

Reveal MATH[®]

Reveal the Full Potential
in Every Student


Grade 4



**Unit 2:
Generalize Place-Value
Structure**

Generalize Place-Value Structure

PACING: 8 days

LESSON	MATH OBJECTIVE	LANGUAGE OBJECTIVE	SOCIAL AND EMOTIONAL LEARNING OBJECTIVE
Unit Opener  Fewest Coins	Explore base-5 number system using pennies, nickels, and quarters and compare to a base-10 system.		
2-1 Understand the Structure of Multi-Digit Numbers	Students relate the value of a digit in one place-value position to that of the same digit in the place to its right; determine the value of a digit in any place in a number.	Students will identify the value of any digit in a number and explain that a digit in any place represents ten times what it represents in the place to its right using the terms <i>to the right/left</i> . In order to support sense-making, ELs will participate in MLR6: Three Reads. See page X for a full description of the routine.	Students explain their thinking for how they solved a mathematical problem, including how a correct solution was found or what caused confusion and why.
2-2 Read and Write Numbers to One Million	Students read and write numbers from 1 to 1,000,000 in standard form, word form, and expanded form.	Students will identify and write multi-digit whole numbers using base-ten numerals, number names, and expanded form using the prefix <i>multi-</i> . In order to support optimizing output, ELs will participate in MLR4: Information Gap. See page X for a full description of the routine.	Students actively listen without interruption as peers describe how they approached a complex mathematical task.
2-3 Compare Multi-Digit Numbers	Students compare multi-digit numbers using place value and record comparisons using symbols.	Students will compare two multi-digit numbers based on the values of digits in each place using the academic word <i>compare</i> . In order to support sense-making and to maximize meta-language, ELs will participate in MLR2: Collect and Display and MLR5: Co-Craft Questions or Problems. See page X for a full description of the routines.	Students identify personal traits that make them good students, peers, and math learners.
2-4 Round Multi-Digit Numbers	Students determine an estimate by rounding numbers to an appropriate place; round multi-digit numbers to any place.	Students explain to partners how rounding can be used to get estimates; justify decisions about to which place to round a given number.	Students practice behavioral flexibility while working with peers to complete a challenging mathematical task.
Math Probe Rounding Numbers	Gather data on students' understandings of rounding multi-digit numbers.		
Unit Review			
Fluency Practice			
Unit Assessment			
Performance Task			

**FOCUS QUESTION:
How can I use place value to work
with multi-digit numbers?**

LESSON	KEY VOCABULARY		MATERIALS TO GATHER	RIGOR FOCUS	STANDARD
2-1	<u>Math Terms</u> base-10 number system digit expanded form	<u>Academic Terms</u> generalize notice	<ul style="list-style-type: none"> base-ten blocks <i>Place-Value Chart to Millions Teaching Resource</i> 	Conceptual Understanding	4.NBT.A.1
2-2	expanded form period standard form word form	notice represent	<ul style="list-style-type: none"> index cards <i>Place-Value Chart with Periods Teaching Resource</i> 	Conceptual Understanding	4.NBT.A.2
2-3	digit value	conjecture represent	<ul style="list-style-type: none"> <i>Number Cards 0–10 Teaching Resource</i> number cubes <i>Place-Value Chart to Millions Teaching Resource</i> 	Conceptual Understanding Procedural Skill and Fluency	4.NBT.A.2
2-4	halfway point round	estimate explain justify	<ul style="list-style-type: none"> <i>Activity Cards Teaching Resource</i> <i>Blank Number Lines Teaching Resource</i> <i>Place-Value Charts to Millions Teaching Resource</i> 	Conceptual Understanding	4.NBT.A.3

Unit Overview

Focus

Place Value Understanding of Multi-Digit Whole Numbers

In this unit, students extend their understanding of the base-ten place-value structure to multi-digit numbers within one million. They analyze the relationship between the value of digits in consecutive positions in 3-digit numbers and then look to generalize that relationship to 4- and 5-digit numbers. They notice that just as 100 is 10 times 10, and 1,000 is 10 times 100, a digit in any place in a number has 10 times the value of the same digit in the place to the right.

Students explore the three-position periods that define our base-ten number system and explain the names of different positions within one million and the values of digits in them.

Students extend their understanding of place value and number sense concepts learned in previous grades. These include:

- **Represent numbers in different forms:** Students read and write up to 6-digit numbers in standard, expanded, and word forms.
- **Compare multi-digit numbers:** Students compare up to two 6-digit numbers.
- **Round multi-digit numbers:** Students round multi-digit numbers to an appropriate place based on the purpose of the estimated value.

Coherence

What Students Have Learned

- **Place Value Structure** Students learned the place value of 3-digit numbers. They represented 3-digit numbers in different forms. (Grade 2)
- **Comparing Numbers** Students have had experiences comparing quantities and numbers that represent quantities since Kindergarten. Students compared two 3-digit numbers. (Grade 3)
- **Rounding Numbers** Students rounded whole numbers to the nearest ten and hundred. (Grade 3)

What Students Are Learning

- **Place Value Structure** Students generalize the base-ten place-value structure, and explain that a digit in one place represents ten times the value of the digit in the place to its right.
- **Represent Greater Numbers** Students represent multi-digit whole numbers using forms such as standard, expanded, and word forms.
- **Apply Place-Value Understanding** Students compare two multi-digit numbers using place value and round multi-digit numbers to an appropriate place for the given estimation need.

What Students Will Learn

- **Extend Place Value Structure to Decimals** Students expand their understanding of place value as they explore relationships between digits in decimal fractions. (Grade 5)
- **Represent Rational Numbers** Students represent decimals to thousandths in different forms. (Grade 5)
- **Apply Place-Value Understanding** Students apply their understanding of place value as they compare two decimals written in decimal notation, and round decimals to an appropriate place for the given estimation need. (Grade 5)

Rigor

Conceptual Understanding

Students develop understanding of

- the base-ten place-value structure;
- the place value positions and periods within one million;
- the importance of place value when comparing and rounding multi-digit numbers.

Procedural Skill and Fluency

Students build proficiency with

- representing multi-digit numbers within one million using different forms;
- comparing two multi-digit numbers;
- rounding multi-digit numbers.

Application

Students apply their knowledge of

- rounding multi-digit numbers to determine an appropriate estimate for a given situation;
- comparing multi-digit numbers to solve problems.

ETP Effective Teaching Practices

Facilitate Meaningful Mathematical Discourse

At the core of learning is discourse, that is, talking and interacting with others and with concepts. These interactions, which include all aspects of communication – listening, speaking, reading, and writing -- help learners clarify their understanding of concepts and internalize new ideas. Encouraging students to talk about math helps them build fluency with mathematical language and reasoning and connect new concepts to previously learned ones.

Getting sometimes reluctant learners to engage in math discourse, and especially meaningful discourse, is not always easy for a host of reasons ranging from fear of being wrong, to inattention, to lack of understanding. However, it is worth the effort!

Engaging students in meaningful conversation requires not just careful planning, but careful consideration of your students' personalities and their confidence with math.

Think about where you want students to be at the end of the discussion and plan questions that will get the students there without you being at the center of the discussion. Smith and Stein's (2011) **Five Practices in Orchestrating Productive Class Discussions** are a helpful framework:

- **anticipate** students' responses or misconceptions,
- **monitor** students' work and conversations prior to the whole-class discussion;
- **select** students or groups to present during the whole-class discussion based on their small group work,
- **sequence** the selected approaches to guide the discussion, and
- **connect** the different student approaches presented.

MPP Math Practices and Processes

Construct Viable Arguments and Critique the Reasoning of Others

Mathematics is not about getting the right answers to equations; rather, the more important part of mathematics is the discourse -- engaging in sense-making and reasoning, explaining one's strategies and reasoning, exploring different representations and solution pathways.

As students share their explanations and justifications, remind them that when we critique the reasoning of others, we pay close attention to the "how" and "why" of classmates' ideas and strategies and provide feedback on the hows and whys. Set the expectation that students' feedback be targeted and specific. Initially, you may want to model the kind of feedback you expect students to give to their classmates.

For example, in response to a student's explanation of the value of a digit in a specific place-value position, you might say, "I think I understand your thinking, but can you explain it in a different way so I can be sure." or "I understand your reasoning, but I disagree with it. I think the value of the digit is ..."

To help students build proficiency with explaining their thinking, justifying their reasoning, and responding to the reasoning of their classmates, students need opportunities to engage in rich mathematical discussions and be encouraged to share their thinking. Some suggestions for building proficiency includes:

- in pairs, students each justify their reasoning related to rounding multi-digit numbers for a given situation;
- students discuss the similarities and differences between two ways that can be used to compare multi-digit numbers;
- students share their descriptions of the structure of the base-ten place-value system and classmates respond to the descriptions with clarifying questions.

SEL Social and Emotional Learning

- **Self Awareness – Self Confidence** (Lesson 2-3): Self-confident students are more willing to take risks, allowing them to learn from mistakes.
- **Self Regulation – Metacognition** (Lesson 2-1): Students who think about their own thinking can develop deeper understand of themselves as math learners, which leads to more meaningful learning experiences.
- **Social Awareness – Flexible Behavior** (Lesson 2-4): Behavioral flexibility can help students collaborate well with peers.
- **Relationship Skills – Effective Communication** (Lesson 2-2): Students who can communicate effectively are more likely to build strong relationships and contribute to a positive classroom culture.

Unit Overview

LOM Language of Math

Vocabulary

Students will be using these key terms in this unit:

- **Base-10 number system** (Lesson 2-1): Remind students that the number system we use is based on 10, so it is called a base-10 number system. Have them think about what a base-5 or base-2 number system might look like. Some students may be interested to know that many computer languages use a base-2 system.
- **Digit** (Lessons 2-1): Review the difference between “digit” and “number.” Whole numbers 0-9 are single-digit numbers, but the digits 0-9 are the building blocks of other numbers.
- **Estimate** (Lesson 2-4): Students were introduced to estimating in Grade 3. Have students discuss the value of estimates as a way of determining the magnitude of a solution or checking the reasonableness of a calculated solution.
- **Halfway point** (Lesson 2-4): Students were introduced to the concept of halfway point in Grade 3. Check that students can explain the meaning by recognizing what “halfway” means.
- **Period*** (Lesson 2-2): This is a new term. A period represents a grouping of three places of a number. Students will know the ones and thousands period. Students are so familiar with hundreds, tens, and ones that it might be difficult for them to understand why the ones period includes hundreds and tens. Explain that each period is named for its first place (e.g., the thousands period isn’t called the ten thousands period).
- **Round** (Lesson 2-4): Students were introduced to this term in Grade 3. Use “round” in contexts with “estimate” to help students understand the difference between rounding a number and estimating a solution.

MLD Math Language Development

A Focus on Word Relationships

Many mathematical terms are also used in non-mathematical contexts. For some words, their math meaning is close to their everyday meaning, as is the case with decompose. For other words, such as period, their math meaning is different from the everyday meaning for most fourth graders. In either case, connecting the math meaning of the word to its everyday meaning can often help students internalize the math meaning more readily.

Help students draw these connections by asking questions and providing information and examples as needed.

Period: While many students may know this word primarily in terms of punctuation, some may know it in a school context (periods of the day) or in everyday usage (periods of time). Guide students to recognize that these are separations into spans of time. Ask student to relate the meaning of period in these everyday contexts to the mathematical meaning of period (separations into spans of value).

Decompose: Students may know “compose” in reading/language arts or musical terms. Ask what it means to compose an essay or a piece of music. (Put together words and sentences or individual notes to make a whole.) Explain that if something can be put together (composed) it can also be taken apart, and that the prefix “de-” indicates this opposite meaning. If students bring up decomposing in a biological context, ask them to think about what happens with a living organism decomposes (it breaks apart).

EL English Language Learner

Making Inputs Comprehensible

In this unit, students are provided with a number of scaffolds to support their comprehension of the language used to present and explain generalizing place-value structure. Because many of the challenging words and phrases used in this section compare place and position of multi-digit numbers, students are supported in understanding and using these words as well as the prefix *multi-*.

Lesson 1 – *to the left/right*

Lesson 2 – Prefix *multi-*

Lesson 3 – *compare*

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.

Would You Rather?

Purpose: Build flexibility with number sense and mental-math operations; enhance decision-making.

Overview: Students choose between two options, both of which require mental computation. Students explain their choice and their rationale for their choice.

Sense-Making Routines

Which Doesn't Belong (Lesson 2-1) Students analyze four different multi-digit numbers to decide which doesn't belong. Sample student responses:

- 11,808 doesn't belong because the number doesn't have an 8 in the tens place.
- 180 doesn't belong because the number has fewer than 4 digits.
- 2,382 doesn't belong because its leading digit is not 1.

Notice & Wonder™: What do you notice? What do you wonder? (Lessons 2-2, 2-4) In Lesson 2-2, students notice and wonder about a large crowd of people. Students may wonder how many people are in the crowd and how could one determine the number of people in the crowd. The prompt for Lesson 2-4 has students noticing and wondering about two different estimates for the same number.

Notice & Wonder™: What question could you ask? (Lesson 2-3) Students consider questions related to the three step counts. Students may ask who walked the most steps assuming the images represent the steps of three different people or on which day did the person walk the most, assuming the images represent the steps a single person walked over three days. They may also ask whether the steps represent one day's activity or multi-days' activity.

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 a full description of the Mathematical Language Routines, please refer to pages xx-xx in this Teacher's Edition.

- **Lesson 1** In order to support sense-making, students participate in MLR6: Three Reads so that they know what they are being asked to do, have the opportunity to reflect on the ways mathematical questions are presented, and are equipped with tools used to negotiate meaning.
- **Lesson 2** In order to optimize output, students participate in MLR4: Information Gap so that meaningful interaction is facilitated while they create a place-value chart from standard and word form numbers in the millions.
- **Lesson 3** In order to support sense making and maximize linguistic and cognitive meta-awareness, students participate in MLR2: Collect and Display and MLR5: Co-Craft Questions or Problems so that students' relevant oral words and phrases can be captured into a stable, collective reference and so that students' linguistic and cognitive meta-awareness can be fostered as they produce the mathematical language related to comparing different strategies for comparing numbers.

Unit 2

How Ready Am I?

Name _____

- What is four hundred fifty-one written in standard form?
 A. 415 **B. 451**
 C. 514 D. 541
- What is $3,000 + 200 + 10 + 8$ written in standard form?
 A. 3,200 B. 3,210
C. 3,218 D. 3,281
- Which digit is in the tens place in 2,459?
 A. 2 B. 4
C. 5 D. 9
- What is the value of the digit 2 in 4,299?
 A. 2,000 **B. 200**
 C. 20 D. 2
- Kari has 412 coins, and Steve has 421 coins. Who has the greatest number of coins?
 A. Kari because her digit in the ones place is greater than Steve's digit in the ones place.
B. Steve because his digit in the tens place is greater than Kari's digit in the tens place.
 C. They both have the same number of coins.
 D. Kari because she has more than 400 coins.

Assessment Resource Book 13

- Which number is closest to 300?

A. 258 B. 285
C. 308 D. 311

- What is the missing number?

$$5 \times ? = 350$$

A. 6 B. 7
 C. 60 **D. 70**

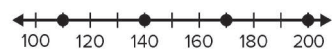
- What is 249 rounded to the nearest 100?

A. 300 B. 250
 C. 240 **D. 200**

- What is 3×60 ?

A. 18
 B. 90
C. 180
 D. 240

- Look at the points on the number line.



Which point is closest to the halfway point of 100 and 200?

A. 110
B. 140
 C. 170
 D. 200

14 Assessment Resource Book

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

Targeted Intervention

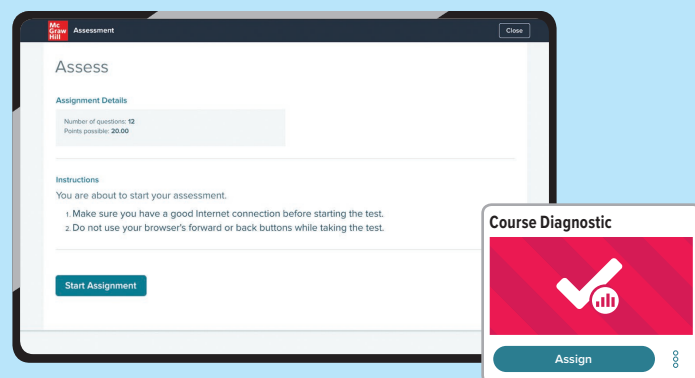
Use Guided Support Intervention lessons available in the Digital Teacher Center to provide targeted intervention.

Item Analysis

Item	DOK	Skill	Guided Support Intervention Lesson	Standard
1	2	Represent numbers in different forms	Identify Numbers to 999	2.NBT.A.3
2	2	Represent numbers in different forms	Expanded Form (101-999)	2.NBT.A.3
3	1	Identify place value positions in a multi-digit number	Standard Form through 9,999	3.NBT.A.1
4	1	Determine the value of a digit in a multi-digit number	Expanded Form through 9,999	3.NBT.A.1
5	3	Compare 3-digit numbers	Compare Whole Numbers < 1,000	2.NBT.A.4
6	2	Round 3-digit numbers	Round 3-Digit Numbers (Nearest 100)	3.NBT.A.1
7	1	Multiply multiples 10	Multiply by Multiples of 10	3.NBT.A.3
8	2	Round 3-digit numbers	Round 3-Digit Numbers (Nearest 100)	3.NBT.A.1
9	1	Multiply multiples of 10	Multiply by Multiples of 10	3.NBT.A.3
10	2	Round 3-digit numbers	Round 3-Digit Numbers (Nearest 100)	3.NBT.A.1



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



Focus Question

Introduce the Focus Question, *How can I use place value to work with multi-digit numbers?*

Ask students to think about what they know about place value.

- What do we already know about place value?
- How can we describe the relationship among the digits in a 3-digit number?

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.

STEM in Action

Videos

Students can watch the two STEM videos.

STEM Career: Park Ranger Poppy talks about the work of park rangers.

Poppy Records the Number of Visitors Poppy explains the place value of a 4-digit number.

STEM Project Card

Students can complete the STEM project, **A New National Park**, during their workstation time.

Websketch Exploration

Students can complete the Websketch exploration, **Place Value Counter 1000**, during their workstation time.

Generalize Place-Value Structure

Focus Question

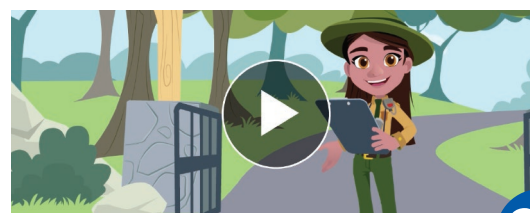
How can I use place value to work with multi-digit numbers?

Hi, I'm Poppy.

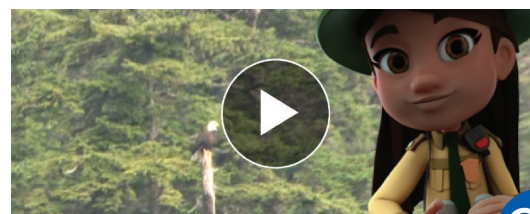
I want to be a park ranger. Park rangers keep track of animals in the parks, and also the number of visitors. Some parks have hundreds of thousands or even millions of visitors each year.



STEM Career: Park Ranger



Poppy Records the Number of Visitors





Name _____

Fewest Coins

Table 1

Use the fewest pennies, nickels, and quarters to make each amount.

Cents	Quarters	Nickels	Pennies
1			1
2			2
3			3
4			4
5		1	0
6		1	1
7		1	2
8		1	3
9		1	4
10		2	0
11		2	1
12		2	2
13		2	3
14		2	4
15		3	0
16		3	1
17		3	2
18		3	3
19		3	4
20		4	0
21		4	1
22		4	2
23		4	3
24		4	4
25	1	0	0
26	1	0	1

Table 2

Use the fewest pennies, dimes, and dollars to make each amount.

Cents	Dollars	Dimes	Pennies
1			1
2			2
3			3
4			4
5			5
6			6
7			7
8			8
9			9
10		1	0
11		1	1
12		1	2
13		1	3
14		1	4
15		1	5
16		1	6
17		1	7
18		1	8
19		1	9
20		2	0
97		9	7
98		9	8
99		9	9
100	1	0	0
101	1	0	1

Ignite!

Fewest Coins

Students think about base-5 using pennies, nickels, and quarters. Students often understand base-10 place value better when they can compare or contrast it with another base, such as base-5.






- Have students think of a world that has only three types of coins: pennies (P), nickels (N), and quarters (Q).
 - How many pennies are needed to make one nickel? How many nickels are needed to make one quarter?
 - How can you make 88 cents using the fewest of those three types of coins? Explain.
- Have students work with a partner to complete Table 1.
 - What do you notice about the number of coins you entered in the table? Can you notice any patterns?
 - Ask students: You add one nickel and one penny to one nickel and one penny, what is the value of the coins? How does that compare to what is in the table for 12 cents?
- Now have students add one nickel and three pennies to one nickel and three pennies.
 - What coins do you have? What's the value of the coins? How does that compare to what is in the table for 16 cents?
 - Why aren't the number of each type of coin used to make 16 cents the same?
 - What could you do to make the numbers of coins be the same?

Point out that the above is similar to the regrouping we do in base-10 when there are 10 or more in a given place-value position. However, when working with just quarters, nickels, and pennies, we regroup when we get to a group of 5. This is called working in the base-5 system.
- Now have students think of a world where the only types of coins are penny, dime, and dollar.
 - What could you do to make the numbers of coins be the same?
- Have students work with a partner to complete Table 2.
 - What do you notice about the numbers in the table? What patterns do you notice?
- Have students compare and contrast working in base-10 with working in base 5.
 - What do you notice about the numbers in the table? What patterns do you notice?

Unit Resources At-A-Glance

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 the structure of the base-ten number system. <ul style="list-style-type: none"> • Place Value Race • Place Value Four in a Row • Place Value Showdown • Rounding Numbers Race 	2-1 2-2 2-3 2-4
	Digital Game 	Asteroid Blast Students practice adding multiples of 10.	2-1
	Have students complete at least one of the Use It! activities for this unit.		
	STEM Project Card 	Mountain Science Students graph data about current and historical glacial runoff. They then analyze the data and create a poster describing their conclusions.	2-4
Application Station	Connection Card 	State Capital Populations Students order the populations of each state capital. They determine whether any populations are 10 times as greater as other populations.	2-4
	Real World Card 	How Do They Compare? Students research a purchase by comparing prices and other fees.	2-3

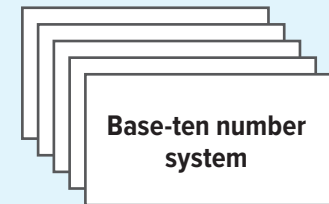
Additional Resources

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



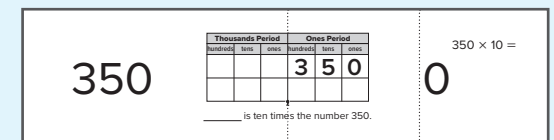
Vocabulary

In this unit, students are re-introduced to key vocabulary terms that they have already learned in earlier grades. Encourage students to write their own definitions of the key terms on the front side of the card.



Foldables

Use the unit foldables with Lesson 2-1 and 2-3.



Spiral Review

Students can complete the Spiral Review as either a paper-and-pencil or digital assignment.

Spiral Review Content Focus

Lesson	Standard
4-1	4.OA.B.4
4-2	4.OA.B.4
4-3	4.OA.B.4
4-4	4.OA.B.4

Understand the Structure of Multi-Digit Numbers

Learning Targets

- I can use place value to determine the value of a digit.
- I can identify relationships between the values of digits.

Standards ◆ Major ▲ Supporting ○ Additional

Content

◆ **4.NBT.A.1** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.*

◆ **4.NBT.A.2** Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

Math Practices and Processes

MPP Construct viable arguments and critique the reasoning of others.

MPP Look for and make use of structure.

Vocabulary

Math Terms

base-10 number system
digit
expanded form

Academic Terms

generalize
notice

Materials

The materials may be for any part of the lesson.

- base-ten blocks
- *Place-Value Chart to Millions* Teaching Resource

Focus

Content Objectives

- Students relate the value of a digit in one place-value position to that of the same digit in the place to its right.
- Students determine the value of a digit in any place in a number up to one million.

Language Objective

- Students will identify the value of any digit in a number and explain that a digit in any place represents ten times what it represents in the place to its right using the terms *to the right/left*.
- In order to support sense-making, ELs will participate in MLR6: Three Reads. See page X for a full description of the routine.

SEL Objective

- Students explain their thinking for how they solved a mathematical problem, including how a correct solution was found or what caused confusion and why.

Coherence

Previous

- Students recognized that the digits of a 3-digit number represent the amounts of ones, tens, and hundreds (Grade 2).

Now

- Students find the value of any digit in a number.
- Students explain that a digit in any place represents ten times what it represents in the place to its right.

Next

- Students read, write, and compare multi-digit whole numbers (Unit 2).
- Students will apply their understanding of place value to read and write decimals (Grade 5).



Number Routine

Would You Rather?

🕒 5–7 min

Build Fluency Students build skills with computation as they compare products.

These prompts encourage students to talk about their reasoning:

- What strategies did you use to find the products?
- How can you compare the amounts without multiplying both sets of factors?

Purpose Students discuss possible reasons why a number may or may not belong based on the number of digits and their place values.

Which Doesn't Belong

- Which doesn't belong?

Teaching Tip Consider a Think-Pair-Share option for this activity to maximize student engagement. Students complete the activity in pairs, then share their reasoning for which number doesn't belong based on the number of digits or the place values of the digits during discussion with their classmates.

Pose Purposeful Questions

The questions that follow may be asked in any order. They are meant to help advance students' thinking about place value and are based on possible comments and questions students may make during the share out.

- How did you determine that the number ____ doesn't belong?
- What is another reason why the number ____ doesn't belong?
- What do you notice about the numbers with more than 3 digits?
- What can you say about the value of the digit 8 in each number?

Math is... Mindset

- How can you explain your thinking?

Self-Regulation: Metacognition

After students work through the Which Doesn't Belong routine, have them share their reasoning with a partner. Encourage students to think about how they made sense of the numbers or what caused confusion as they thought about the similarities and differences between the numbers.

As students move on to work with the values of digits in a number and the relationships between the values, encourage them to reflect on their work by asking themselves what was challenging and why.

Transition to Explore & Develop


Ask questions that get students thinking about the value of digits in different positions in a number. Guide the discussion to have students think about whether some of the digits in the numbers have the same value.

Establish Goals to Focus Learning

- Let's explore how we can determine the value of each digit in a number and the relationship between the values.

Lesson 2-1
Understand the Structure of Multi-Digit Numbers

4.NBT.A.1, 4.NBT.A.2

 **Be Curious**

Which doesn't belong?

180


1,389

11,808

2,382

Math is... Mindset
How can you explain your thinking?

Unit 2 • Generalize Place-Value Structure 33

 **Be Curious**



Which doesn't belong?

180

1,389

11,808

2,382

Learn

Akira says that the digits in the number shown are all the same, so they all have the same value.

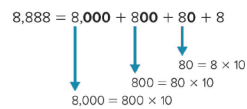
8,888

Do you agree with Akira's thinking?
Explain your reasoning.

Math is... Explaining

What do you need to construct a good argument?

Write the number in expanded form. Then look at the value of each part of the expanded form.

$$8,888 = 8,000 + 800 + 80 + 8$$


$8,000 = 800 \times 10$
 $80 = 8 \times 10$

The value of each 8 is different. Each 8 is ten times the value of the 8 to the right.



$8,888$

Akira's thinking is not correct.

The value of a digit is determined by its place-value position.

A digit in one place represents ten times what it represents in the place to its right.

Work Together

How can you describe the relationship between the values of the digits 3 in this number? Explain.

3,830

Sample answer: The value of the digit in the thousands place is one hundred times the value of the digit in the tens place.

1 Pose the Problem

ETP Pose Purposeful Questions

- What do you know about the values of digits in a number?
- How can writing numbers in different forms help you make sense of the number?

Math is... Explaining

- What do you need to construct a good argument?

Students think about ways to support an argument.

2 Develop the Math

Choose the option that best meets your instructional goals.

MLR Three Reads

1st Read: Ensure students understand that Akira believes each 8 has the same value.

2nd Read: Focus students' attention on the actual value of each 8.

3rd Read: Brainstorm ways to determine if Akira's thinking is correct.

3 Bring It Together

ETP Elicit and Use Evidence of Student Thinking

- How can you determine the value of digits in a multi-digit number?
- Do you think the relationship you noticed between the values of digits will hold true for 6-digit or 7-digit numbers? Explain why or why not.

Key Takeaways

- The value of a digit is determined by its place-value position.
- A digit in one place represents ten times what it represents in the place to its right.

Work Together

Students relate the value of a digit in the tens place to the value of the same digit in the thousands place. If students give only the value of each digit, ask them to describe the relationship between the values.

Common Misconception Students may think that there is no relationship between the value of the digits 3 in the number since the digits are not in adjacent place-value positions. Remind students how the value of each place-value position is 10 times the value of the place to its right. This means a digit will be 100 times the value of the same digit two places to its right.

LOM Language of Math

This lesson may represent students' first opportunities to compare numbers using a multiplicative relationship. Model the correct use of such phrases as "ten times as much as," "ten times," and "ten times the value of." Encourage students to use complete statements as they compare the values of the digits.

Activity-Based Exploration

Students explore the relationship among the values of a digit in different positions in a multi-digit number.

Materials: base-ten blocks, *Place-Value Chart to Millions* Teaching Resource

Directions: Students work in pairs or small groups to construct arguments to support their responses to Pose the Problem question: *Do you agree with Akira's thinking? Explain your reasoning.* Remind students that a strong argument has different examples to support it. Suggest that they may want to use base-ten blocks, place-value charts, or equations in their arguments. Encourage students to use at least two examples to support their arguments.

ETP Support Productive Struggle

- How does your representation support your argument?
- 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 among the values of a digit in different positions in a number?

Activity Debrief: Have groups share their arguments and the examples they used. Use the following questions to facilitate a discussion on patterns students noticed in the values of a digit in different place-value positions.

- What relationship did you notice between the values of the digits in your examples?
- How does this relationship support your argument that Akira is incorrect?
- What generalization can you make about the value of a digit in different place-value positions?



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

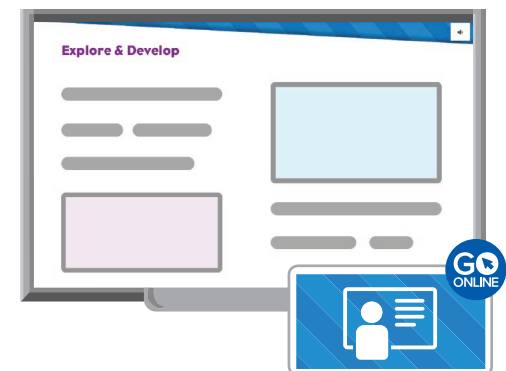
Lesson 2-4 Activity Cards	
Kate estimates how much money she needs to save to buy a car.	Ross estimates the number of tickets he has for prizes at the arcade.
A manager estimates the amount of flooring a new store needs.	An interior designer estimates the amount of fabric for a project.
An engineer estimates the weight limit of an elevator.	Juni estimates the disk space she will use before buying a computer.
Juni estimates the disk space she will use before buying a computer.	An engineer estimates the weight limit of an elevator.
A manager estimates the amount of flooring a new store needs.	An interior designer estimates the amount of fabric for a project.
Ross estimates how much money he needs to save to buy a car.	Kate estimates the number of tickets he has for prizes at the arcade.

Guided Exploration

Students draw on their prior knowledge of place value to think about the relationship between adjacent place-value positions. They connect to previously learnt place-value concepts such as, the value of a digit depends on its place-value position.

ETP Facilitate Meaningful Discourse

- How does writing a number in expanded form help you determine the value of its digits?
-  Have students discuss what they notice about the number in expanded form. Encourage students to think about how the values are the same and how they are different. Prompt them to think about why these similarities and differences exist.
- When you compare the value of each 8 digit with the 8 digit to its right, what do you notice?
 - What can you say about digits that go beyond the thousands place?
 - What pattern do you notice in the values of the digit 8 in this number?
-  Have students write a multiplication equation to represent the comparison of the values of each digit to the value of the digit to its right.
- What division equation can you write to show the relationship between the values of the digits 8 in the hundreds and tens place-value positions?
 - How does the equation show the relationship between the values?
 - What is similar about the equations? Why do you think this similarity exists?



EL English Learner Scaffolds

Entering/Emerging Support students in understanding the meaning of the terms *to the right/left*. Face the front of the class and have students stand up. Raise your right hand and say, *Right*. Raise your left hand and say, *Left*. Then have students follow along raising their right and left hands in turn. Point to the right and step one foot to the right. Say, *To the right*. Do the same demonstrating *to the left*. Have students follow. Test comprehension by moving either to the right or left and asking *to the left? Or to the right?* each time.

Developing/Expanding Support students in understanding the meaning of the terms *to the right/left*. Face the front of the class and have students follow your actions. Point to the right, take a step, and say, *To the right*. Point to the left, take a step, and say, *To the left*. Gesture to the right and ask, *Is this to the right or to the left? (to the right)* Give students commands and have them demonstrate and practice *to the right* and *to the left*. Then have students give the commands.

Bridging/Reaching Ask students to explain the mathematical relationship between digits in any place using the terms *to the right* and *to the left*. Allow students to interject to confirm or to point out any mistakes that they may catch in meaning or understanding. For example, *Yes, that's correct/I agree* or *No, that's not correct because...*



On My Own

Name _____

What is the value of the digits in the number?

- | | |
|-----------------|------------------|
| 1. 1,489 | 2. 98,124 |
| 1: <u>1,000</u> | 1: <u>100</u> |
| 4: <u>400</u> | 2: <u>20</u> |
| 8: <u>80</u> | 4: <u>4</u> |
| 9: <u>9</u> | 8: <u>8,000</u> |
| | 9: <u>90,000</u> |

How can you describe the relationship between the values of the underlined digits?

- | | |
|--|--|
| 3. 258 and 2,180
2,000 is 10 times as much as 200. | 4. 16,852 and 14,674
6,000 is 10 times as much as 600. |
| 5. 12,184 and 541,247
10,000 is 10 times as much as 1,000. | 6. 453 and 1,333
30 is 10 times as much as 3. |

What is the greatest number and the least number you can create using the given digits? Use each digit only once. Do not use 0 as the first digit.

- | | |
|--|---|
| 7. 3, 5, 8, and 9
9,853; 3,589 | 8. 7, 1, 0, 6, 4
76,410; 10,467 |
|--|---|

9. Is the value of the digit in the hundreds place ten times the value of the digit in the tens place in the number 3,735? Explain.

No; Sample answer: The value of the hundreds place is ten times the value of the tens place, but the digits in each place are not the same.

Unit 2 • Generalize Place-Value Structure 35

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10. Karma created a number using the digits 4, 2, and 7. Use the following clues to determine Karma's number.

The number is between 7,000 and 8,000.

The digit 4 has a value of 40.

The value of the digit in the thousands place is 10 times the value of the digit to its right.

7,742

11. **Extend Your Thinking** Sienna wants to rearrange the digits in the number 1,258,072 so that the value of one of the digits is 10 times the value of another digit in her number. What number could she write? Justify your answer.

Sample answer: 1,228,075; The value of the digit 2 in the hundred thousands place is 10 times the value of the digit 2 in the ten thousands place.

12. **Error Analysis** Rahul says the relationship between the 3s in the number 45,339 is different than the relationship between the 6s in the number 66,084. How would you respond to Rahul?

Sample answer: The relationship is the same because the value of a digit in one place-value position is 10 times the value of the same digit in the position to its right.

Reflect

How can place-value help you determine the value of a digit?

Answers may vary.

Math is... Mindset

How has explaining your thinking helped you learn?

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Practice

ETP Build Fluency from Understanding

Common Error: Exercise 2 Students may write the incorrect values for each digit because digits are written in ascending order, and not by place value. Students should first locate the place-value position of the indicated digits and then write its value.

Item Analysis

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

Reflect

Students complete the Reflect question.

- How can place value help you determine the value of a digit?

Ask students to share their reflections with their classmates.

Math is... Mindset

- How has explaining your thinking helped you learn?

Students reflect on how they practiced self-regulation.

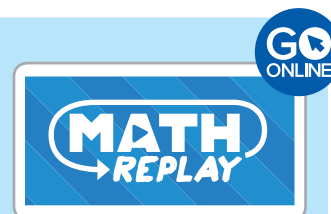
Learning Targets

Ask students to Reflect on the Learning Targets of the lesson.

- I can use place value to determine the value of a digit.
- I can identify relationships among the values of digits.

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	Use a tool to find place value of a digit	4.NBT.A.1
2	2	Determine the value of a digit	4.NBT.A.1
3	2	Determine the value of a digit to the right	4.NBT.A.1

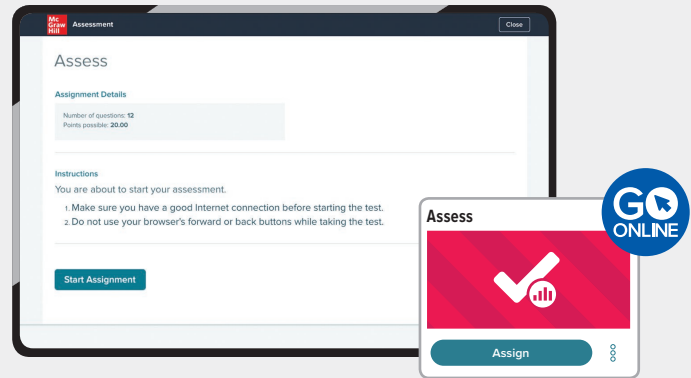
 **Data** Use students' scores on the *Exit Ticket* to assign the differentiated resources available.

Exit Ticket Recommendations

If students score	Then have students do
3 of 3	Additional Practice or any of the B or E activities
2 of 3	<i>Take Another Look</i> or any of the B activities
1 or fewer of 3	Small Group Intervention or any of the R activities

Key for Differentiation

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



Lesson 2-1 Exit Ticket

Name _____

1. Can you find the value of the digits in 2,178,095? Use the place-value chart to help.

Millions Period			Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones

The digit 0 has a value of 0.

The digit 2 has a value of 2,000,000.

The digit 8 has a value of 8,000.

2. A scientist studies a blue whale that weighs 378,810 pounds.

a. What is the value of the digit 8 in the thousands place?
The digit 8 has a value of _____.

A. 800 **B. 8,000**
C. 80,000 D. 800,000

b. What is the relationship between the digit 8 in the thousands place and the digit 8 in the hundreds place?
The digit 8 in the thousands place is ten times greater than the digit 8 in the hundreds place.

3. The population of Town A is 74,000. The population of the Town B is 740,000. How much larger is Town B than Town A?
Town B is 10 times larger than Town A.

Reflect On Your Learning

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

○ ————— ○ ————— ○ ————— ○

Assessment Resource Book 15

R Reinforce Understanding

SMALL GROUP

Connect the Dots

Work with students in groups of 3. Provide place value charts. Have students write the numbers 1,234; 2,314; 2,341; 3,241; and 3,124 beside dots arranged in a circle. Have students pick two dots to connect by comparing the value of the same digit in the two numbers by filling in the sentence “The ___ in ___ has a value that is 10 times the value of the ___ in ___.” If the statement is true, students connect the dots. Make sure students understand that in order for the statement to be true, the digit in the first number must be exactly one place to the left of the same digit in the second number.

B Build Proficiency

WORKSTATIONS

Practice It! Game Station

Place Value Race

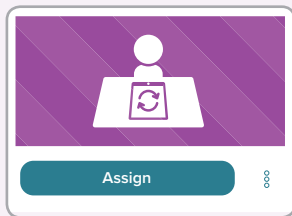
Students practice working with place value.



Take Another Look Lesson

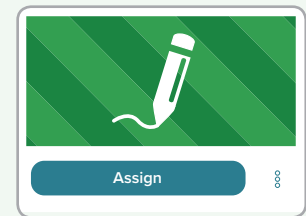
Assign the interactive lesson to reinforce targeted skills.

- Ten Times as Great



Interactive Additional Practice

Assign the digital version of the Student Practice Book.



GO ONLINE

GO ONLINE

Differentiation Resource Book, p. 1

Lesson 2-1 • Reinforce Understanding

Understand the Structure of Multi-Digit Numbers

Name _____

Review

What is the value of each digit in 4,321?

4,321

4 = 4,000

3 = 300

2 = 20

1 = 1

Tip: Remember that each digit in a number is 10 times the place value of the digit at the right.

Write the value of the digits in each number as shown in the example above.

- 8,935 **8 = 8,000; 9 = 900; 3 = 30; 5 = 5**
- 632 **6 = 600; 3 = 30; 2 = 2**
- 1,761 **1 = 1000; 7 = 700; 6 = 60; 1 = 1**
- 472 **4 = 400; 7 = 70; 2 = 2**

Look at the underlined digits in each number below. Write the place value of each. Then, tell how much greater the digit on the left is than the digit on the right.

- 4,466; **4,000; 400; 10 times greater**
- 677; **70; 7; 10 times greater.**
- 8,661; **600; 60; 10 times greater**
- 2,290; **2,000; 200; 10 times greater**

Differentiation Resource Book

Student Practice Book, pp. 1–2

Lesson 2-1

Additional Practice

Name _____

Review

You can use a place-value chart to identify the relationship between two numbers. The value of a digit in one place is 10 times the value of the same digit in the place to its right.

Identify the relationship between the digit 6 in the numbers 68 and 680.

hundred thousands	ten thousands	thousands	hundreds	tens	ones
				6	8
			6	8	0

680 is ten times the value of 68.

- How do the values of the 8s compare in this number?

Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones
8	8	5	2	1	7

The value of the digit 8 in the hundred thousands place is 800,000. The value of the digit 8 in the ten thousands place is 80,000. 800,000 is ten times greater than 80,000.

Student Practice Book

INDEPENDENT WORK

INDEPENDENT WORK

E

Extend Thinking

Own It! Digital Station

Build Fluency Games

Assign the digital game to develop fluency with adding multiples of 10.



Use It! Application Station

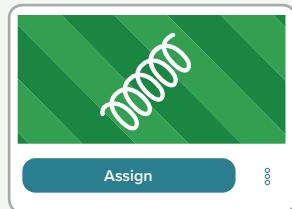
During the unit, have students complete the Connection Card, Real World Card, and STEM Project Card. You can find more information in the Workstations chart on page 32A.



WORKSTATIONS

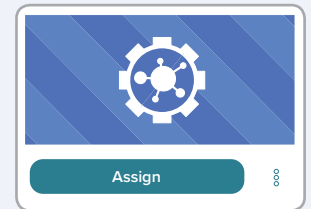
Spiral Review

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



Websketch Exploration

Assign a websketch exploration to apply skills and extend thinking.



GO ONLINE

Student Practice Book, pp. 1–2

2. Margie finds the sum 640,357. Cindy finds the sum 4,793,812. How can you compare the digit 3 in these numbers?

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	6	4	0	3	5	7
4	7	9	3	8	1	2

The digit 3 in Cindy's number is ten times the value of the digit 3 in Margie's number.

3. Write the value of each digit in the number 94,053.
The value of the 9 is 90,000, the value of the 4 is 4,000, the value of the 0 is 0, the value of the 5 is 50, and the value of the 3 is 3.
4. How can you rearrange two digits in the number 2,957,648 so that the value of the digit 4 is 10 times greater?
2,957,468

5. Write two numbers so that the value of the digit 9 in the second number is 10 times the value of the digit 9 in the first number.
See students' work. Students' answers should show that the 9 in the second number is one place to the left of where the 9 is located in the first number.



Write the numbers 0–9 on index cards, one number per card. Shuffle the cards and have your child choose 7 cards and use them to create a 7-digit number, like 3,451,208. Identify a digit within the number and ask your child to move the digit so that it has a value that is 10 times greater. Repeat the activity by reshuffling the cards and having your child create a different number.

Student Practice Book

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Differentiation Resource Book, p. 2

Lesson 2-1 • Extend Thinking

Understand the Structure of Multi-Digit Numbers

Name _____

Analyze numbers using place value.

- Use your knowledge of place-value to tell how the underlined digits compare.
 $\underline{9}8,345$ and $19,026$
The 9 in 98,345 is 10 times greater than the 9 in 19,026
 $23,670$ and $\underline{3}7,945$
The 3 in 37,945 is 10 times greater than the 3 in 23,670
 $68,431$ and $29,041$
The 4 in 68,431 is 10 times greater than the 4 in 29,041
- The Blue Whale's tongue weighs 5,952 pounds. A student says that the 5's in this number are 20 apart from each other. Is this correct or incorrect? Explain your answer using your knowledge of place value.
The 5s are not 20 apart, but rather 100 apart. The first 5 in the number is in the 1000s place. It is the same as 5,000. The second 5 in the number is in the 10s place. It is the same as 50.

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Differentiation Resource Book

INDEPENDENT WORK

Read and Write Numbers to One Million

Learning Targets

- I can read and write greater numbers in word form, standard form, and expanded form.
- I can explain how to use place-value structure to read and write greater numbers.

Standards ◆ Major ▲ Supporting ○ Additional

Content

- ◆ **4.NBT.A** Generalize place value understanding for multi-digit whole numbers.
- ◆ **4.NBT.A.2** Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

Math Practices and Processes

- MPP** Use appropriate tools strategically.
- MPP** Look for and make use of structure.

Vocabulary

Math Terms

- expanded form
- period**
- standard form
- word form

Academic Terms

- notice
- represent

Materials

The materials may be for any part of the lesson.

- index cards
- *Place-Value Chart with Periods* Teaching Resource

Focus

Content Objective

- Students read and write numbers from 1 through 1,000,000 in standard form, word form, and expanded form.

Language Objective

- Students will identify and write multi-digit whole numbers using base-ten numerals, number names, and expanded form using the prefix *multi-*.
- In order to support optimizing output, Els will participate in MLR4: Information Gap. See page X for a full description of the routine.

SEL Objective

- Students actively listen without interruption as peers describe how they approached a complex mathematical task.

Coherence

Previous

- Students read and wrote numbers to 1,000 (Grade 2).
- Students recognized that a digit in any place represents ten times what it represents in the place to its right (Unit 2).

Now

- Students read and write multi-digit whole numbers to 1,000,000 using base-ten numerals, number names, and expanded form.

Next

- Students use place value to compare multi-digit whole numbers (Unit 2).
- Students read, write, and compare decimals to thousandths (Grade 5).

Rigor

Conceptual Understanding

- Students extend their understanding of place value as they read and write multi-digit whole numbers.

Procedural Skill & Fluency

- Students build proficiency with reading and writing multi-digit whole numbers.
- Procedural skill and fluency is not a targeted element of rigor for this standard.*

Application

- Students apply their understanding of place-value structure to read and write multi-digit numbers.
- Application is not a targeted element of rigor for this standard.*

Number Routine

Would You Rather?



🕒 5–7 min

Build Fluency Students build skills with computation as they compare quotients. These prompts encourage students to talk about their reasoning:

- What strategies did you use to find the quotients?
- How can you use inverse operations to compare the expressions?

Purpose Students think about the size of multi-digit numbers and how they are represented.

Notice & Wonder™

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

Teaching Tip Have students turn and talk to a partner to discuss events or places where they may have seen large crowds, or heard about the size of such large crowds. Ask them to compare the crowd in the image to the different places they may have seen large crowds.

ETP Pose Purposeful Questions

The questions that follow may be asked in any order. They are meant to help advance students’ noticing and wondering about numbers that could be used to represent the crowd of people shown in the image and are based on possible comments and questions that students may make during the share out.

- What can you tell me about this picture of a crowd of people?
- Do you think there are more than 10,000 people in the crowd? More than 100,000 people? Explain your reasoning.
- How many people do you think are in the crowd? Why did you choose that number?
- What do you think this number would look like when you write it down?

Math is... Mindset

- Why is active listening important?

SEL Relationship Skills: Effective Communication

As students engage in collaborative discourse around the Notice and 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 what they noticed and wondered about the image, 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 to get students thinking about how they could use a number to represent the crowd of people. Guide the discussion to have students think about different ways they could represent their number.

ETP Establish Goals to Focus Learning

- Let’s explore how we can read and write greater numbers.




Lesson 2-2
Read and Write Numbers to One Million

Be Curious 4.NBT.A.2

What do you notice? What do you wonder?

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

Unit 2 • Generalize Place-Value Structure 37



Be Curious

What do you notice? What do you wonder?

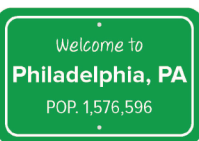
GO ONLINE

Learn

How can you read the population of Philadelphia, PA?

Math is... Choosing Tools

What will the tool tell me about the number?



You can use a place-value chart to make sense of a multi-digit number.

This place-value chart shows nine positions. It has three groupings. Each grouping is a **period**.

Each period has the same three places.

Millions Period			Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones
		1	5	7	6	5	9	6

Word Form

One million, five hundred seventy-six thousand, five hundred ninety-six

Standard Form 1,576,596

A comma separates the periods.

Expanded Form $1,000,000 + 500,000 + 70,000 + 6,000 + 500 + 90 + 6$

You can use the values of the digits and the names of place-value positions to read and write multi-digit numbers. Commas are used to separate the periods when writing numbers in standard form.

Work Together

How can you write *seven hundred thirty-six thousand, nine hundred two* in standard form and expanded form?

736,902; $700,000 + 30,000 + 6,000 + 900 + 2$

1 Pose the Problem

ETP Pose Purposeful Questions

- What are some numbers you know how to read? How is this number different?
- What do you notice about this number?
- How can you determine the place value of each digit in the number?

2 Develop the Math

Chose the option that best meets your instructional goals.

MLR Information Gap

In pairs, give one student a number in the millions in standard form. Give the other student the same number in word form. Have them work together to make a place-value chart of the number. Encourage them to think-aloud as they complete the place-value chart.

3 Bring It Together

ETP Elicit and Use Evidence of Student Thinking

- How can place-value patterns help you read and write greater numbers?
- How do standard form, word form, and expanded form relate to one another? When would each form be useful?

Key Takeaways

- The millions and thousands periods follow the same place-value pattern as the ones period.
- The place-value structure and meaning of numbers can help you read and write numbers.
- Each grouping of three numbers is called a period. The three numbers in the period are hundreds, tens, and ones.

Work Together

Students express a given number written in word form, in standard form and expanded form. It may be helpful for students to write the number in standard form first. Some students may need the support of a place-value chart to help write the number in standard form and expanded form.

Common Misconception Students may have trouble writing numbers from word form. Encourage students to focus on the words that describe each period to help them write the number in standard form. Students should understand the words that appear before the word thousands represent the digits in the thousands period and the words that appear after the word thousands represent the digits in the ones period.

LOM Language of Math

Students need multiple opportunities to use key terms used in this lesson. Ask students questions that require them to use key vocabulary such as, *standard form*, *expanded form*, *period*, *commas*, *place value*, and *word form* in their responses. This will allow these words to become part of students' active vocabulary.

Activity-Based Exploration

Students explore how place-value structure can help them read and write multi-digit numbers.

Materials: index cards, *Place-Value Chart with Periods* Teaching Resource

Directions: Prepare sets of index cards with the following cards in each set: 1, 2, 3, 4, 5, 8, four, eight, fifteen, thirty-two, hundred, hundred, thousand, as well as two cards with commas. Distribute place-value charts and a set of index cards to each student-group. Student-groups will use all index cards to represent a 6-digit number in standard form and word form. Have students rearrange the cards to create at least one more 6-digit number with the cards.

Math is... Choosing Tools

- What will a place-value chart tell me about my number?

Students recognize how tools can help them read and write numbers.

ETP Support Productive Struggle

- How can the place-value chart help you create your number?
- How can creating a 3-digit number help you create a 6-digit number?
- What is the purpose of a comma in a multi-digit number?

Activity Debrief: Have groups share their numbers and discuss patterns they noticed in place-value names as they created their numbers. Students should notice the structure of hundreds, tens, and ones repeats in each group of 3 digits. Introduce the vocabulary term period to students to describe groups of 3 digits.

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

- How can you read the population of Philadelphia, PA?

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

Lesson 2-4 Activity Cards	
Kate estimates how much money she needs to save to buy a car.	Ross estimates the number of tickets he has for games at the arcade.
A manager estimates the amount of flooring a new store needs.	An interior designer estimates the amount of fabric for a project.
An engineer estimates the weight limit of an elevator.	Juni estimates the disk space she will use before buying a computer.
Juni estimates the disk space she will use before buying a computer.	An engineer estimates the weight limit of an elevator.
An interior designer estimates the amount of fabric for a project.	A manager estimates the amount of flooring a new store needs.
Ross estimates the number of tickets he has for games at the arcade.	Kate estimates how much money she needs to save to buy a car.

Guided Exploration

Students extend their knowledge of place value to the millions period and use their knowledge to read and write multi-digit numbers in different forms.

Math is... Choosing Tools

- What will the tool tell me about the number?

Students recognize how tools can help them read and write numbers.


Math is... Patterns

- If you were to extend the place-value chart, what names do you think would repeat?

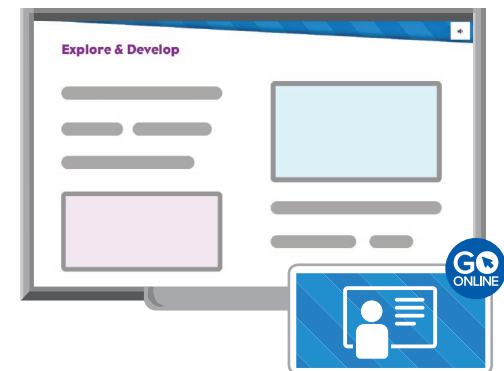
Students notice the structure of the place-value position names.

ETP Facilitate Meaningful Discourse

- **Think About It:** How is the 5 in the hundred thousands place related to the 5 in the hundreds place?
- What do the commas in the standard form of the number represent?

 Have students pairs discuss how to read the number aloud. Then have them share their thoughts with the class. Encourage students to explain if they disagree with how their classmates read the number.

- How can reading a number aloud help you write it in word form?
- Why is it important to include the name of the period when writing the word form of a number?



EL Emergent Bilinguals Scaffolds

Entering/Emerging Support students in understanding the meaning of the word *multi-digit*. Write various single- and multi-digit numbers on the board. Point to them randomly, saying either This is a single digit number or This is a multi-digit number. Check comprehension by pointing to singular and multi-digit numbers and asking *Is this number multi-digit or single digit?*

Developing/Expanding Support students in understanding the meaning of the word *multi-digit*. Write various single- and multi-digit numbers on the board. Point to them randomly, saying either This is a single digit number or This is a multi-digit number. Check comprehension by pointing to some of the numbers and saying *Tell me about this number.*

Bridging/Reaching Ask students the meaning of the word *multi-digit*. (*more than one number or digit*) Ask them what prefix they see in the word (multi-) Ask *What does the prefix multi- mean?* (*more than one, many*) Make a list of all the words the students can think of that include the prefix *multi-* and discuss their meanings.



On My Own

Name _____

How can you write the number in standard form?

- Four hundred thousand, nine hundred thirty **400,930**
- Thirty-four thousand, nine hundred eighty-nine **34,989**

How can you write the number in expanded form?

- 530,879
500,000 + 30,000 + 800 + 70 + 9
- 6,216
6,000 + 200 + 10 + 6

How can you write the number in word form?

- 205,782
two hundred five thousand, seven hundred eighty-two
- 1,108,308
one million, one hundred eight thousand, three hundred eight

- STEM Connection** Poppy found a sticker on the sign showing the size of Olympic National Park. She knows the size is between one million and nine hundred thousand acres. She also knows that the value of the digit in the ten thousands place is 10 times greater than the value of the digit in the thousands place. What is the size of the park?

Olympic National Park

Established 1938
Size: 😊 2,651 acres

922,651 acres

Unit 2 • Generalize Place-Value Structure 39

What are other ways to write the number? Complete the table.

	Standard Form	Expanded Form	Word Form
8.	405,832	400,000 + 5,000 + 800 + 30 + 2	four hundred five thousand, eight hundred thirty-two
9.	539,015	500,000 + 30,000 + 9,000 + 10 + 5	five hundred thirty-nine thousand, fifteen
10.	610,416	600,000 + 10,000 + 400 + 10 + 6	six hundred ten thousand, four hundred sixteen

- Extend Your Thinking** How is the word form of 245,007 similar to the word form of 700,245? Explain why these similarities exist.
Sample answer: Two hundred forty-five appears in the word form of both numbers because the digits 245 appear within a period in each number. Seven appears in the word form of both numbers because the digit 7 is in either the ones or hundreds position within a period of each number.

- What are the missing words or digits in each form of the number?

Word form: **sixty** thousand, **four hundred** eight

Expanded form: **60,000** + 400 + **8**

Standard form: 6 **0** , **4** **0** **8**

Reflect

How can place value help you make sense of multi-digit numbers?
Answers may vary.

Math is... Mindset

What have you done to be an active listener today?

Practice

ETP Build Fluency from Understanding

Common Error: Exercise 1 Students may not include the zeros in the correct place when writing the number in standard form. Encourage students to read the standard form aloud to see if it matches the word form.

Item Analysis

Item	DOK	Rigor
1–6	1	Procedural Skill and Fluency
7	2	Application
8–10	1	Conceptual Understanding
11	3	Conceptual Understanding
12	3	Application

Reflect

Students complete the Reflect question.

- How can place value help you make sense of multi-digit numbers?

Ask students to share their reflections with their classmates.

Math is... Mindset

- What have you done to be an active listener today?

Students reflect on how they developed stronger relationship skills.

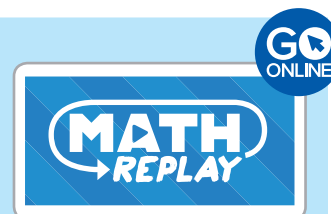
Learning Targets

Ask students to Reflect on the Learning Targets of the lesson.

- I can read and write greater numbers in word form, standard form, and expanded form.
- I can explain how to use place-value structure to read and write greater 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.



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	Read and write multi-digit numbers in standard form	4.NBT.A.2
2	2	Read and write multi-digit numbers in expanded form	4.NBT.A.2
3	2	Read and write multi-digit numbers in word form	4.NBT.A.2
4	2	Recognize different number forms	4.NBT.A.2

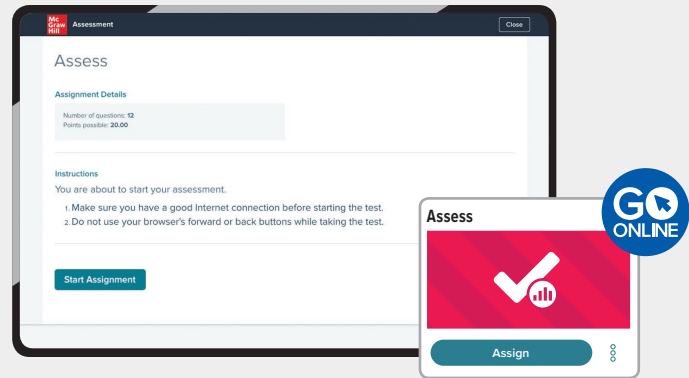
Data Use students' scores on the *Exit Ticket* to assign the differentiated resources available.

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	<i>Take Another Look</i> 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



Lesson 2-2
Exit Ticket

Name _____

- How can you write the number in standard form?
Seven hundred seventeen thousand, twenty-nine = **717,029**
- How can you write 120,564 in expanded form?
100,000 + 20,000 + 500 + 60 + 4
- Which of these is the word form of 733,452?
 - A. seventy-three thousand, thirty-five hundred fifty-two
 - B. seventy-three thousand, four hundred fifty-two
 - C. seven hundred thirty-three thousand, four hundred fifty-two**
 - D. seven hundred thirty-three thousand, five hundred forty-two

Which representations are equivalent to 701,803?
Choose Yes or No for each representation.

	Yes	No
4. $700,000 + 1,000 + 800 + 3$	✔	
5. $700,000 + 10,000 + 8,000 + 300$		✔
6. seven hundred eighteen thousand, three		✔
7. seven hundred one thousand, eighty-three		✔
8. seven hundred one thousand, eight hundred three	✔	

Reflect On Your Learning

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

16 Assessment Resource Book

R Reinforce Understanding

SMALL GROUP

Guess My Number

Work with pairs of students. Give place-value charts and note cards to each partner. Have students create a 4-6 digit number out of sight from their partners. Students take turns giving place value clues about their number, one digit at a time. If necessary, help students identify the names and values of each digit. Partners attempt to guess the number. At the end of the round, have students discuss how the clues helped to identify the number.

B Build Proficiency

WORKSTATIONS

Practice It! Game Station

Place Value Four in a Row

Students practice using place value.

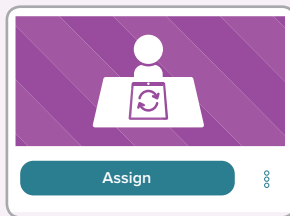


Take Another Look Lessons

GO ONLINE

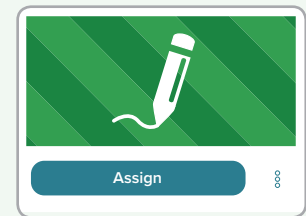
Assign the interactive lessons to reinforce targeted skills.

- Standard & Word Form through 999,999
- Expanded Form through 999,999



Interactive Additional Practice

Assign the digital version of the Student Practice Book.



INDEPENDENT WORK

Differentiation Resource Book, p. 3

Lesson 2-2 • Reinforce Understanding

Read and Write Numbers to One Million

Name _____

Review

A place value chart can help when reading and writing numbers.

Millions Period			Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones
		3	5	4	6	1	8	9

Write the expanded form of the digits in 1,546,389.

- 1 1,000,000
- 6 6,000
- 9 9
- 4 40,000

Write these numbers in word form.

- 1,522,100
one million, five hundred twenty-two thousand, one hundred
- 678,000
six hundred seventy-eight thousand

Write this number in standard form.

- Nine hundred eighty-eight thousand, three hundred sixty-one
988,361

Differentiation Resource Book

GO ONLINE

Student Practice Book, pp. 3–4

Lesson 2-2

Additional Practice

Name _____

Review

You can use a place-value chart to make sense of a multi-digit number.

Millions Period			Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones
		1	9	7	0	8	4	3

Use the digits and names of place-value positions to read and write the number in standard, word and expanded form.

Standard Form 1,970,843

Word Form One million, nine hundred seventy thousand, eight hundred forty-three

Expanded Form $1,000,000 + 900,000 + 70,000 + 800 + 40 + 3$

Complete the table.

Standard Form	Expanded Form	Word Form
382,219	$300,000 + 80,000 + 2,000 + 200 + 10 + 9$	Three-hundred eighty-two thousand, two hundred nineteen
63,074	$6,000 + 3,000 + 70 + 4$	Sixty-three thousand, seventy-four
1,621,715	$1,000,000 + 600,000 + 20,000 + 1,000 + 700 + 10 + 5$	One million, six-hundred twenty-one thousand, seven hundred fifteen

Student Practice Book

E

Extend Thinking

Own It! Digital Station

Build Fluency Games

Assign the digital game to develop fluency with adding multiples of 10.



WORKSTATIONS

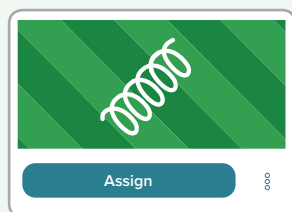
Use It! Application Station

During the unit, have students complete the Connection Card, Real World Card, and STEM Project Card. You can find more information in the Workstations chart on page 32A.



Spiral Review

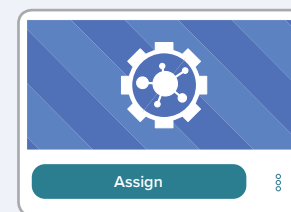
Assign the digital Spiral Review to students or download and print PDFs of the Spiral Review from the Digital Teacher Center.



GO ONLINE

Websketch Exploration

Assign a websketch exploration to apply skills and extend thinking.



Student Practice Book, pp. 3–4

- A song on the Internet has been streamed 1,453,125 times. Write this number in expanded form.
 $1,000,000 + 400,000 + 50,000 + 3,000 + 100 + 20 + 5$
- A movie on the Internet has been streamed six-hundred thirty-nine thousand, four hundred sixty-two times. What is this number in standard form?
639,462
- A photo on the Internet has been viewed 830,249 times. How can this number be written in word form?
eight hundred thirty thousand, two hundred forty-nine
- Ingrid downloads 12,705 photos from her camera's memory card onto her computer. How can you write this number in word form? How can you write it in expanded form?
twelve thousand, seventy hundred five; $10,000 + 2,000 + 700 + 5$
- How is the expanded form of 1,293,500 similar to the expanded form of 493,200?
Sample answer: both expanded forms of these numbers contain 90,000 and 3,000. They both also end with zeroes because they have zeroes in the tens and ones place.

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Have your child create a place-value chart to the millions place with craft supplies, such as construction paper and markers. Write a number to the millions place on a sheet of paper and ask your child to write the number in his or her chart with a pencil. Ask your child to then write the number in word form and expanded form. Then repeat the activity.

Student Practice Book

INDEPENDENT WORK

Differentiation Resource Book, p. 4

Lesson 2-2 • Extend Thinking

Read and Write Numbers to One Million

Name _____

Reading and Writing World Populations

- These numbers show approximate populations of various countries. Draw a line to its match.

Bhutan: 763,092	$600,000 + 10,000 + 5,000 + 700 + 200 + 9$	Luxembourg
Solomon Islands: 669,823	three hundred thirty-nine thousand, thirty-one	Iceland
Western Sahara: 582,463	$600,000 + 60,000 + 9,000 + 800 + 20 + 3$	Solomon Islands
Luxembourg: 615,729	two hundred ninety-nine thousand, eight hundred eighty-two	Vanuatu
Iceland: 339,031	$500,000 + 80,000 + 2,000 + 400 + 60 + 3$	Western Sahara
Vanuatu: 299,882	seven hundred sixty-three thousand, ninety-two	Bhutan

- The approximate population of Cyprus is 1,198,575. Write this number in standard form, word form and expanded form.

Word form: one million, one hundred ninety-eight thousand, five hundred seventy-five; Expanded form: $1,000,000 + 100,000 + 90,000 + 8,000 + 500 + 70 + 5$

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Differentiation Resource Book

Compare Multi-Digit Numbers

Learning Targets

- I can compare two multi-digit numbers based on the value of the digits in each place.
- I can use $>$, $=$, and $<$ symbols to record the results of comparisons.

Standards ◆ Major ▲ Supporting ○ Additional

Content

- ◆ **4.NBT.A** Generalize place value understanding for multi-digit whole numbers.
- ◆ **4.NBT.A.2** Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

Math Practices and Processes

MPP Reason abstractly and quantitatively.

MPP Use appropriate tools strategically.

Vocabulary

Math Terms

digit
value

Academic Terms

conjecture
represent

Materials

The materials may be for any part of the lesson.

- *Number Cards 0–10* Teaching Resource
- number cubes
- *Place-Value Chart to Millions* Teaching Resource

Focus

Content Objective

- Students compare multi-digit numbers using place value and record comparisons using symbols.

Language Objective

- Students will compare two multi-digit numbers based on the values of digits in each place using the academic word *compare*.
- In order to support sense-making and to maximize meta-language, ELs will participate in MLR2: Collect and Display and MLR5: Co-Craft Questions or Problems. See page X for a full description of the routines.

SEL Objective

- Students identify personal traits that make them good students, peers, and math learners.

Coherence

Previous

- Students compared two 3-digit numbers based on the values of the digits in each place (Grade 2).
- Students determined the value of digits in a multi-digit number (Unit 2).

Now

- Students compare two multi-digit numbers based on the values of digits in each place.

Next

- Students round multi-digit numbers to any place (Unit 2).
- Students compare two decimals based on the values of digits in each place (Grade 5).

Rigor

Conceptual Understanding

- Students extend their understanding of place value as they compare two multi-digit numbers.

Procedural Skill & Fluency

- Students build proficiency with comparing multi-digit numbers based on place value.

Application

- Students apply their understanding of comparing multi-digit numbers to solve real-world problems.

Application is not a targeted element of rigor for this standard.

Number Routine Would You Rather?

🕒 5–7 min

Build Fluency

Students build skills with computation as they compare multiplication and division expressions. These prompts encourage students to talk about their reasoning:

- What strategies did you use to compare the expressions?
- How can you use an estimate instead of an exact product or quotient?



Purpose Students discuss and share observations about the given numbers and possible questions they could solve, such as comparing or ordering the numbers.

Notice & Wonder™

- What question could you ask?

Teaching Tip Have students turn to a partner and discuss where they may have seen numbers such as these. Have them think what the label “steps” represents. Students then share their thoughts with the whole class.

ETP Pose Purposeful Questions

The questions that follow may be asked in any order. They are meant to help advance students’ thinking about the numbers and are based on possible comments and questions students may make during the share out.

- What do you notice about these numbers?
- What do the numbers have in common? What is different about the numbers?
- What are some other ways you can represent each of these numbers?
- How can you use place value to read each of these numbers?

Math is... Mindset

- What are some ways you can give positive feedback to your classmates?

SEL Self-Awareness: Self-Confidence

Throughout the Notice & Wonder routine, provide opportunities for students to feel confident about 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 comparing multi-digit numbers, continue to find other opportunities to allow students to give positive feedback to their classmates.

Transition to Explore & Develop

Ask questions that get students thinking about how they might compare the numbers. Guide the discussion to have student think about strategies they may have used to compare 3-digit numbers and whether they could use those strategies to compare greater numbers.

ETP Establish Goals to Focus Learning

- How could we compare multi-digit numbers? What strategies might we use?

Lesson 2-3
Compare Multi-Digit Numbers

Be Curious
What question could you ask?

10,463 STEPS 10,229 STEPS 10,295 STEPS

Math is... Mindset
What are some ways you can give positive feedback to your classmates?

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Unit 2 • Generalize Place-Value Structure 41

Be Curious
What question could you ask?

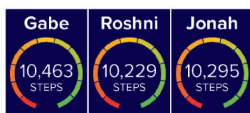
10,463 STEPS 10,229 STEPS 10,295 STEPS

GO ONLINE

Learn

Jonah says that he has walked more steps than Roshni.

How can Jonah support his statement?



Math is... Thinking

What are some mathematical representations you can use to compare numbers?

Jonah can use place value to compare the two numbers.

▶ One Way Use a Place-Value Chart

The digits in the tens place are different.

Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones
1	0	2	9	5	
1	0	2	2	9	



9 tens are greater than 2 tens, so $10,295 > 10,229$.

▶ Another Way Use Expanded Form

$$10,295 = 10,000 + 200 + 90 + 5$$

$$10,229 = 10,000 + 200 + 20 + 9$$

90 is greater than 20, so $10,295 > 10,229$.

To compare multi-digit numbers, compare the digits in each place. Start with the digits in the greatest place-value position.

Work Together

Who walked more steps in May?
Justify your answer.

Name	Steps in May
Roshni	245,821
Jonah	43,068

Roshni; Sample answer:
245,821 > 43,068 because 2 hundred thousands is greater than 4 ten thousands.

1 Pose the Problem

MLR Collect and Display

As students discuss the questions, write key words and phrases you hear, such as *more*, *less*, *greater than*, *tens place*, and *place value*. 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

- Based on what you know about place value, what is a conjecture that you can make?
- What symbols might you use? Explain.

Math is... Thinking

- What are some mathematical representations you can use to compare numbers?

Students consider varied representations and approaches to compare numbers.

2 Develop the Math

Choose the option that best meets your instructional goals.

MLR Co-Craft Questions or Problems

Present a context similar to the one on the Learn page. Then ask students to write down mathematical questions that could be asked based on the context. In pairs, then groups, have students share and compare their questions. Finally, reveal the actual question students will answer.

3 Bring It Together

ETP Elicit and Use Evidence of Student Thinking

- How is place value helpful when comparing two numbers?
- Are there any other tools that can help you compare numbers? Explain.
- What strategy do you prefer to use when comparing numbers? Explain.

Key Takeaway

- Comparing multi-digit numbers follows the same process as comparing 2- or 3-digit numbers: one compares digits in the same place-value position, starting with the greatest place value.

Work Together

Students compare two numbers with a different numbers of digits. Have students work on the activity in pairs before asking them to share their justifications with the class.

Common Error Students may incorrectly compare two numbers that have different numbers of digits. They may only compare the leading digit in each number without considering the value of the digits. For example, they may incorrectly state that 43,068 is greater than 245,821 because 4 is greater than 2.

Activity-Based Exploration

Students explore different ways to compare multi-digit numbers. They record their comparisons using symbols $>$, $=$, or $<$.

Materials: *Number Cards 0-10 Teaching Resource; Place-Value Charts to Millions Teaching Resource*

Directions: Distribute three sets of cards with digits 0-9 to each pair of students. Have students place cards face down in a stack. Each student chooses 4 number cards and arranges their cards to make the greatest 4-digit number. Students compare their 4-digit numbers and decide whose number is greater, based on their understanding of comparing 2- and 3-digit numbers. Students record their comparisons on a piece of paper using $>$, $<$, or $=$. Next, students rearrange their cards to make the least 4-digit number and compare these numbers. Students place their cards back in the stack and repeat the steps above, drawing 5 cards to create 5-digit numbers. Students repeat once more, drawing 6 cards to create 6 digit-numbers.

ETP Implement Tasks That Promote Reasoning and Problem Solving

- How can you prove your comparisons are true?
- How did you compare your multi-digit numbers? Explain.
- How did you rearrange the digits to make the least number?

Activity Debrief: Have students share their thinking as they created their numbers and the strategies they used to compare their number to their partner's number.

Math is... Thinking

- What are some mathematical representations you can use to compare numbers?

Students think about varied approaches to compare numbers.

Have students revisit Pose the Problem question and discuss answers.

- How can Jonah support his statement?

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

Lesson 2-4 Activity Cards	
Kate estimates how much money she needs to save to buy a car.	Ross estimates the number of tickets he has for prizes at the arcade.
A manager estimates the amount of flooring a new store needs.	An interior designer estimates the amount of fabric for a project.
An engineer estimates the weight limit of an elevator.	Just estimates the disk space she will use before buying a computer.
Just estimates the disk space she will use before buying a computer.	An engineer estimates the weight limit of an elevator.
A manager estimates the amount of flooring a new store needs.	An interior designer estimates the amount of fabric for a project.
Ross estimates the number of tickets he has for prizes at the arcade.	Kate estimates how much money she needs to save to buy a car.

Guided Exploration

Students connect to previously learnt place-value concepts and apply them to compare multi-digit numbers.

Math is... Choosing Tools

- What are some tools that you can use to compare the numbers?

Students consider appropriate tools for comparing numbers.

ETP Use and Connect Mathematical Representations

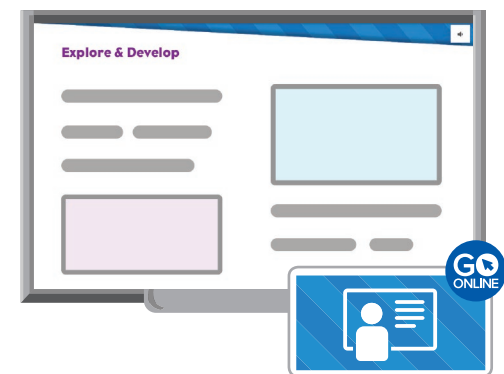
- What does a place-value chart tell you about each number? How can this help you understand which number is greater?
- **Think About It:** Do you need to compare the digits in the ten thousands place? Explain.

Have students discuss how the values of the digits in the tens place compare, and how the comparison of these values can help them determine which number is greater.

- Why is it not necessary to compare the value of the digits in the ones place?

Have students write the expanded form of each number. Prompt students to think about how the comparison of the values using expanded form can help them determine which number is greater.

- How is using expanded form to compare the numbers similar to using a place-value chart to compare the numbers?



EL Emergent Bilinguals Scaffolds

Entering/Emerging Support students in understanding the meaning of the word *compare*. Using classroom objects such as two different colored pens. Hold up one pen and say *Let's compare these two pens. This pen is [blue]*. Then hold up the other pen and say *This pen is [red]*.

Developing/Expanding Support students in understanding the meaning of the word *compare*. Using familiar classroom objects such as two different colored pens. Say *Let's compare these pens*. Hold up one pen and ask *What color is it? (blue)* Hold up the other pen and ask *What color*

Bridging/Reaching Ask students to explain the meaning of *compare*. (To see how two or more things or numbers are the same or different). Ask students to explain some strategies they know to compare multi-digit numbers based on

On My Own



Name _____

How can you compare the numbers? Complete with $>$, $<$, or $=$.

- | | |
|------------------------|------------------------|
| 1. 5,598 $<$ 55,889 | 2. 123,710 $<$ 123,711 |
| 3. 628,910 $>$ 628,800 | 4. 709,103 $<$ 709,130 |
| 5. 6,217 $<$ 6,241 | 6. 43,829 $>$ 43,598 |

Is the comparison true or false? Explain your reasoning.

- | | |
|---|--|
| 7. $1,780 < 11,780$
True; Sample answer: The leading digit of 11,780 is in a greater place-value position than the leading digit of 1,780. | 8. $720,301 < 720,031$
False; Sample answer: 720,301 has more hundreds than 720,031. |
| 9. $34,646 > 321,446$
False; Sample answer: The leading digit of 321,446 is in a greater place-value position than the leading digit of 34,646. | 10. $24,747 < 24,774$
True; Sample answer: 24,774 has more tens than 24,747. |

11. Rebecca knows her number is greater than 15,724 by looking at the digits in the tens place. What could be Rebecca's number? Justify your answer.

Sample answer: 15,734; I know the digits in the ten thousands, thousands, and hundreds place of her number are the same and the digit in the tens place is greater than 2.

Unit 2 • Generalize Place-Value Structure 43

12. **Error Analysis** Jamar says 9,280 is greater than 12,621 because the digit 9 is greater than the digit 1. How can you respond to Jamar's statement? Justify your thinking.

Sample answer: Jamar did not consider the place-value positions of the digits when he compared them. $12,621 > 9,280$ because the leading digit of 12,621 is in a greater place-value position than the leading digit of 9,280.

13. Maddie's mother is buying a new vehicle. The table shows the cost of vehicles she is considering. Which vehicle is the most expensive? Justify your answer.

Vehicle	Cost
Minivan	\$ 24,990
Pickup Truck	\$ 31,990
Sports Car	\$ 22,990

Pickup Truck; Sample answer: \$31,990 is greater than \$24,990 and \$22,990 because 3 ten thousands is greater than 2 ten thousands.

14. **Extend Your Thinking** Write a number less than 4,850 by only switching two digits in this number. Explain your thinking.

Sample answer: 4,580; I switched the 8 in the hundreds place with the 5 in the tens place so the number would have less hundreds.

Reflect

How can you justify a comparison of two numbers?

Answers may vary.

Math is... Mindset

How did you give positive feedback to your classmates?

44 Lesson 3 • Compare Multi-Digit Numbers

Practice

ETP Build Fluency from Understanding

Common Error: Exercise 1 Students may compare the numbers by comparing digit to digit, such as **5598** to **55889**, instead of thinking about the place-values of the digits. Remind students to align numbers by place-value and to determine the value of each digit before comparing the numbers.

Item Analysis

Item	DOK	Rigor
1–6	1	Procedural Skill and Fluency
7–10	2	Conceptual Understanding
11	3	Application
12	2	Conceptual Understanding
13	2	Application
14	3	Application

Reflect

Students complete the Reflect question.

- How can you justify a comparison of two numbers?

Ask students to share their reflections with their classmates.

Math is... Mindset

- How did you give positive feedback to your classmates?

Students reflect on how they practiced self-awareness.

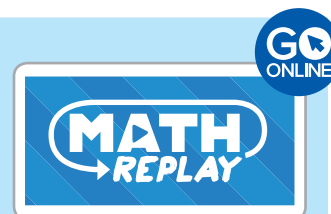
Learning Targets

Ask students to Reflect on the Learning Targets of the lesson.

- I can compare two multi-digit numbers based on the value of the digits in each place.
- I can use $>$, $=$, and $<$ symbols to record the results of comparisons.

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	2	Compare multi-digit numbers using place value	4.NBT.A.2
2	2	Compare multi-digit numbers using place value	4.NBT.A.2
3	3	Compare multi-digit numbers using place value	4.NBT.A.2
4	3	Compare multi-digit numbers using place value	4.NBT.A.2

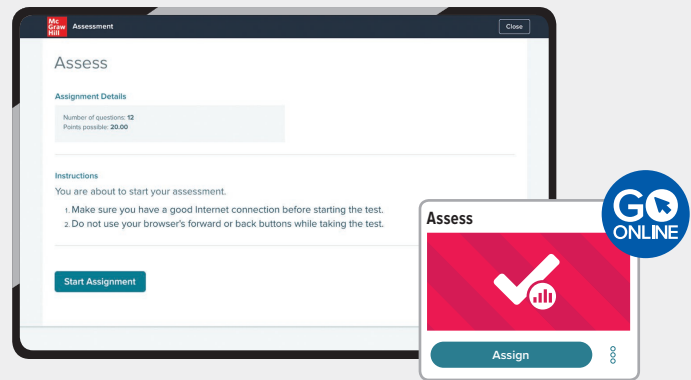
Data Use students' scores on the *Exit Ticket* to assign the differentiated resources available.

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	<i>Take Another Look</i> 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



Lesson **2-3**
Exit Ticket

Name _____

How can you compare each pair of numbers? Use $<$ or $>$.

		$<$	$>$
1.	806,121 <input type="radio"/> 87,302		<input checked="" type="checkbox"/>
2.	681,532 <input type="radio"/> 681,459		<input checked="" type="checkbox"/>
3.	457,188 <input type="radio"/> 482,100	<input checked="" type="checkbox"/>	
4.	260,832 <input type="radio"/> 259,785		<input checked="" type="checkbox"/>

5. Which numbers are less than 278,376? Choose all that apply.
A. 269,899 **B.** 270,589
C. 277,589 **D.** 287,004

6. Seth wrote the number 54,653. Which numbers are greater than Seth's number? Choose all that apply.
A. 53,465 **B.** 54,563
C. 55,643 **D.** 56,453

7. Is the comparison True or False. Explain how you know.
 $643,290 > 643,209$ **True.**
643,290 has more tens than 643,209.

Reflect On Your Learning

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

————— ————— —————

Assessment Resource Book **17**

R Reinforce Understanding

SMALL GROUP

Which is Greater?

Give each group of students four number cubes (1–6). The first student rolls all four cubes to make a 4-digit number, which is recorded by the other students. That student rolls the cubes again to generate a second 4-digit number. The other students determine which number is greater and write the inequality sentence to show it. Make sure students understand how to compare numbers starting with the greatest place value position. The next student takes a turn generating numbers for students to compare. Continue as time allows.

B Build Proficiency

WORKSTATIONS

Practice It! Game Station Place Value Showdown

Students practice comparing numbers using place value.

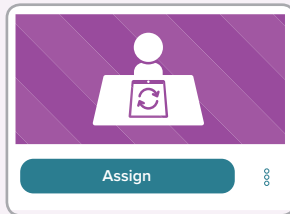


Take Another Look Lesson

GO ONLINE

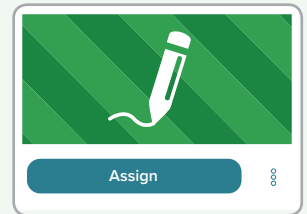
Assign the interactive lesson to reinforce targeted skills.

- Compare & Order Numbers through 999,999



Interactive Additional Practice

Assign the digital version of the Student Practice Book.



INDEPENDENT WORK

Differentiation Resource Book, p. 5

Lesson 2-3 • Reinforce Understanding

Compare Multi-Digit Numbers

Name _____

Review

Use a place-value chart to help you compare multi-digit numbers.

40,389 and 40,590

hundred thousands	ten thousands	thousands	hundreds	tens	ones
	4	0	3	8	9
	4	0	5	9	0

TIP: Compare each digit from left to right until you reach one that is larger. That is the greater number!

Which number is greater? Use a place-value chart to help you compare.

- 30,989 or 30,777 **30,989**
- 66,688 or 66,639 **66,688**
- 90,991 or 90,999 **90,999**
- 100,001 or 100,009 **100,009**

Compare each pair of numbers using the symbols $<$, $>$, or $=$.

- 77,890 $>$ 77,340
- 68,892 $<$ 68,899
- 922,781 $<$ 923,783
- 174,223 $>$ 172,301
- 82,531 $>$ 82,431
- 22,890 $>$ 21,999
- 123,456 $<$ 123,654
- 398,450 $>$ 398,430

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Differentiation Resource Book

INDEPENDENT WORK

Student Practice Book, pp. 5–6

Lesson 2-3

Additional Practice

Name _____

Review

You can compare two multi-digit numbers using place value.

Edwardo scores 213,568 points and Les scores 213,591 points in a game. Who scores the greater number of points?

Compare the digits in each place value, starting with the greatest place value, until the digits are different.

hundred thousands	ten thousands	thousands	hundreds	tens	ones
2	1	3	5	6	8
2	1	3	5	9	1

The digits in each place value are the same until the tens place.

9 is greater than 6.

$$213,591 > 213,568$$

So, Les scores the greater number of points.

Write $>$ or $<$ to compare the numbers.

- 6,087 $<$ 6,497
- 7,689 $>$ 7,684
- 2,837 $<$ 22,381
- 88,865 $<$ 88,965
- 471,198 $>$ 471,197
- 633,731 $<$ 633,749
- 525,084 $>$ 525,061
- 707,027 $<$ 707,109

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Student Practice Book

E

Extend Thinking

Own It! Digital Station

Build Fluency Games

Assign the digital game to develop fluency with adding multiples of 10.



WORKSTATIONS

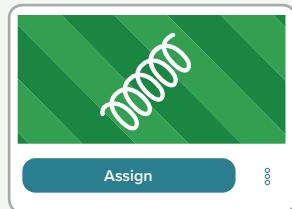
Use It! Application Station

During the unit, have students complete the Connection Card, Real World Card, and STEM Project Card. You can find more information in the Workstations chart on page 32A.



Spiral Review

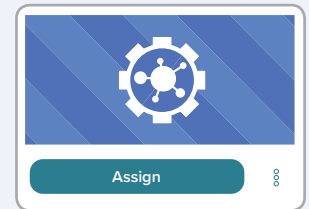
Assign the digital Spiral Review to students or download and print PDFs of the Spiral Review from the Digital Teacher Center.



GO ONLINE

Websketch Exploration

Assign a websketch exploration to apply skills and extend thinking.



Student Practice Book, pp. 5–6

Circle the number that is greater than the number given.

9. 4,374
4,373 **4,378** 437
10. 18,607
18,609 18,606 18,507
11. 645,088
645,084 645,001 **645,089**

12. Lorenzo wins 12,973 tickets and Trena wins 12,970 tickets. Who wins the greater number of tickets?

Lorenzo

13. Brittany circles the number 142,357. Carmen circles the number 142,458. Which number is less than the other?

142,357

14. Alexandra's hometown has a population of 964,208 people. The population of Connor's hometown is 964,278 people. Connor thinks that his hometown has the greater population. Do you agree or disagree with Connor? Explain.

Agree; Sample answer: I compared the digits in each place, starting with the greatest place value. The digits in the two numbers are the same until the tens place. 7 is greater than 0, which means that 964,278 is greater than 964,208.



Create cards with the symbols $>$ and $<$ on them. Write two numbers that have 4 to 6 digits in them for your child to compare. Make sure there is a space between the numbers. Have your child place the $<$ or $>$ card between the numbers to compare them. Ask your child to explain why he or she picked the given symbol.

Student Practice Book

INDEPENDENT WORK

Differentiation Resource Book, p. 6

Lesson 2-3 • Extend Thinking

Compare Multi-Digit Numbers

Name _____

1. Compare these numbers. Then arrange them from least to greatest.

Numbers	Least to Greatest
88,980	1. 8,980
188,980	2. 8,990
1,888,990	3. 88,980
188,990	4. 88,990
88,990	5. 188,980
8,990	6. 188,990
1,888,980	7. 1,888,980
8,980	8. 1,888,990

2. Pick the two greatest numbers from the list. Compare them in two ways using the symbols $<$, $>$, or $=$.

1,888,980 and 1,888,990 are the greatest numbers. They can be compared in these two ways: $1,888,980 < 1,888,990$ and $1,888,990 > 1,888,980$.

Differentiation Resource Book

Round Multi-Digit Numbers

Learning Targets

- I can round multi-digit numbers to any place.
- I can explain why rounding multi-digit numbers is useful.

Standards ◆ Major ▲ Supporting ○ Additional

Content

- ◆ **4.NBT.A** Generalize place value understanding for multi-digit numbers.
- ◆ **4.NBT.A.3** Use place value understanding to round multi-digit whole numbers to any place.

Math Practices and Processes

- MPP** Use appropriate tools strategically.
- MPP** Attend to precision.

Vocabulary

Math Terms	Academic Terms
halfway point	estimate
round	explain
	justify

Materials

The materials may be for any part of the lesson.

- *Activity Cards Teaching Resource*
- *Blank Number Lines Teaching Resource*
- *Place-Value Chart to Millions Teaching Resource*

Focus

Content Objectives

- Students determine an estimate by rounding numbers to an appropriate place.
- Students round multi-digit numbers to any place value position.

Language Objectives

- Students explain to partners how rounding can be used to get estimates.
- Students justify decisions to round a number to a given place-value position.

SEL Objective

- Students practice behavioral flexibility while working with peers to complete a challenging mathematical task.

Coherence

Previous

- Students rounded whole numbers to the nearest ten and hundred (Grade 3).
- Students generalized the structure of place values to one million (Unit 2).

Now

- Students expand their understanding of place value and rounding to greater numbers.
- Students justify decisions about to which place to round a given number.

Next

- Students use rounding when estimating sums and differences (Unit 3).
- Students round decimals to any identified place value (Grade 5).

Rigor

Conceptual Understanding

- Students build on their understanding of place value to make decisions about how exact an estimate needs to be.

Procedural Skill & Fluency

- Students build proficiency with rounding to any place-value position.

Procedural skill and fluency is not a targeted element of rigor for this standard.

Application

- Students apply place-value concepts to decide to which place to round multi-digit numbers in different situations.

Application is not a targeted element of rigor for this standard.

Number Routine Would You Rather?

🕒 5–7 min

Build Fluency Students build skills with computation as they compare multiplication and division expressions. These prompts encourage students to talk about their reasoning:

- What strategies did you use to compare the expressions?
- When can you use an estimate instead of an exact product or quotient? Explain.



Purpose Students explore differences between estimates when numbers are rounded to different place-value positions.

Notice & Wonder™

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

Teaching Tip You may want to have students work in pairs as they notice and wonder. This can help build a collaborative classroom culture. It also allows for greater participation among students as they share their thinking with their partners.

ETP Pose Purposeful Questions

The questions that follow may be asked in any order. They are meant to help advance students’ noticing and wonder about the different estimates of museum visitors and are based on possible comments and questions students may make during the share out.

- What could be the exact number of visitors to the museum?
What evidence can you give to support your thinking?
- What could explain the different estimates from the two directors?
- Let’s think of a situation in which the 40,000 estimate would be preferred and another situation in which the 35,000 estimate would be better.
- When might a greater value be useful? When might a lesser value be useful?

Math is... Mindset

- How can behaving flexibly help you work with and learn from others?

SEL Self Awareness: Flexible Behavior

After students engage in collaborative discourse around the Notice & Wonder routine, invite them to share how their ideas may have changed throughout the group discussion. Encourage students to think about how hearing the ideas of their peers may have helped them reach a new or different understanding of estimates. Use this discussion to encourage students to be open to the ideas and suggestions of their peers and remind them that their behavioral flexibility can allow them to learn from one another.

Transition to Explore & Develop

Ask questions that get students thinking about the uses of estimates. Guide the discussion to have student think about how to get to appropriate estimates. If students bring up rounding organically, bring that into the discussion, but if students do not introduce the concept during this part of the lesson, they will be reminded of it in the Explore & Develop.

ETP Establish Goals to Focus Learning

- Let’s think about when estimates are helpful and how we can come up with appropriate estimates.

Lesson 2-4
Round Multi-Digit Numbers

Be Curious 4.NBT.A.3

What do you notice? What do you wonder?

One director said there were about 40,000 visitors at the museum in one month.

Another director said there were about 35,000 visitors at the museum in one month.

Math is... Mindset
How can behaving flexibly help you work with and learn from others?

Unit 2 • Generalize Place-Value Structure 45

Be Curious

What do you notice? What do you wonder?

One director said there were about 40,000 visitors at the museum in one month.

Another director said there were about 35,000 visitors at the museum in one month.

GO ONLINE

Learn

A museum will give a free T-shirt to each visitor in August. The director expects that the number of visitors in August will be about the same as it was in June.



How many T-shirts should the museum director order?

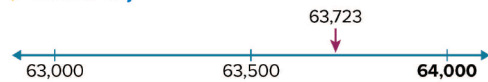
You can round numbers to get a good estimate

▶ One Way Use place value

Round to the nearest ten thousands	Round to the nearest thousands
63,723	63,723
↓	↓
60,000	64,000

Math is... Precision
To which place should the director round to get a good estimate?

▶ Another Way Use a number line



The director should order 64,000 T-shirts.

You can round numbers to make estimates. Think about how precise the estimate needs to be when deciding to which place you will round.

Work Together

Each student who participates in field day will get a water bottle, but not all 1,528 students are expected to participate. What is a reasonable estimate of the number of water bottles to order?

Sample answer: 1,528 rounded to the nearest hundred is 1,500. So, 1,500 water bottles is a reasonable estimate if not all students participate.

1 Pose the Problem

ETP Pose Purposeful Questions

- **Think About It:** Does the museum director know exactly how many visitors will come to the museum in August? Justify your reasoning.
- Would you expect more or fewer visitors in August? Why do you think that?
- What should the director be thinking about before he orders T-shirts?

2 Develop the Math

Choose the option that best meets your instructional goals.

MLR Three Reads Routine

As needed, use the **Three Reads Routine** to help all students make sense of the problem situation. See page X for a full description of the routine.



3 Bring It Together

ETP Elicit and Use Evidence of Student Thinking

- When would ordering 60,000 T-shirts make sense?
- How many T-shirts do you recommend the director order? Explain why.
- What advice can you give someone on how to decide which place to round to?

Key Takeaways

- Rounding multi-digit numbers follows the same steps as rounding 2- and 3-digit numbers. You can round multi-digit numbers to any place.
- You can use rounded numbers to make reasonable estimates.
- Deciding on which place-value position to round to depends on how precise the estimate needs to be.

Work Together

Students determine which place-value position to round the given number as they consider a reasonable estimate for the number of participants. Ask them how precise the estimate needs to be in this situation.

Common Error: Students may misread the problem situation and round 1,528 to 2,000. Ask students to explain what it means if “not all the 1,528 students are expected to participate.”

LOM Language of Math

The word “estimate” is both a verb and a noun. Talk with students about how the word is different when it is used in different ways. Have students practice using the word as both a verb and a noun when they share their answers and how they found them.

Activity-Based Exploration

Students analyze different situations to determine when a more precise estimate may be needed.

Materials: *Activity Cards* Teaching Resource (1 per student-group)

Directions: Student-groups will sort the card into two main categories: (1) estimates that can be less than actuals and (2) estimates that should be greater than actuals. Students can then sort the cards from each category into smaller groups – how close to the actual number the estimate should be and to what place to round for the estimate. As needed, have students write the rules for rounding that they know and update the rules during the activity.

ETP Support Productive Struggle

- Tell me why this estimate can be less than the actual number. What's your reasoning?
- Why do you think this estimate needs to be close to the actual, but this estimate does not need to be as close?
- Why would rounding to the [tens] place give you an estimate that is closer to the actual number?

Math is... Precision

- What patterns do you notice between how close an estimate is to the actual and the place that you round to?

Students notice how rounding to different places impacts the preciseness of an estimate.

Activity Debrief: Have groups share their sorting of the cards and compare decisions made. As student compare their sorting, encourage them to provide clear explanations for their decisions.

Ask students to share their updated rules for rounding.

What updates did you make to your rules for rounding?

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

How many T-shirts should the museum director order?

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

Lesson 2-4 Activity Cards	
Kate estimates how much money she needs to save to buy a car.	Ross estimates the number of tickets he has for games at the arcade.
A manager estimates the amount of flooring a new store needs.	An interior designer estimates the amount of fabric for a project.
An engineer estimates the weight limit of an elevator.	Juni estimates the disk space she will use before buying a computer.
Juni estimates the disk space she will use before buying a computer.	An engineer estimates the weight limit of an elevator.
An interior designer estimates the amount of fabric for a project.	A manager estimates the amount of flooring a new store needs.
Ross estimates the number of tickets he has for games at the arcade.	Kate estimates how much money she needs to save to buy a car.

Guided Exploration

Students extend strategies they learned in Grade 3 for rounding 3-digit numbers to numbers with 4 or more digits. They also think about the uses of rounding numbers, in particular to determine a reasonable estimate.


ETP Facilitate Math Discourse

- What will the director use the estimate for? How close to the actual number do you think the director wants to be? Why?
- Why is it important to consider this question?

Math is... Choosing Tools

- What tools can you use to round numbers?

Students consider appropriate tools for rounding multi-digit numbers.

 You may want to have students round 63,723 to the thousands place on the number line on their own first. Prompt them to think about which numbers to put on the end points based on what they learned about rounding in Grade 3.

- Is 60,000 a reasonable estimate? Explain your reasoning.

Remind students of the process of rounding numbers using place value that they learned in Grade 3 and have them think through how to implement that process when rounding to any place-value position.

- Is 64,000 a more reasonable estimate than 60,000? Explain your reasoning.

Math is... Precision

- To which place should the director round to get a good estimate?

Students consider the need for preciseness with rounded numbers being used for estimates.



EL English Learner Scaffolds

Entering/Emerging Check that students understand the meaning of round in this context. Ask about their understanding of other uses of “round,” e.g., A circle is round.

Developing/Expanding Check that students understand the meaning of round in this context. Point out that when we round, we get a number that is about or around the exact number.

Bridging/Reaching Ask students to explain what it means to round a number. Make sure students understand that we round a number to get an estimate.



On My Own

Name _____

How can you use place value to round the number as indicated?

- | | |
|---|--|
| 1. 478,309 to the nearest thousand
478,000 | 2. 105,201 to the nearest hundred thousand
100,000 |
| 3. 95,550 to the nearest ten thousand
100,000 | 4. 132,847 to the nearest thousand
133,000 |

5. **STEM Connection** Denali National Park in Alaska has about 650,000 visitors each year. What could be the actual number of visitors in one year? Explain your reasoning.

Sample answer: 647,550; 647,550 rounded to the nearest ten thousand is 650,000.



6. Some astronauts will travel to the moon, which is 238,855 miles from the earth.
- About how many miles will the astronauts travel there and back? Explain the reasoning for your estimate.
Sample answer: The astronauts will travel about 480,000 miles. I rounded to the nearest ten thousand to get 240,000 and doubled it because they traveled to the moon and back.
 - How accurate does the estimate need to be?
Sample answer: Rounding to the nearest ten thousand gives me a closer estimate. If I round to the nearest hundred thousand and double it, I get 400,000. This is too far from the actual distance.

Unit 2 • Generalize Place-Value Structure 47

7. About 15,000 people live in a small town. What could be the actual number of people living in the town?
Sample answer: 14,697
8. Mae rounds a number to the thousands place and gets 13,000. Eli rounds the same number to the hundreds place and gets 12,600. What is the greatest number that can be rounded as described?
12,649
9. Anna and her family will fly 4,387 miles to visit family. What's a reasonable estimate of the distance Anna will fly?
Sample answer: 4,400
10. A sports stadium has seats for about 100,000 visitors. What could be the actual number of seats?
Sample answer: 96,600
11. Leon is ordering water bottles for a sports event at which 1,255 people are expected. He plans to round to the nearest thousand to estimate the number of water bottles needed. How would you respond to Leon?
Sample answer: Leon should round to the nearest hundred. If he rounds to the nearest thousand, he will order 1,000 bottles which is less than the number of people expected.
12. **Extend Your Thinking** Students have collected 1,475 cans for a food drive. Their goal is to collect 2,000 cans. About how many more cans do they need to collect?
Sample answer: 1,475 rounded to the nearest hundred is 1,500. So, the students need about 500 more cans.

Reflect

How did you apply what you already know about rounding during this lesson?

Answers may vary.

Math is... Mindset

How have you behaved flexibly while working with others?

Practice

ETP Build Fluency from Understanding

Common Error: Exercises 1–4 Students may incorrectly round down a digit when the place beside it is less than 5, rather than leaving the digit as is. They may assume that if they are to increase the digit to round up, they should decrease the digit to round down. Reinforcing the range in which the digit falls on a number line can help students see the error in that logic.

Item Analysis

Item	DOK	Rigor
1–4	1	Procedural Skill and Fluency
5	2	Application
6a	2	Application
6b	3	Conceptual Understanding
7	2	Application
8	3	Conceptual Understanding
9	2	Application
10	2	Application
11	3	Conceptual Understanding
12	3	Application

Reflect

Students complete the Reflect question.

- How did you apply what you already know about rounding during this lesson?

Ask students to share their reflections with their classmates.

Math is... Mindset

- How have you behaved flexibly while working with others?

Students reflect on how they practiced social awareness.

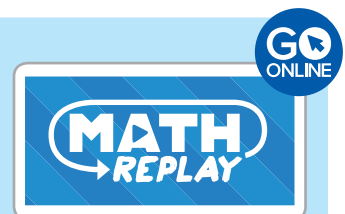
Learning Targets

Ask students to reflect on the Learning Targets of the lesson.

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- I can explain why rounding multi-digit numbers is useful.

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	2	Determine a reasonable estimate by rounding	4.NBT.A.3
2	3	Round multi-digit numbers	4.NBT.A.3
3	2	Round multi-digit numbers	4.NBT.A.3

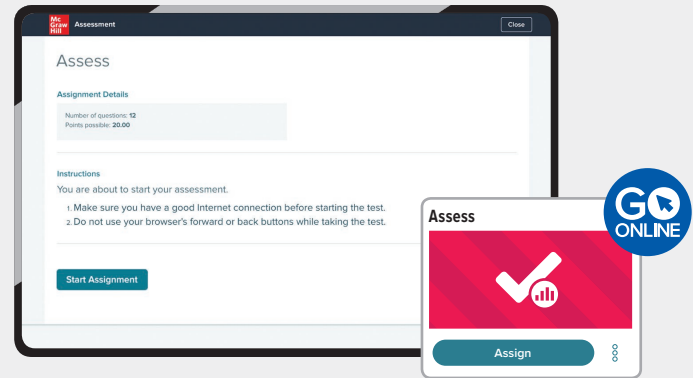
 **Data** Use students' scores on the *Exit Ticket* to assign the differentiated resources available.

Exit Ticket Recommendations

If students score	Then have students do
3 of 3	Additional Practice or any of the B or E activities
2 of 3	<i>Take Another Look</i> or any of the B activities
1 or fewer of 3	Small Group Intervention or any of the R activities

Key for Differentiation

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



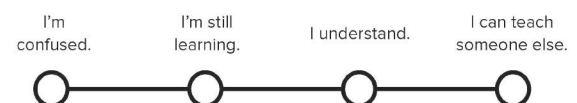
Lesson 2-4 Exit Ticket

Name _____

- How can you use place value to round 317,126?
 Round to the nearest hundred thousand: 300,000
 Round to the nearest ten thousand: 320,000
 Round to the nearest thousand: 317,000
- Last summer, a tour company had 535,812 customers. They will have about the same number of customers this summer.
 Which statement *best* explains the most reasonable estimate of customers that the tour company should use when determining how many buses to hire?
 A. 500,000 so they don't hire more buses than needed.
 B. 535,000 is a good number of buses to work with.
 C. 536,000 is close to the number of last summer's customers.
 D. 550,000 so they are sure to have enough buses.
- Which numbers round to 406,000 when rounding to the nearest thousand? Choose Yes or No.

	406,259	405,811	416,009	406,623	405,539
Yes	✓	✓			✓
No			✓	✓	

Reflect On Your Learning



R Reinforce Understanding

SMALL GROUP

How Many Ways?

Make available place-value charts or number line Teaching Resources. Display 526,875 and ask students to round to the nearest hundred thousand. Students should identify the digit in the hundred thousands place and explain which hundred thousand it is closer to (500,000 or 600,000).

Students may want to write the number in a place value chart or place the number on a number line.

Follow the same process with rounding the number to the nearest ten thousand, thousand, and if needed, hundred.

B Build Proficiency

WORKSTATIONS

Practice It! Game Station

Rounding Numbers Race

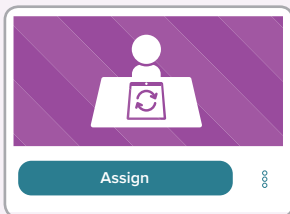
Students practice rounding numbers.



Take Another Look Lessons

Assign the interactive lessons to reinforce targeted skills.

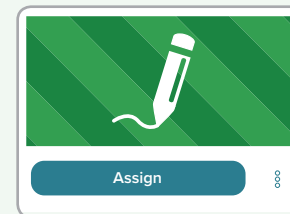
- Round to Nearest 10, 100, or 1,000
- Round to Any Place



GO ONLINE

Interactive Additional Practice

Assign the digital version of the Student Practice Book.



Differentiation Resource Book, p. 7

Lesson 2-4 • Reinforce Understanding

Round Multi-Digit Numbers

Name _____

Review

Use a number line to help you round numbers. Round 78,289 to the nearest thousand.



78,289 is closer to 78,000 than to 79,000.

78,289 rounded to the nearest thousand is 78,000.

Use a number line to help you round each number.

1. Round 40,189 to the nearest hundred. **40,200**
2. Round 64,688 to the nearest thousand. **65,000**
3. Round 80,791 to the nearest ten. **80,790**
4. Round 123,001 to the nearest ten-thousand. **120,000**

Which rounding is the better estimate?

5. A school wants to have enough cookies for a parent event. Last year 345 parents came. One teacher said they should buy 300 cookies. Another teacher said they should buy 400 cookies. Should the school round up or down? Explain your answer.

Sample answer: The school should round up to 400 to make sure they have enough cookies if the same number of parents come this year.

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Differentiation Resource Book

Student Practice Book, pp. 7–8

Lesson 2-4

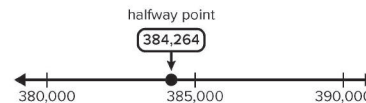
Additional Practice

Name _____

Review

You can round large numbers to any place.

Use a number line to round 384,264 to the nearest ten thousand.



384,264 is between 380,000 and 390,000.

385,000 is halfway between 380,000 and 390,000.

384,264 is closer to 380,000.

384,264 rounded to the nearest ten thousand is 380,000.

Round the following numbers to the nearest hundred thousand, ten thousand, and thousand.

		hundred thousands	ten thousands	thousands
1.	125,250	100,000	130,000	125,000
2.	485,649	500,000	490,000	486,000
3.	518,341	500,000	520,000	518,000
4.	826,341	800,000	830,000	826,000

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Student Practice Book

GO ONLINE

INDEPENDENT WORK

INDEPENDENT WORK

E

Extend Thinking

Own It! Digital Station

Build Fluency Games

Assign the digital game to develop fluency in adding multiples of 10.



WORKSTATIONS

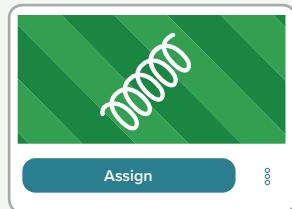
Use It! Application Station

During the unit, have students complete the Connection Card, Real World Card, and STEM Project Card. You can find more information in the Workstations chart on page 32A.



Spiral Review

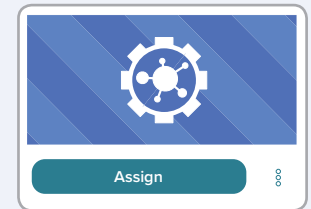
Assign the digital Spiral Review Practice to students or download and print PDFs of the Spiral Review from the Digital Teacher Center.



GO ONLINE

Websketch Exploration

Assign a websketch exploration to apply skills and extend thinking.



Student Practice Book, pp. 7–8

- A company is mailing out 16,743 letters. Envelopes are sold in boxes of one thousand. How many envelopes will the company purchase in order to have enough for all of the letters? Explain.
17,000 envelopes; Sample answer: 16,743 rounded to the nearest thousand is 17,000. The company will need to order 17,000 envelopes to have enough for all of the letters.
- A food bank collects 324,887 items in one year. The food bank expects to collect about the same number of items during the next year. About how many items can the food bank plan to collect in the 2 years? Explain how you chose your estimate.

Sample answer: In two years, the food bank can plan on collecting about 650,000 items. I rounded 324,887 to 325,000 because it is closer than either 300,000 or 400,000 and will give a more accurate estimate. Then, I doubled 325,000 to find an estimated total for two years.

- A school district gives each student an agenda book at the beginning of the school year. There are 163,641 students currently enrolled in the district. Estimate the number of agenda books the district should buy in order to account for any new students that arrive throughout the year. Explain your estimate.

Sample answer: The school district should buy 164,000 agenda books. Rounding the number of students to the nearest hundred thousand or ten thousand will likely result in an excess number of agenda books left over. Rounding to the nearest thousand will ensure that there are enough agenda books for current and future students.



Identify large numbers in magazines or online articles. Ask your child to round each number to the nearest hundred thousand, ten thousand, and thousand. Then ask him or her to identify which estimate would be the most acceptable in each situation.

Student Practice Book

INDEPENDENT WORK

Differentiation Resource Book, p. 8

Lesson 2-4 • Extend Thinking

Round Multi-Digit Numbers

Name _____

Rounding in the Real World

Think about each situation. Decide if it is a good idea to round the number or if an exact number would be better. Explain your answer for each.

- A contractor has calculated that he needs 365 bags of cement to finish a job. He doesn't want to have any extra cement after the job is complete. How many should he purchase?
The contractor should purchase the exact number of 365 so that he doesn't have any left over.
- A city needs to decide how many medals to order for a community fun run. Last year, 1,937 people participated in the race. How many should the city leaders order?
The city leaders should round 1,937 to a greater number, like 1,950 or 2,000 to make sure they have enough.

Think and Solve.

You want to go to a movie with your cousin. You remember the movie costing about \$7.45 last time you went. Would you round down to \$7 or round up to \$8? Explain your reasoning?

You would round up to \$8 to make sure you have enough money with you.

Differentiation Resource Book

Unit 2 Rounding Numbers



Name _____

1. If you round to the nearest hundred, which numbers round to 2,700? Choose all that apply.

- a. 2,752 e. 2,682
 b. 2,735 f. 2,650
 c. 2,749 g. 2,789
d. 2,599 h. 2,649

Explain your choices.

Explanations may vary.

2. If you round to the nearest hundred, which numbers round to 26,500? Choose all that apply.

- a. 26,449 e. 26,498
b. 26,385 f. 26,451
c. 26,589 g. 25,513
d. 25,389 h. 25,499

Explain your choices.

Explanations may vary.

3. If you round to the nearest thousand, which numbers round to 26,000? Choose all that apply.

- a. 25,329 e. 26,329
 b. 25,781 f. 26,585
 c. 25,503 g. 26,289
 d. 25,899 h. 24,792

Explain your choices.

Explanations may vary.

Reflect On Your Learning

I am confused.

I'm still learning.

I understand.

I can teach someone else.



Analyze The Probe ✔ Formative Assessment

Targeted Concept Understand rounding concepts and conventions to identify 4-digit or 5-digit numbers rounded to the any place.

! Targeted Misconceptions Students may have difficulty interpreting place value and understanding that rounding relates to location relative to halfway points on a number line. They may misapply rules for rounding or not understand that multiple numbers can round to the same number when rounding to a given place.

Authentic Student Work

Below are examples of correct student work and explanations.

Sample A

<p>1. If you round to the nearest hundred, which numbers below round to 2,700?</p> <p>a. 2,752 <input checked="" type="checkbox"/> e. 2,682 <input checked="" type="checkbox"/> b. 2,735 <input checked="" type="checkbox"/> f. 2,650 <input checked="" type="checkbox"/> c. 2,749 g. 2,789 d. 2,599 h. 2,649</p>	<p>Explain your choices.</p> <p style="text-align: center;"> $\begin{array}{ccc} & 2700 & \\ \swarrow & & \searrow \\ 2650 & - & 2749 \\ f & e & b & c \end{array}$ </p> <p>rest are to small or to big</p>
--	--

Sample B

<p>3. If you round to the nearest thousand, which numbers below round to 26,000?</p> <p>a. 25,329↓ <input checked="" type="checkbox"/> e. 26,329↓ <input checked="" type="checkbox"/> b. 25,781↑ f. 26,585↑ <input checked="" type="checkbox"/> c. 25,503↑ <input checked="" type="checkbox"/> g. 26,289↓ <input checked="" type="checkbox"/> d. 25,899↑ h. 24,792</p>	<p>Explain your choices.</p> <p>I chose b, c, d, e and g because I remember 500 and up move up 499 and below stays same.</p>
--	--

Collect and Assess Student Work

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

IF incorrect...	THEN the student likely...	Sample Misconceptions
1. a, g 2. a, b, c 3. e, f, g	thinks about rounding as rounding <i>off</i> at the given place value rather than rounding <i>to the nearest</i> place value. Students may not apply the convention that when the digit to the right of the place being rounded to is 5, you round up.	<p>1. If you round to the nearest hundred, which numbers below round to 2,700?</p> <p>a. 2752 e. 2,682 b. 2735 f. 2,650 c. 2749 g. 2789 d. 2,599 h. 2,649</p> <p>Explain your choices.</p> <p>I rounded 2700 to 2752, 2735, 2749, 2789.</p>
1. h 2. a, b 3. a	rounds up rather than to the nearest place value. This often occurs when there is a digit greater than 4 in a place that should not be under consideration. For example, in item 1, choice h, some students may erroneously think that the 9 in 2,649 means that 2,649 should be rounded to 2,700.	<p>2. If you round to the nearest hundred, which numbers below round to 26,500?</p> <p>a. 26,449 e. 26,498 b. 26,385 f. 26,451 c. 26,589 g. 25,513 d. 25,389 h. 25,499</p> <p>Explain your choices.</p> <p>Th ay are The Closests to 26500 26449 26385 25389 like that.</p>
1. d 2. d 3. h	“rounds” multiple times, starting with the ones place. In item 1, choice d, students may round 2,599 to 2,700 because both the ones and tens digits are greater than 4. This means that the 5 in 2,599 is in effect rounded up twice, first to 6 and then to 7, producing 2,700.	<p>2. If you round to the nearest hundred, which numbers below round to 26,500?</p> <p>a. 26,449 c. 26,498 b. 26,385 f. 26,451 c. 26,589 g. 25,513 d. 25,389 h. 25,499</p> <p>Explain your choices.</p> <p>I picked my choices becuZ the hundreds can round up or down to 500. 498-500 •449-500 •451-500 •499-500 •513-500</p>

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 number line activities in Lesson 2-4.
- Have students make and walk on a physical number line to build understanding that rounding is related to proximity to a value shown on the number line.
- Revisit rounding to the nearest hundred using base-ten blocks to build numbers. Have students build a number that when rounded would be the number you have represented with base-ten blocks. Connect this representation to the number line.
- Move away from concrete materials and the number line to support students in reasoning about rounding by visualizing numbers without physically representing them.

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 items 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.

Unit Review

Unit Review Name _____

Vocabulary Review

Match the word to the phrase that best describes it.

- | | |
|----------------------------------|--|
| 1. round
(Lesson 2-4) | A. a way to write a number as a sum that shows the value of each digit |
| 2. period
(Lesson 2-2) | B. the form of a number that uses written words |
| 3. expanded form
(Lesson 2-1) | C. exactly half the distance between two given numbers |
| 4. standard form
(Lesson 2-2) | D. one way to determine a reasonable estimate |
| 5. digit
(Lesson 2-4) | E. the usual way of writing a number that shows only its digits |
| 6. word form
(Lesson 2-2) | F. a grouping of three digits in greater numbers |
| 7. halfway point
(Lesson 2-4) | G. a symbol used to write numbers |

Unit 2 • Generalize Place-Value Structure 51

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	2-4
2	2-2
3	2-1
4	2-2
5	2-1
6	2-2
7	2-4

Review

8. What is the relationship between the two 4 digits in the number 904,467? (Lesson 2-1)
- The value of the first 4 is 4,000; the value of the second 4 is 400. 4,000 is ten times 400.**
9. Which number represents sixty-two thousand, four hundred ninety-five? Choose the correct answer. (Lesson 2-2)
- A. 620,495
B. 624,95
C. 62,495
D. 62,400,095
10. A school raised \$8,875. Which shows a reasonable estimate of the amount the school raised? Choose the correct answer. (Lesson 2-4)
- A. \$9,500 **B. \$9,000**
C. \$7,000 D. \$8,000
11. What is the value of the digit 2 in 143,287? (Lesson 2-1)
- 200**
12. What is the word form of 9,284? (Lesson 2-2)
- nine thousand, two hundred eighty-four**
13. In which number does the digit 2 have a value that is ten times the value of the digit 2 in 12,738? Choose the correct answer. (Lesson 2-1)
- A. 26 B. 215
C. 2,387 **D. 23,901**
14. Which of the following are different ways to represent the number 40,381? Choose all that apply. (Lesson 2-2)
- A. $4,000 + 300 + 80 + 1$
B. Forty thousand, three hundred eighty-one
C. $40,000 + 300 + 80 + 1$
D. Four thousand, three hundred eighty-one
E. $40,000 + 3,000 + 80 + 1$
F. Forty, three hundred eighty-one
15. What is the value of each digit in the number shown? (Lesson 2-1)

Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones
	3	4	4	5	6

30,000; 4,000; 400; 50; 6

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52 Unit 2 • Review

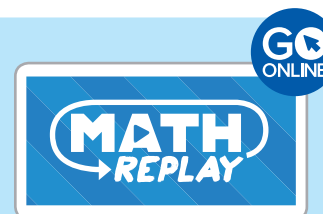
Review

Item Analysis

Item	DOK	Lesson	Standard
8	2	2-1	4.NBT.A.1
9	2	2-2	4.NBT.A.2
10	2	2-4	4.NBT.A.3
11	1	2-1	4.NBT.A.1
12	1	2-2	4.NBT.A.2
13	1	2-1	4.NBT.A.1
14	3	2-2	4.NBT.A.2
15	2	2-1	4.NBT.A.1

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.



Item Analysis (continued)

Item	DOK	Lesson	Standard
16	3	2-3	4.NBT.A.2
17	2	2-3	4.NBT.A.2
18	2	2-4	4.NBT.A.3
19	2	2-3	4.NBT.A.2
20	2	2-1	4.NBT.A.1
21	1	2-4	4.NBT.A.3
22	1	2-4	4.NBT.A.3
23	3	2-1	4.NBT.A.1

Performance Task

Standards: 4.NBT.A.2, 4.NBT.A.3

Rubric (6 points)

Part A (DOK 3) – 2 points

- 2 POINTS** Student’s work reflects a proficiency with rounding and estimating quantities. The student used rounding appropriately and the estimate is reasonable as is the explanation.
- 1 POINT** Student’s work reflects developing proficiency with rounding and estimating quantities. The student used rounding appropriately to estimate, but the explanation does not reflect understanding of reasonable estimation.
- 0 POINTS** Student’s work reflects a poor understanding of rounding and estimating quantities. Their rounded estimate is not reasonable.

Part B (DOK 3) – 2 points

- 2 POINTS** Student’s work reflects proficiency with comparing multi-digit numbers. The student’s statement and explanation are accurate.
- 1 POINT** Student’s work reflects developing proficiency with comparing multi-digit numbers. The student’s statement is accurate, but the explanation may not be.
- 0 POINTS** Student’s work shows weak proficiency with comparing multi-digit numbers. The student’s statement and explanation are both inaccurate.

Part C (DOK 4) – 2 points

- 2 POINTS** Student’s work reflects proficiency with determining an exact value from an estimate. The student’s actual number and explanation are reasonable.
- 1 POINT** Student’s work reflects developing proficiency with determining an exact value from an estimate. The student’s actual number is reasonable, but the explanation is not.
- 0 POINTS** Student’s work shows weak proficiency with determining an exact value from an estimate. Neither the student’s actual number nor explanation is reasonable.

Reflect

The Reflect question provides an opportunity for students to express their understanding of the unit level focus question.

16. Michael was playing a video game with his friends. Each person recorded their score in a different form. Who had the highest score? Tell how you know. (Lesson 2-3)
19. Which statements are true? Choose all that apply. (Lesson 2-3)
- A. $3,100 = 3,000 + 100$
 - B. $432,238 < 324,239$
 - C. two thousand, six = 2,006
 - D. $31,840 > 31,440$

Name	High Score
Paul	three thousand, two hundred fifty-eight
Susan	$2,000 + 900 + 50 + 8$
Michael	3,302

Michael; Sample answer: $3,302 > 3,258$ (Paul’s score); $3,302 > 2,958$ (Susan’s score)

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

17. Which statements are true? Choose all that apply. (Lesson 2-3)
- A. $2,315 > 1,319$
 - B. $2,315 < 1,319$
 - C. $1,319 > 2,315$
 - D. $2,315 = 1,319$
 - E. $1,319 < 2,315$
18. Keisha has about \$3,000 in her saving account. What could be the exact amount in her savings account? Justify your answer. (Lesson 2-4)
20. In the number 3,665, how does the value of the digit 6 in the hundreds place compare to the value of the digit 6 in the tens place? (Lesson 2-1)
21. What is 392,483 rounded to the nearest thousand? (Lesson 2-4)
22. What is 392,483 rounded to the nearest hundred thousand? (Lesson 2-4)
23. What is the relationship between the two 7 digits in the number 328,277? (Lesson 2-1)

Sample answer: \$2,851; 2,851 rounds to 3,000

The value of the 7 in the tens place is 10 times the value of the digit 7 in the ones place.

Performance Task

National Park Visitors

There were 642,809 visitors to Denali National Park in Alaska in 2017. In 2015, there were 589,450 visitors to the park.

Part A: What is a reasonable estimate of the number of visitors to Denali National Park in 2017? Explain why it is a reasonable estimate.

Sample answer: 640,000. There were 642,809 visitors in 2017. Rounding 642,809 to the nearest thousand gives me 640,000 which is close to the original number.

Part B: How does the number of visitors to Denali in 2015 compare to the number of visitors in 2017? Write a math statement to represent the comparison. Justify your statement.

642,809 > 589,450; Sample answer: I compared the numbers by starting at the highest place-value position. 6 hundred thousands > 5 hundred thousands, so there were more visitors in 2017.

Part C: The number of visitors to Everglades National Park in Florida in 2017 was about 600,000. What could be the actual number of visitors to Everglades National Park in 2017? Defend your number.

Sample answer: 613,021. If I round 613,021 to the nearest hundred thousand I get 600,000.

Reflect

How does knowing the structure of multi-digit numbers help you work with these numbers?

Answers may vary.

Unit 2

Fluency Practice

Name _____

Fluency Strategy

You can decompose by place value to find the difference.

Decompose

$$653 - 212 = ?$$

$$212 = 200 + 10 + 2$$

$$653 - 200 = 453$$

$$453 - 10 = 443$$

$$443 - 2 = 441$$

$$\text{So, } 653 - 212 = 441$$

1. How can you decompose by place value to find the difference?

$$697 - 324 = ?$$

$$324 = \underline{300} + \underline{20} + \underline{4}$$

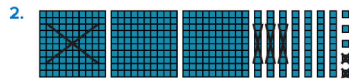
$$697 - \underline{300} = 397$$

$$397 - \underline{20} = 377$$

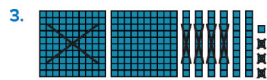
$$377 - \underline{4} = \underline{373}$$

Fluency Flash

Use the base-ten blocks to write matching subtraction equations.



$$375 - 100 = 275; 275 - 30 = 245; 245 - 2 = 243$$



$$264 - 100 = 164; 164 - 40 = 124; 124 - 3 = 121$$

Unit 2 • Generalize Place Value Structure 55

Fluency Check

What is the sum or difference?

4. $739 - 428 = ?$ 311 10. $684 - 152 = ?$ 532

5. $238 + 684 = ?$ 922 11. $549 + 287 = ?$ 836

6. $723 + 246 = ?$ 969 12. $164 + 528 = ?$ 692

7. $736 + 125 = ?$ 861 13. $356 - 145 = ?$ 211

8. $858 - 615 = ?$ 243 14. $674 - 213 = ?$ 461

9. $958 - 230 = ?$ 728 15. $464 + 103 = ?$ 567

Fluency Talk

How would you explain to a friend how to decompose a number by place value to make subtraction easier?

Explanations may vary.

How is using partial sums to add like decomposing a number by place value to subtract?

Explanations may vary.

56 Unit 2 • Fluency Practice

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 build fluency with subtracting by decomposing by place value.

Fluency Progression

Unit	Skill	Standard
1	Use Partial Sums (Within 1,000)	3.NBT.A.2
2	Decompose by Place Value to Subtract (Within 1,000)	3.NBT.A.2
3	Multiply by 2, 5, and 10	3.OA.C.7
4	Multiply by 4 and 8	3.OA.C.7
5	Multiply by 3 and 6	3.OA.C.7
6	Multiply by 7 and 9	3.OA.C.7
7	Use an Algorithm to Add (No Regrouping)	4.NBT.B.4
8	Use an Algorithm to Subtract (No Regrouping)	4.NBT.B.4
9	Use an Algorithm to Add (With Regrouping)	4.NBT.B.4
10	Use an Algorithm to Subtract (With Regrouping)	4.NBT.B.4
11	Choose a Strategy to Add	4.NBT.B.4
12	Choose a Strategy to Subtract	4.NBT.B.4
13	Use an Algorithm to Add and Subtract	4.NBT.B.4
14	Use an Algorithm to Add and Subtract	4.NBT.B.4

Fluency Expectations

Grade 3

- Add and subtract within 1,000.
- Multiply and divide within 100.

Grade 4

- Add and subtract within 1,000,000.

Grade 5

- Multiply multi-digit whole numbers.

Performance Task

Populations

Students draw on their understanding of place value and estimation to solve problems. Use the rubric shown to evaluate students' work.

Standards: 4.NBT.A.1, 4.NBT.A.2, 4.NBT.A.3

Rubric (8 points)

- Part A – 2 points**
- 2 POINTS** Student's work reflects a proficiency with understanding place value through the millions for both populations. The place value inputs are accurate and reasoning makes sense.
- 1 POINTS** Student's work reflects developing proficiency with understanding place value through the millions for one of the two populations. One of the place value inputs is accurate and reasoning makes sense.
- 0 POINTS** Student's work reflects a poor understanding of place value through the millions to fill in populations. Place value chart is filled in inaccurately or is unable to explain their reasoning.
- Part B – 2 points**
- 2 POINTS** Student's work shows proficiency with writing numbers through the millions in expanded form. The solution and explanation are accurate.
- 1 POINTS** Student's work shows developing proficiency with writing numbers through millions in expanded form. The solution shows inaccurate place value for one of the populations or provides an inaccurate explanation.
- 0 POINTS** Student's work shows weak proficiency with writing numbers through millions in expanded form. The solution is inaccurate and provides an inaccurate explanation.
- Part C – 2 points**
- 2 POINTS** Student's work shows proficiency with comparing multi-digit numbers using the $>$ symbol and rounding to the place value position that makes sense. Comparison and rounding are accurate. Explanation is clear, precise, and makes sense.
- 1 POINTS** Student's work shows developing proficiency with comparing multi-digit numbers using the $>$ symbol and rounding to the place value position that makes sense. The comparison and rounding are inaccurate, or the explanation is not clear, precise, or does not make sense.
- 0 POINTS** Student's work shows weak proficiency with comparing multi-digit numbers using the $>$ symbol and rounding to the place value position that makes sense. Comparison and rounding are inaccurate, and explanation does not make sense.
- Part D – 2 points**
- 2 POINTS** Student's explanation shows proficiency with place value understanding to explain how to round a multi-digit number. Clear mathematical language is used.

Unit 2

Performance Task

Name _____

Populations

Chicago, Illinois is one of the largest cities in the United States. Chicago is a city known for its media communications, business, fashion, and transportation.

The chart shows the population of Chicago in two recent years.

Population of Chicago	
Year	Population
2015	2,726,215
2018	2,705,994

Part A

Use the place-value chart to fill in Chicago's population for 2015 and 2018.

Millions Period			Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones

How do the 5s compare in the two population years? How does the place value chart help you determine this?

I can look at the place value chart and compare the positions of the digits. The 5 in Chicago's 2015 population is in the ones place, so its value is 5; the 5 in Chicago's 2018 population is in the thousands place, so its value is 5,000. 5,000 is greater than 5.

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Part B

Use the population chart to write Chicago's 2015 and 2018 populations in expanded form. Explain how using expanded form could help you compare the populations.

$2,726,215 = 2,000,000 + 700,000 + 20,000 + 6,000 + 200 + 10 + 5$; $2,705,994 = 2,000,000 + 700,000 + 5,000 + 900 + 90 + 4$; Sample answer: Expanded form shows me the value of each digit. I can see the millions and hundred thousands each have the same value. But, the ten thousands differ. There are twenty thousands in 2,726,215 and 0 ten thousands in 2,705,994. $20,000 > 0$. The greater population is 2,726,215.

Part C

Use the $>$ symbol to compare the two populations.

$2,726,215 > 2,705,994$

Determine which place value position to round the population to. About how much greater is the population between the two years? Explain why you chose the place value position that you did.

About 20,000; 2,726,215 rounds to 2,730,000 and 2,705,994 rounds to 2,710,000; $2,730,000 - 2,710,000 = 20,000$; I rounded to the nearest ten thousand because both numbers have the same value in millions and ten thousands. Also, estimation of populations isn't precise.

Part D

Explain your preferred way of rounding and why.


Check students' explanations.

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Unit Assessments

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.

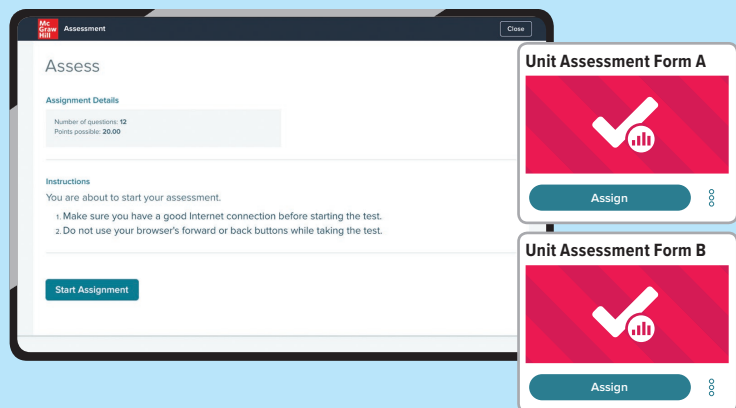
 **Data** When students complete the Unit Assessment in the Digital Student Center, their responses are auto-scored.

Item Analysis

Item	DOK	Lesson	Guided Support Intervention Lesson	Standard
1	2	2-2	Standard & Word Form through 999,999	4.NBT.A.2
2	2	2-3	Compare & Order Numbers through 999,999	4.NBT.A.2
3	2	2-3	Compare & Order Numbers through 999,999	4.NBT.A.2
4	1	2-1	Ten Times as Great	4.NBT.A.1
5	2	2-2	Expanded Form through 999,999	4.NBT.A.2
6	1	2-4	Round to Any Place	4.NBT.A.3
7	2	2-1	Ten Times as Great	4.NBT.A.1
8	2	2-4	Round to Nearest 10, 100, or 1,000	4.NBT.A.3
9	2	2-4	Round to Any Place	4.NBT.A.3
10	3	2-2	Standard & Word Form through 999,999	4.NBT.A.2
11	2	2-2	Standard & Word Form through 999,999	4.NBT.A.2
12	1	2-4	Round to Any Place	4.NBT.A.3
13a	3	2-1	Ten Times as Great	4.NBT.A.1
13b	3	2-1	Ten Times as Great	4.NBT.A.1
14	2	2-2	Expanded Form through 999,999	4.NBT.A.2
15	3	2-1	Ten Times as Great	4.NBT.A.1



Assign the digital Unit Assessment (Form A or B) to students or download and print PDFs from the Digital Teacher Center.



Unit 2 Unit Assessment, Form A

Name _____

- Which number has the digit 4 in the tens place, the digit 9 in the ten thousands place, and the digit 7 in the hundreds place?
 A. 93,724 **B. 93,742**
 C. 97,234 D. 97,342
- How can you compare the numbers? Write $>$, $<$, or $=$.
 4,893 $<$ 12,399
 948,121 $>$ 941,053
 435,927 $>$ 87,589
 20,508 $=$ 20,508
- Paula creates a table to show the heights of 3 different skyscrapers.

Skyscraper	Height (ft)
Willis Tower	1,453
U.S. Bank Tower	1,018
One World Trade Center	1,776

 Which place-value position should Paula use to compare their heights?
 A. ones place
 B. tens place
C. hundreds place
 D. thousands place
- The value of the thousands place is 10 times greater than the value of which place-value position?
 A. ten thousands
B. hundreds
 C. tens
 D. ones
- Which of these represents 508,627? Choose all that apply.
 A. $50,000 + 8,000 + 600 + 20 + 7$
B. five hundred eight thousand, six hundred twenty-seven
C. $500,000 + 8,000 + 600 + 20 + 7$
 D. fifty-eight thousand, six hundred twenty-seven
- What is the value of the digit 7 in 76,509?

70,000

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- What is 65,803 rounded to the nearest ten thousand?

70,000

- The value of the digit 9 in 943 is 10 times the value of the digit 9 in what other number?
 A. 9,723 **B. 793** C. 39 D. 9

A factory owner estimates that the factory can make 655,000 toy cars each week. Which number rounds to 655,000 when rounding to the nearest thousand? Choose Yes or No for each number.

	Yes	No
9. 655,289	✓	
10. 658,213		✓
11. 654,602	✓	
12. 655,555		✓
13. 654,399		✓

- How can you round 385,122 to three different place-value positions?

Round to the nearest hundred thousand: **400,000**
 Round to the nearest ten-thousand: **390,000**
 Round to the nearest thousand: **385,000**

- a. How would you write 420,403 in expanded form?

$400,000 + 20,000 + 400 + 3$

- b. Rounding to the nearest thousand, what does 420,403 round to?

420,000

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Unit 2
Unit Assessment, Form A (continued)

Name _____

16. Look at the place-value chart.

Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones
4	6	0	1	5	7

Which statements are true about the number shown in the place-value chart? Choose all that apply.

- A. The digit 1 is in the hundreds place.
- B. The digit 5 is in the tens place.
- C. There are 0 ten thousands.
- D. The value of the digit 6 is 60,000.
- E. The digit 4 is in the millions period.
- F. The value of the digit 7 is 70.

Complete the table.

Standard Form	Expanded Form	Word Form
17. 1,235, 576	1,000,000 + 200,000 + 30,000 + 5,000 + 500 + 70 + 6	one million, two hundred thirty-five thousand, five hundred seventy-six
18. 820,412	800,000 + 20,000 + 400 + 10 + 2	eight hundred twenty thousand, four hundred twelve
19. 97,026	90,000 + 7,000 + 20 + 6	ninety-seven thousand, twenty-six

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20. What is 378,249 rounded to the nearest hundred thousand?
400,000

21. Write the largest number and the smallest number you can create using the given digits. Use each digit only once. Do not use 0 as the first digit.

4, 0, 6, 5, and 3

a. largest 65,430 b. smallest 30,456

Which representations are equivalent to 320,605? Choose Yes or No for each representation.

	Yes	No
22. three hundred twenty thousand, six hundred five	<input checked="" type="checkbox"/>	<input type="checkbox"/>
23. 300,000 + 20,000 + 600 + 5	<input checked="" type="checkbox"/>	<input type="checkbox"/>
24. 3 hundred thousands 2 ten thousands 6 thousands 6 hundreds 0 tens 5 ones	<input type="checkbox"/>	<input checked="" type="checkbox"/>

25. Zoe writes the following number in the place-value chart:

Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones
	1	2	0	1	9

Ralph makes a new 4-digit number. He uses the same digits as Zoe, but he removes the 0. He writes the digits in the same order. Write Ralph's number. Then, explain how the values of the digits in Ralph's number compare to the values of the digits in Zoe's number.

1,219; Sample answer: The value of the first two digits, 1 and 2, in Zoe's number are ten times more than in Ralph's number. The value of the 1 changed from 10,000 to 1,000. The value of the 2 changed from 2,000 to 200. The value of the second 2 digits, 1 and 9, stay the same.

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Form B

Unit 2
Unit Assessment, Form B

Name _____

- Which number has the digit 7 in the ones place, the digit 4 in the thousands place, and the digit 8 in the hundred thousands place?
 A. 814,507 B. 814,570
 C. 840,517 D. 840,571
- How can you compare the numbers? Write $>$, $<$, or $=$.
10,420 7,211
253,059 253,207
64,719 64,719
62,599 179,880
- Vince creates a table to display the heights of 3 different waterfalls.

Waterfall	Height (ft)
Tres Hermanas Falls	2,999
Olo'upena Falls	2,953
Yumbilla Falls	2,940

Which place-value position should Vince use to compare their heights?

- A. ones place
- B. tens place
- C. hundreds place
- D. thousands place

- The value of the hundred thousands place is 10 times greater than the value of which place-value position?
 A. millions
 B. ten thousands
 C. thousands
 D. hundreds
- Which of these represents 857,014? Choose all that apply.
 A. Eight hundred fifty-seven thousand, fourteen
 B. 800,000 + 50,000 + 7,000 + 10 + 4
 C. Eighty-five thousand, seven hundred fourteen
 D. 800,000 + 50,000 + 700 + 10 + 4

6. What is the value of the digit 5 in 76,509?
500

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10. 318,468		<input checked="" type="checkbox"/>
11. 319,097	<input checked="" type="checkbox"/>	
12. 319,521		<input checked="" type="checkbox"/>
13. 318,604	<input checked="" type="checkbox"/>	

14. How can you round 228,141 in different ways?

Round to the nearest hundred thousand: 200,000

Round to the nearest ten-thousand: 230,000

Round to the nearest thousand: 228,000

15. a. How would you write 272,403 in expanded form?

200,000 + 70,000 + 2,000 + 400 + 3

b. Rounding to the nearest thousand, what does 272,403 round to?

272,000

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- D. The digit 7 is in the thousands period.
- E. The value of the digit 4 is 40,000.
- F. The value of the digit 3 is 30.

Complete the table.

Standard Form	Expanded Form	Word form
17. 531,076	500,000 + 30,000 + 1,000 + 70 + 6	Five hundred thirty-one thousand, seventy-six
18. 1,826,920	1,000,000 + 800,000 + 20,000 + 6,000 + 900 + 20	One million, eight hundred twenty-six thousand, nine hundred twenty
19. 34,856	30,000 + 4,000 + 800 + 50 + 6	Thirty-four thousand, eight hundred fifty-six

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hundreds	tens	ones	hundreds	tens	ones
	2	8	3	0	1

Isabelle makes a new number. She uses the same digits as Grace, but she removes the 0. She writes the digits in the same order. Write Isabelle's number. Then explain how the values of the digits in Isabelle's number compare to the values of the digits in Grace's number.

2,831; Sample answer: The value of the first three digits, 2, 8 and 3, in Grace's number are ten times more than in Isabelle's number. The value of the 2 changed from 20,000 to 2,000. The value of the 8 changed from 8,000 to 800. The value of the 3 changed from 300 to 30. The value of the last digit, 1, stays the same. The 1 keeps the value of 1.

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Grade 4

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: Generalize Place-Value Structure .

- Understand the Structure of Multi-Digit Numbers
- Read and Write Numbers to One Million
- Compare Multi-Digit Numbers
- Round Multi-Digit Number

Unit 3: Addition and Subtraction Strategies and Algorithms .

- Estimate Sums or Differences
- Strategies to Add Multi-Digit Numbers
- Understand an Addition Algorithm
- Understand an Addition Algorithm Involving Regrouping
- Strategies to Subtract Multi-Digit Numbers
- Understand a Subtraction Algorithm
- Understand a Subtraction Algorithm Involving Regrouping
- Represent and Solve Multi-Step Problems
- Solve Multi-Step Problems Involving Addition and Subtraction

Unit 4: Multiplication as Comparison .

- Understand Comparing with Multiplication
- Represent Comparison Problems
- Solve Comparison Problems Using Multiplication
- Solve Comparison Problems Using Division

Unit 5: Numbers and Number Patterns .

- Understand Factors of a Number
- Understand Prime and Composite Numbers
- Understand Multiples
- Number or Shape Patterns
- Generate a Pattern
- Analyze Features of a Pattern

Unit 6: Multiplication Strategies with Multi-Digit Numbers .

- Multiply by Multiples of 10, 100, or 1,000
- Estimate Products
- Use the Distributive Property to Multiply
- Multiply 2-Digit by 1-Digit Factors
- Multiply Multi-Digit by 1-Digit Factors
- Multiple Two Multiples of 10
- Multiply Two 2-Digit Factors
- Solve Multi-Step Problems Involving Multiplication

Unit 7: Division Strategies with Multi-Digit Dividends and 1-Digit Divisors

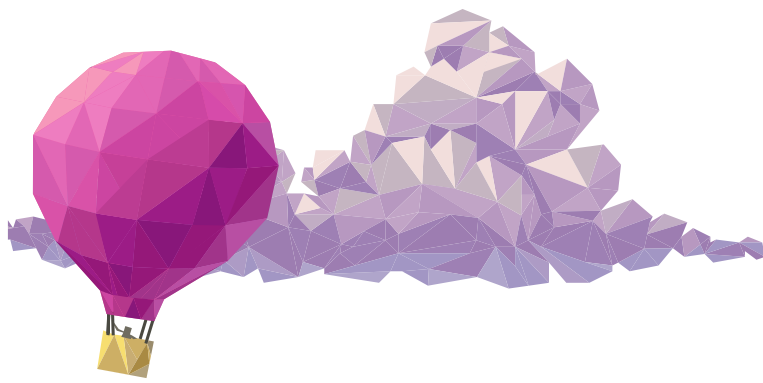
- Divide Multiples of 10, 100, or 1,000
- Estimate Quotients
- Find Equal Shares
- Understand Partial Quotients
- Divide 4-Digit Dividends by 1-Digit Divisors
- Understand Remainders
- Make Sense of a Remainder
- Solve Multi-Step Problems Using Division

Unit 8: Fraction Equivalence .

- Equivalent Fractions
- Generate Equivalent Fractions using Models
- Generate Equivalent Fractions using Number Lines
- Compare Fractions using Benchmarks
- Other Ways to Compare Fractions

Unit 9: Addition and Subtraction Meanings and Strategies with Fractions

- Understand Decomposing Fractions
- Represent Adding Fractions
- Add Fractions with Like Denominators
- Represent Subtracting Fractions
- Subtract Fractions with Like Denominators
- Solve Problems Involving Fractions



Unit 10: Addition and Subtraction Strategies with Mixed Number

- Understand Decomposing Mixed Numbers
- Represent Adding Mixed Numbers
- Add Mixed Numbers
- Represent Subtracting Mixed Numbers
- Subtract Mixed Numbers
- Solve Problems Involving Mixed Numbers

Unit 11: Multiply Fractions by Whole Numbers

- Represent Multiplication of a Unit Fraction By a Whole Number
- Understand Multiplying a Fraction By a Whole Number
- Multiply a Fraction by a Whole Number
- Multiply a Mixed Number by a Whole Number
- Solve Problems Involving Fractions and Mixed Numbers

Unit 12: Decimal Fractions

- Understand Tenths and Hundredths
- Understand Decimal Notation
- Compare Decimals
- Adding Decimals Using Fractions
- Solve Problems Involving Money

Unit 13 Units of Measurement and Data

- Relate Metric Units
- Relate Customary Units of Capacity
- Convert Units of Time
- Solve Problems That Involve Units of Measure
- Solve More Problems That Involve Units of Measure
- Solve Problems Using a Perimeter Formula
- Solve Problems Using an Area Formula
- Solve Problems Involving Perimeter and Area
- Display and Interpret Data on a Line Plot
- Solve Problems Involving Data on a Line Plot

Unit 14: Geometric Figures

- Understand Lines, Line Segments, and Rays
- Classify Angles
- Draw and Measure Angles
- Understand Parallel and Perpendicular Lines
- Add and Subtract Angle Measures
- Solve Problems Involving Unknown Angle Measures
- Classify Polygons
- Classify Triangles
- Understand Line Symmetry
- Draw Lines of Symmetry

