as Much | 5.NBT.A.1 |
| 7 | 2 | 3 | Expanded Form of Decimal Powers of Ten | 5.NBT.A.3.a |
| 8 | 2 | 5 | Round Decimals to Nearest Tenth $> 1$ | 5.NBT.A.4 |
| 9 | 1 | 3 | Standard & Word Form (Large Numbers) | 5.NBT.A.3.a |
| 10 | 3 | 4 | Compare Decimal Numbers (100ths) | 5.NBT.A.3.b |
| 11 | 2 | 5 | Round Decimals to Any Place | 5.NBT.A.4 |
| 12 | 1 | 3 | Standard & Word Form (Large Numbers) | 5.NBT.A.3.a |
| 13 | 3 | 5 | Round Decimals to Nearest Whole $> 1$ | 5.NBT.A.4 |
| 14 | 3 | 5 | Round Decimals to Nearest Tenth $> 1$ | 5.NBT.A.4 |

Assign the digital Unit Assessment (Form A or B) to students or download and print PDFs from the Digital Teacher Center.

**GO ONLINE**

Mc Graw Hill Assessment    Close

**Assess**

Assignment Details

Number of questions: 12
Points possible: 20.00

Instructions
You are about to start your assessment.
1. Make sure you have a good Internet connection before starting the test.
2. Do not use your browser's forward or back buttons while taking the test.

Start Assignment

**Unit Assessment Form A**

Assign

**Unit Assessment Form B**

Assign

---

Unit **3**
## Unit Assessment, Form A

Name _____

1. Which statement about the digits in the number 39,906 is true?

   **A.** The value of the digit 9 in the thousands place is 10 times the value of the digit 9 in the hundreds place

   **B.** The value of the digit 9 in the thousands place is $\frac{1}{10}$ the value of the digit 9 in the hundreds place.

   **C.** The value of the digit 9 in the thousands place is 100 times the value of the digit 9 in the hundreds place.

   **D.** The value of the digit 9 in the thousands place has the same value as the digit 9 in the hundreds place.

2. How can you write the number in standard form?

   In standard form, the number *nine hundred two and fifty-one thousandths* is written **902.051**.

3. Look at the digit 7 in the numbers given in the place-value chart.

| hundreds | tens | ones | hundreds | tens | ones |
|---|---|---|---|---|---|
| **7** | 9 | **7** | 2 | 6 | 4 |
|  | **7** | 0 | 1 | 3 | 8 |

   Which statement is true? Choose all that apply.

   **A.** 70,000 is $\frac{1}{10}$ of 700,000

   **B.** 7,000 is 10 times 700,000

   **C.** 70,000 is $\frac{1}{10}$ of 7,000

   **D.** 70,000 is $\frac{1}{10}$ of 700,000

   **E.** 70,000 is 10 times 7,000

Assessment Resource Book **41**

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4. Use the place value chart to complete the statement.

| hundreds | tens | ones | tenths | hundredths | thousandths |
|---|---|---|---|---|---|
| 4 | 6 | 5 | 5 | 5 | 1 |

   The value of the digit 5 in the tenths place is $\frac{1}{10}$ the value of the digit 5 in the _____ place.

   **A.** ones    **B.** tenths    **C.** hundredths

   **Is each comparison True or False?**

| | | True | False |
|---|---|---|---|
| **5.** | 0.12 < 0.2 | ✓ | |
| **6.** | 0.407 > 0.446 | | ✓ |
| **7.** | 0.089 < 0.09 | ✓ | |
| **8.** | 0.61 > 0.06 | ✓ | |
| **9.** | 0.555 < 0.55 | | ✓ |
| **10.** | 0.34 = 0.034 | | ✓ |

11. A centimeter is 0.01 meter. A millimeter is 0.001 meter.

    How does the length of 1 centimeter compare to the length of 1 millimeter? Explain your answer.

    **1 centimeter is 10 times the length of 1 millimeter; Sample answer: The digit 1 in 0.01 is ten times the value of the digit 1 in 0.001. So 1 centimeter is 10 times the length of 1 millimeter.**

12. What is the expanded form of 405.072?

    **A.** $40 + 5 + \frac{7}{100} + \frac{2}{1,000}$

    **B.** $40 + 5 + \frac{7}{10} + \frac{2}{100}$

    **C.** $400 + 5 + \frac{7}{10} + \frac{2}{100}$

    **D.** $400 + 5 + \frac{7}{100} + \frac{2}{1,000}$

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## Unit 3
## Unit Assessment, Form A (continued)

Name _____

Do the numbers round to 5.3 when rounded to the nearest tenth? Choose *Yes* or *No* for each number.

| | | Yes | No |
|---|---|---|---|
| 13. | 5.26 | ✓ | |
| 14. | 5.38 | | ✓ |
| 15. | 5.227 | | ✓ |
| 16. | 5.308 | ✓ | |
| 17. | 5.251 | ✓ | |

18. What is the decimal form of each fraction? Draw a line to match. Not all decimals will be used.

$\frac{333}{1000}$      0.33

$\frac{3}{100}$      0.333

$\frac{33}{100}$      0.03

$\frac{3}{1000}$      0.003

19. The table shows the time it took Kara and Soo to each run the 100-meter dash.

| Student | Time (seconds) |
|---|---|
| Kara | 14.09 |
| Soo | 14.22 |

Which student ran faster? Explain how you know.

**Kara; Sample answer: Since 14.09 has 0 tenths and 14.22 has 2 tenths, 14.09 is less than 14.22. The lesser time indicates the faster runner, so Kara ran faster than Soo.**

---

**How can you round each number?**

20. 0.291 rounded to the nearest tenth is ____**0.3**____.

21. 0.291 rounded to the nearest hundredth is ____**0.29**____.

22. Which is the correct word form for 302.07?

   **A.** thirty-two and seven hundredths

   **B.** three hundred two and seven tenths

   **C.** three hundred two and seven hundredths

   **D.** three hundred two and seven thousandths

23. Rounded to the nearest 10 dollars, Holly spent about $30.00 at the store. Which could be the exact amount of her purchases? Choose all that apply.

   **A.** $23.95

   **B.** $28.25

   **C.** $32.88

   **D.** $35.45

   **E.** $38.25

24. Henri rounded the decimal 8.446 to the nearest tenth as 8.5. He reasoned that the digit 6 in the thousandths place rounded the number to 8.45, and so the digit 5 in the hundredths place rounds the number to 8.5 to the nearest tenth. Is Henri correct? Explain.

**No; Sample answer: To round to the nearest tenth, look only at the digit in the hundredths place. Since the digit is 4, 8.446 rounds to 8.4.**

---

## Form B

## Unit 3
## Unit Assessment, Form B

Name _____

1. Which statement about the digits in 144,672 is true?

   **A.** The value of the digit 4 in the thousands place is 10 times the value of the digit 4 in the ten thousands place.

   **B.** The value of the digit 4 in the thousands place is $\frac{1}{10}$ the value of the digit 4 in the ten thousands place.

   **C.** The value of the digit 4 in the ten thousands place is 100 times the value of the digit 4 in the thousands place.

   **D.** The value of the digit 4 in the ten thousands place has the same value as the digit 4 in the thousands place.

2. How can you write the number in standard form?

In standard form, the number *six and fifty-one thousandths* is written as ____**6.051**____.

3. Look at the digit 2 in the numbers in the place-value chart.

| hundreds | tens | ones | hundreds | tens | ones |
|---|---|---|---|---|---|
| 8 | 0 | 6 | 2 | 7 | 0 |
| 1 | 2 | 9 | 2 | 4 | |

Which statement is true? Choose all that apply.

   **A.** 20 is $\frac{1}{10}$ of 200

   **B.** 2,000 is 10 times 200

   **C.** 200 is $\frac{1}{10}$ of 2,000

   **D.** 200 is $\frac{1}{10}$ of 20

   **E.** 200 is 10 times 2,000

| | | | |
|---|---|---|---|
| 8. | 0.052 > 0.06 | | ✓ |
| 9. | 0.109 < 0.121 | ✓ | |
| 10. | 0.35 > 0.4 | | ✓ |

11. A centimeter is 0.01 meter. A millimeter is 0.001 meter. How does the length of 1 millimeter compare to the length of 1 centimeter? Explain your answer.

**1 millimeter is $\frac{1}{10}$ the length of 1 centimeter; Sample answer: The digit 1 in 0.001 is $\frac{1}{10}$ the value of the digit 1 in 0.01. So 1 millimeter is $\frac{1}{10}$ the length of 1 centimeter.**

12. What is the expanded form of 103.702?

   **A.** $100 + 3 + \frac{7}{10} + \frac{2}{1,000}$

   **B.** $100 + 3 + \frac{7}{10} + \frac{2}{100}$

   **C.** $10 + 3 + \frac{7}{100} + \frac{2}{1,000}$

   **D.** $10 + 3 + \frac{7}{10} + \frac{2}{1,000}$

$\frac{5}{10}$      0.005

$\frac{55}{100}$      0.55

     0.555

$\frac{5}{100}$      0.5

     0.05

$\frac{55}{1000}$      0.055

19. The table shows the distance each of two marbles travelled when rolled down a ramp.

| Marble | Distance (meters) |
|---|---|
| Marble A | 9.36 |
| Marble B | 9.08 |

Which marble traveled farther? Explain how you know.

**Marble A; Sample answer: Since 9.36 has 3 tenths and 9.08 has 0 tenths, 9.36 is greater than 9.08. The greater number represents the greater distance, so Marble A traveled farther than Marble B.**

   **D.** $55.45

   **E.** $58.25

24. Bill rounded the decimal 12.448 to the nearest tenth as 12.5. He reasoned that the digit 8 in the thousandths place rounded the number to 12.45, and so the digit 5 in the hundredths place rounds the number to 12.5 to the nearest tenth. Is Bill correct? Explain.

**No; Sample answer: To round to the nearest tenth, look only at the digit in the hundredths place. Since the digit is 4, 12.448 rounds to 12.4.**

# Grade 5

## Unit 1: Math Is...
- Math Is Mine
- Math Is Exploring and Thinking
- Math Is In My World
- Math Is Explaining and Sharing
- Math Is Finding Patterns
- Math Is Ours

## Unit 2 Volume .
- Understand Volume
- Use Unit Cubes to Determine Volume
- Use Formulas to Determine Volume
- Volume of Rectangular Prisms
- Determine Volume of Composite Figures
- Solve Problems Involving Volume

## Unit 3: Place Value and Number Relationships.
- Generalize Place Value
- Extend Place Value to Decimals
- Read and Write Decimals
- Compare Decimals
- Use Place Value to Round Decimals

## Unit 4: Add and Subtract Decimals.
- Estimate Sums and Differences of Decimals
- Represent Addition of Decimals
- Represent Addition of Tenths and Hundredths
- Use Partial Sums to Add Decimals
- Represent Subtraction of Decimals
- Represent Subtraction of Tenths and Hundredths
- Strategies to Subtract Decimals
- Explain Strategies to Add and Subtract Decimals

## Unit 5: Multiply Multi-Digit Whole Numbers
- Understand Powers and Exponents
- Patterns When Multiplying a Whole Number by Powers of 10
- Estimate Products of Multi-Digit Factors
- Use Area Models to Multiply Multi-Digit Factors
- Use Partial Products to Multiply Multi-Digit Factors
- Relate Partial Products to an Algorithm
- Multiplication of 2-Digit Numbers
- Multiply Multi-Digit Factors Fluently

## Unit 6: Multiply Decimals
- Patterns When Multiplying Decimals by Powers of 10
- Estimate Products of Decimals
- Represent Multiplication of Decimals
- Decimal Multiplication
- Use an Area Model to Multiply Decimals
- Generalizations about Multiplying Decimals
- Explain Strategies to Multiply Decimals

## Unit 7: Divide Whole Numbers
- Division Patterns with Multi-Digit Numbers
- Estimate Quotients
- Relate Multiplication and Division of Multi-Digit Numbers
- Represent Division of 2-Digit Divisors
- Use Partial Quotients to Divide
- Divide Multi-Digit Whole Numbers
- Solve Problems Involving Division
- Solving Division Word Problems

## Unit 8: Divide Decimals

- Division Patterns with Decimals and Powers of 10
- Estimate Quotients of Decimals
- Represent Division of Decimals by a Whole Number
- Divide Decimals by Whole Numbers
- Divide Whole Numbers by Decimals
- Divide Decimals by Decimals
- Decimal Division

## Unit 9: Add and Subtract Fractions

- Estimating Sums and Differences of Fractions
- Make an Estimate of the Sum
- Represent Addition of Fractions with Unlike Denominators
- Add Fractions with Unlike Denominators
- Represent Subtraction of Fractions with Unlike Denominators
- Subtract Fractions with Unlike Denominators
- Add Mixed Numbers with Unlike Denominators
- Subtract Mixed Numbers with Unlike Denominators
- Add and Subtract Mixed Numbers with Regrouping
- Solve Problems Involving Fractions and Mixed Numbers

## Unit 10 Multiply Fractions

- Represent Multiplication of a Fraction by a Whole Number
- Multiply a Fraction by a Whole Number
- Which Is Greater?
- Represent Multiplication of a Fraction by a Fraction
- Multiply a Fraction by a Fraction
- Determine the Area of Rectangles with Fractional Side Lengths
- Represent Multiplication of Mixed Numbers
- Multiply Mixed Numbers
- Multiplication as Scaling
- Solve Problems Involving Fractions

## Unit 11: Divide Fractions

- Relate Fractions to Division
- Solve Problems Involving Division
- Represent Division of Whole Numbers by Unit Fractions
- Divide Whole Numbers by Unit Fractions
- Represent Division of Unit Fractions by Non-Zero Whole Numbers
- Divide Unit Fractions by Non-Zero Whole Numbers
- Which Expressions Represent the Situation?
- Solve Problems Involving Fractions

## Unit 12: Measurement and Data

- Convert Customary Units
- Convert Metric Units
- Solve Multi-Step Problems Involving Measurement Units
- Represent Measurement Data on a Line Plot
- Solve Problems Involving Measurement Data on Line Plots
- Line Plots

## Unit 13: Geometry

- Understand the Coordinate Plane
- Plot Ordered Pairs on the Coordinate Plane
- Represent Problems on a Coordinate Plane
- Classify Triangles by Properties
- Properties of Quadrilaterals
- Ordered Pairs
- Classify Quadrilaterals by Properties

## Unit 14: Algebraic Thinking

- Write Numerical Expressions
- Interpret Numerical Expressions
- Evaluate Numerical Expressions
- Numerical Patterns
- Relate Numerical Patterns
- Graphs of Numerical Patterns