San Diego Unified
SCHOOL DISTRICT

FIFTH GRADE

Unit 1
Place Value
15 days

enVision 2.0 Topic 1

Overarching Understandings:
The base-ten numeration system is the way in which numbers are recorded using digits 0-9, groups of ten, and place value. The position or place of a digit in a number determines its value. A digit in one place represents ten times what it represents in the place to its right and 1/10 of what it represents in the place to its left. Rounding is an appropriate estimation strategy for solving problems.

Essential Questions:
- What determines the value of a number?
- How can you determine the value of a digit in relation to its place in a number?
- What happens to a digit when it is multiplied or divided by 10?
- How can we read, write, and represent decimal values?
- What is an effective way to round numbers?
- When would you use rounding in the real world?

Common Core State Standards:
5.NBT.1 Recognize that in multi-digit whole number, a digit in one place represents 10 times what it represents in the place to its right and 1/10 of what it represents in the place to its left
5.NBT.2 Explain patterns in the number of zeroes of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10
5.NBT.3 Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 x 100 + 4 x 10 + 7 x 1 + 3 x (1/10) + 9 x (1/100) + 2 x (1/1000). b. Compare two decimals to thousandths based on meanings of the
5.NBT.4 Use place value understanding to round decimals to any place.

Key Vocabulary:	**Sentence Frames:**
standard form / expanded form / word form place value digit round exponent	_____ rounded to the nearest (ten, hundred, thousand, etc..) is _____. The digit in the _____ place is _____. The value of the digit is _____. The value of the _____ place is 10 times greater than the _____ place. The value of the _____ place is 1/10 of the _____ place.

Suggested Materials:

base-ten blocks	centimeter grid paper	hundred grid bags
digit cards (0-9)	dice or spinners	

Number Talks: *Number Talks are used to develop fluency and to make sense of problems.*
Problem Solving
Number Lines

San Diego Unified SCHOOL DISTRICT

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Unit 1

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14 Lessons
1 Assessment Day

Suggested Order of Lessons

Objective 1: Students will model whole numbers and decimals in various ways by using place value charts, base-ten manipulatives, and symbols. (5.NBT.1, 5.NBT.2, 5.NBT.3)

Day	Source	Lesson Title	Page Number	Notes
1	Engage NY	Using Exponents to Name Place Value (Problems 1-3)	Unit p. 8	
2	Engage NY	Using Exponents to Name Place Value (Problems 4-9)	Unit p. 13	
3	SDUSD	Using a Place Value Chart to Understand Numbers up to 1,000,000	Unit p. 17	
4	enVision 2.0	1-2 Understand Whole Number Place Value	ENV TE p. 11	
5	SDUSD	Decimal Place Value	Unit p. 21	
6	enVision 2.0	1-3 Decimals to the Thousandths	ENV TE p. 17	
7	Georgia	Patterns R Us	Unit p. 24	
8	enVision 2.0	1-4 Understand Decimal Place Value	ENV TE p. 23	

Objective 2: Students will compare and order numbers by using various models. Students will round multi-digit whole numbers and decimals to any place by using place value understanding. (5.NBT.3, 5.NBT.4)

Day	Source	Lesson Title	Page Number	Notes
9	Georgia	High Roller	Unit p. 30	
10	enVision 2.0	1-5 Compare Decimals	ENV TE p. 29	
11	Georgia	Decimal Line up	Unit p. 36	
12	enVision 2.0	1-6 Round Decimals	ENV TE p. 35	
13	Georgia	Batter up	Unit p. 42	
14	enVision 2.0	1-7 Look for and Use Structure	ENV TE p. 41	
15	Assessment			

SDUSD Math Lesson Map

Number Talks
15 minutes

Number Talks are a chance for students to come together to practice fluency and share their mathematical thinking by engaging in conversations and discussions around problem solving and number sense activities.

The structure of math lessons should follow the Launch, Explore, Summarize format. This structure allows students to explore mathematical concepts with rigor (fluency, concept development, and application) to develop understanding in ways that make sense. Some rich tasks may take multiple days for students to explore. In these cases, each day should still follow the Launch, Explore, Summarize format.

LAUNCH (5–10 minutes)

The teacher sets the stage for learning by ensuring the purpose and the rationale of the lesson are clear by connecting the purpose to prior learning, posing the problem(s), and introducing the Explore task for students. During this time the teacher is identifying the tools and materials available, reviewing academic vocabulary, and setting the expectations for the lesson.

The students are actively engaged in a short task or discussion to activate prior knowledge in preparation of the Explore task. Students may be using tools and/or manipulatives to make sense of the mathematical concept.

WHOLE GROUP

EXPLORE (15–20 minutes)

The teacher provides opportunities and support for students to develop conceptual understanding by providing meaningful explorations and tasks that promote active student engagement.

The teacher monitors the development of student understanding by conferring with students and asking students questions in order to understand and stimulate their thinking. The teacher uses this information to plan for the Summarize and, if needed, to call the students together for a mid-Explore scaffold to focus or propel student thinking.

The students are actively engaged in constructing meaning of the mathematical concept being taught. Students engage in private reasoning time before working with partners or groups. Students use multiple representations to solve rich tasks and communicate their mathematical understanding.

INDIVIDUAL, PAIRS, OR SMALL GROUP

SUMMARIZE (15–20 minutes)

The teacher provides opportunities to make public the learning that was accomplished by the students by sharing evidence of what was learned, and providing opportunities for students to analyze, compare, discuss, extend, connect, consolidate, and record thinking strategies. A summary of the learning is articulated and connected to the purpose of the lesson.

The students are actively engaged as a community of learners, discussing, justifying, and challenging various solutions to the **Explore** task. The students are able to articulate the learning/understanding of the mathematical concept being taught either orally or in writing. Students can engage in this discussion whether or not they have completed the task.

WHOLE GROUP

PRACTICE, REFLECT, and APPLY (10–15 minutes)

This time is saved for after the Summarize so students can use what they have learned to access additional tasks. The opportunities that teachers provide are responsive to student needs.

The students may have the opportunity to: revise their work, reflect on their learning, show what they know with an exit slip, extend their learning with a similar or extension problem, or practice with centers or games.

The teacher confers with individual students or small groups.

INDIVIDUAL, PAIRS, OR SMALL GROUP

FORMATIVE ASSESSMENT

The teacher determines what students are learning and are struggling with by conferring with students and by examining student work throughout the lesson. This formative assessment informs ongoing adjustments in the lesson and next steps for the class and each student.

The students are actively engaged in showing their learning accomplishments related to the mathematical concept of the lesson.

SDUSD Mathematics Units

We understand that for deep and sustainable change in mathematics to take place, teachers, students, and leaders must grapple with what the rich mathematics asked for by Common Core State Standards-Mathematics looks like in the classroom, in pedagogical practice, in student work, in curriculum, and **in** assessments. It is our goal that teachers and site leaders work collaboratively toward a shared vision of math instruction that develops mathematically proficient students as defined by the CCSS-Mathematics. It is our hope that these units provide a common instructional foundation for this collaboration.

The SDUSD Mathematics Units are designed to support teachers and students as we shift from a more directive style of teaching mathematics toward a more inquiry-based style. In problem-based learning, students develop the habits of mind and interaction of mathematicians through engaging in mathematical discourse, connecting representations, asking genuine questions, and justifying and generalizing ideas. These mathematical habits reflect the shifts in pedagogy required to support the Common Core Standards for Mathematical Practice.

The SDUSD math units are compiled with multiple sources to ensure students have a variety of mathematical experiences aligned to the CCSS. All lessons should follow the structure of Launch, Explore, and Summarize. The following document will guide teachers in planning for daily lessons, by helping them understand the structures of each of the sources.

Structure for enVision 2.0 Lessons

Use Step 1 Develop: Problem-Based Learning is the Launch, Explore, and Summarize for every enVision 2.0 Lesson.

Launch: (Before)

Start with the Solve-and-Share problem. Pose the problem to the students making sure the problem is understood. This does not mean you explain *how* to do the problem, rather you ensure that students understand what the problem is about. Establish clear expectations as to whether students will work individually, in pairs, or in small groups. This includes making sure students know which representations and tools they might be using or if they will have a choice of materials.

Explore: (During)

Students engage in solving the problem using a variety of strategies and tools. Use the suggested guiding questions to check in briefly with students as needed, in order to understand and push student thinking. You may want to use the "Extension for Early Finishers" as needed.

Summarize: (After)

Select student work for the class to analyze and discuss. If needed, use the Sample Student Work provided for each lesson in enVision 2.0.

Practice, Reflect, Apply: (Select Problems from Workbook Pages, Reteach, Games, Intervention Activity)

During this time, students may revise their work from the Explore time or you may use pieces of Step 2 Develop: Visual Learning and Step 3 Assess and Differentiate. Note: The Quick-Check component is now a few select problems that are highlighted with a pink checkmark in the Teacher's Edition. This time provides an excellent opportunity to pull small groups of students that may need additional support.

Structure for Engage NY Lessons

Launch/Explore: (Concept Development)

The Concept Development constitutes the major portion of instructional time when new learning is introduced. During this time, the lessons move through a deliberate progression on material, from concrete to pictorial to abstract. Your word choice may be slightly different from that in the vignettes, and you should use what works from the suggested talking points to meet your students' needs.

Summarize: (Student Debrief)

The student debrief piece helps develop students' metacognition by helping them make connections between parts of the lesson, concepts, strategies, and tools on their own. The goal is for students to see and hear multiple perspectives from their classmates and mentally construct a multifaceted image of the concepts being learned. Through questions that help make these connections explicit, and dialogue that directly engages students in the Standards for Mathematical Practice, they articulate those observations so the lesson's objective becomes eminently clear to them.

Practice, Reflect, Apply: (Problem Set/Exit Ticket)

The Problem Set often includes fluency pertaining to the Concept Development, as well as conceptual and application word problems. The primary goal of the Problem Set is for students to apply the conceptual understandings learned during the lesson.

Exit Tickets are quick assessments that contain specific questions to provide a quick glimpse of the day's major learning. The purpose of the Exit Ticket is twofold: to teach students to grow accustomed to being individually accountable for the work they have done, and to provide you with valuable evidence of the efficacy of that day's work which is indispensible for planning purposes. This time provides an excellent opportunity to pull small groups of students that may need additional support.

Structure for Georgia Standards Lessons

The Georgia Standards tasks have been included in the units to provide students opportunities for rich, engaging, real-world mathematical experiences. These tasks allow students to develop conceptual understanding over time and may take more than one math lesson to complete. The extra time for these lessons has been allotted for in the units. When planning for a Georgia Task, it is suggested that you start by doing the mathematics the students will be engaging in before presenting it to the students.

Launch:

You may need to activate prior knowledge for some of the tasks that will be presented by showing images, letting students engage in partner talk about real-life situations, or using the suggested activity from the background knowledge component. Pose the task to the students making sure the task is understood. This does not mean that you explain *how* to do the problem, rather you ensure that students understand what the problem is about. You establish clear expectations as to whether students will work individually, in pairs, or in small groups. This includes making sure students know which representations and tools they might be using or if they will have a choice of materials.

Explore:

Students will engage in working on the task using a variety of strategies and tools. You may use the Essential Questions or Formative Assessment questions provided in the lesson as needed in order to understand and prompt student thinking.

Summarize:

Select student work for the class to analyze and discuss. Use partnerships and whole-class collaborative conversations to help students make sense of each others' work. The Formative Assessment questions may also be used during this time to facilitate the conversation.

Practice, Reflect, Apply:

At this time, provide students time to reflect and revise their work from the Explore after they have engaged in the conversation in the Summarize portion of the lesson. This time provides an excellent opportunity to pull small groups of students that may need additional support.

Common Core Approach to Assessment

Assessments provide ongoing opportunities for students to show their learning accomplishments in addition to offering students a pathway to monitor their progress, celebrate successes, examine mistakes, uncover misconceptions, and engage in self-reflection and analysis. A central goal of assessments is to make students aware of their strengths and weaknesses and to give them opportunities to try again, do better and, in doing so, enjoy the experience of seeing their hard work pay off as their skill and understanding increases. Furthermore, the data collected as a result of assessments represent invaluable tools in the hands of teachers and provides specific data about student understanding that can inform instructional decisions.

For each Topic in enVision 2.0 the following assessments are available:

In the Student Workbook:
- -Topic Assessment
- -Performance Assessment

Online Teacher's Edition:
- -Additional topic assessment Black-line Master
- -Additional performance assessment Black-line Master

Online Student Assessment
- -Teacher can modify the number of items on an assessment
- -Teacher can rearrange order of problems

All of the assessment items for enVision 2.0 are aligned to the types of problems students may encounter on state testing. We have found enVision 2.0 has an excessive amount of items suggested for each topic. To avoid over-assessing, we recommend that school sites work collaboratively in grade-level teams to determine how to best use all the assessment resources available to evaluate student understanding and reduce the amount of items assessed. The SDUSD math units have grouped related topics together within a unit. Sites may choose to only give an assessment at the end of each unit, consisting of items from multiple topics, rather than using multiple days to assess each topic individually.

Objective: Use exponents to name place value units and explain patterns in the placement of the decimal point.

Concept Development (28 minutes)

Materials: (S) Personal white boards

Problem 1

T: (Draw or project chart, adding numerals as discussion unfolds.)

				100	10
				10 x 10	10 x 1

T: (Write 10 × ____ = 10 on the board.) On your personal board, fill in the missing factor to complete this number sentence.

S: (Students write.)

T: (Write 10 × ____ = 100 on the board.) Fill in the missing factor to complete this number sentence.

S: (Students write.)

T: This time, using only 10 as a factor, how could you multiply to get a product of 1000? Write the multiplication sentence on your personal board.

S: 10 x 10 x 10 = 1000.

T: Work with your partner. What would the multiplication sentence be for 10,000 using only 10 as a factor? Write on your personal board.

S: (Students write.)

T: How many factors of 10 did we have to multiply to get to 1000?

S: 3.

T: How many factors of 10 do we have to multiply to get 10,000?

S: 4.

T: Say the number sentence.

S: 10 x 10 x 10 x 10 = 10,000.

T: How many zeros are in our product, 10,000?

S: 4 zeros.

T: What patterns do you notice? Turn and share with your partner.

S: The number of zeros is the same on both side of the equation. → The number of zeros in the product is the same as the number of zeros in the factors. → I see three zeros on the left side, and there are three zeros on the right side for 10 x 10 x 10 = 1000. → The 1 moves one place to the left every time we multiply by 10. → It's like a place value chart. Each number is 10 times as much as the last one.

T: Using this pattern, how many factors of 10 do we have to multiply to get 1 million? Work with your partner to write the multiplication sentence.

S: (Students write.)

T: How many factors of 10 did you use?

S: 6

T: Why did we need 6 factors of 10?

S: 1 million has 6 zeros.

T: We can use an **exponent** (write term on the board) to represent how many times we use 10 as a factor. We can write 10 x 10 as 10^2. (Add to the chart.) We say, "Ten to the second power." The *2* (point to exponent) is the exponent and it tells us how many times to use 10 as a factor.

T: How do you express 1000 using exponents? Turn and share with your partner.

S: We multiply 10 × 10 × 10, that's three times, so the answer is 10^3. → There are three zeros in 1000, so it's ten to the third power.

T: Working with your partner, complete the chart using the exponents to represent the each value on the place value chart.

1,000,000	100,000	10,000	1000	100	10
(10 x 10 x 10) x (10 x 10 x 10)	10x 10 x (10 x 10 x 10)	10 x (10 x 10 x 10)	(10 x 10 x 10)	10 x 10	10 x 1
10^6	10^5	10^4	10^3	10^2	10^1

Problem 2

10^5

T: Write *ten to the fifth power* as a product of tens.

S: 10^5 = 10 x 10 x 10 x 10 x 10.

T: Find the product.

S: 10^5 = 100,000.

Repeat with more examples as needed.

Problem 3

10 x 100

T: Work with your partner to write this expression using an exponent on your personal board. Explain your reasoning.

S: I multiply 10 x 100 to get 1000, so the answer is ten to the third power. → There are 3 factors of 10. → There are three 10's. I can see one 10 in the first factor and 2 more tens in the second factor.

Repeat with 100 x 1000 and other examples as needed.

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving.

Student Debrief (10 minutes)

Lesson Objective: Use exponents to name place value units and explain patterns in the placement of the decimal point.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- What is an **exponent** and how can exponents be useful in representing numbers? (This question could also serve as a prompt for math journals. Journaling about new vocabulary throughout the year can be a powerful way for students to solidify their understanding of new terms.)
- How would you write 1000 using exponents? How would you write it as a multiplication sentence using only 10 as a factor?

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.

Name _____ Date _____

1. Write the following in exponential form (e.g., $100 = 10^2$).

   a. 10,000 = _____

   b. 1000 = _____

   c. 10 x 10 = _____

   d. 100 x 100 = _____

   e. 1,000,000 = _____

   f. 1000 × 1000 = _____

2. Write the following in standard form (e.g., $5 \times 10^2 = 500$).

   a. 10^3 = _____

   b. 10^4 = _____

   c. 10^2 = _____

   d. 10^5 = _____

   e. 10^7 = _____

   f. 10^6 = _____

3. Shaunnie wrote $10^5 = 50$ on her paper.
   a. Is Shaunnie correct or incorrect? Explain using words, numbers, and pictures.

Name _____ Date _____

1. Write the following in exponential form and as a multiplication sentence using only 10 as a factor (e.g., $100 = 10^2 = 10 \times 10$).

   a. 1,000 = _____ = _____

   b. 100×100 = _____ = _____

2. Write the following in standard form.

   a. 10^4 = _____

   b. 10^1 = _____

Objective: Use exponents to name place value units and explain patterns in the placement of the decimal point.

Concept Development (28 minutes)

Materials: (S) Personal white boards

Problems 4–5

3×10^2

3.4×10^3

T: Compare this expression to the ones we've already talked about.
S: These have factors other than 10.
T: Write 3×10^2 without using an exponent. Write it on your personal board.
S: 3 x 100.
T: What's the product?
S: 300.
T: If you know that 3 × 100 is 300, then what is 3×10^2? Turn and explain to your partner.
S: The product is also 300. 10^2 and 100 are same amount so the product will be the same.
T: Use what you learned about multiplying decimals by 10, 100, and 100 and your new knowledge about exponents to solve 3.4×10^3 with your partner.
S: (Students work.)

Repeat with 4.021×10^2 and other examples as needed.

Have students share their solutions and reasoning about multiplying decimal factors by powers of ten. In particular, students should articulate the relationship between the exponent and how the values of the digits change and placement of the decimal in the product.

Problems 6–7

$700 \div 10^2$

$7.1 \div 10^2$

T: Write $700 \div 10^2$ without using an exponent and find the quotient. Write it on your personal board.
S: 700 ÷ 100 = 7
T: If you know that 700 ÷ 100 is 7, then what is $700 \div 10^2$? Turn and explain to your partner.
S: The quotient is 7 because $10^2 = 100$.
T: Use what you know about dividing decimals by multiples of 10 and your new knowledge about exponents to solve $7.1 \div 10^2$ with your partner.
S: (Students work.)
T: Tell your partner what you notice about the relationship between the exponents and how the values of the digits change. Also discuss how you decided where to place the decimal.

Problems 8–9

Complete this pattern: 0.043 4.3 430 _____ _____ _____

T: (Write the pattern on the board.) Turn and talk with your partner about the pattern on the board. How is the value of the 4 changing as we move to the next term in the sequence? Draw a place value chart to explain your ideas as you complete the pattern and use an exponent to express the relationships.

S: The 4 moved two places to the left. → Each number is being multiplied by 100 to get the next one. → Each number is multiplied by 10 twice. → Each number is multiplied by 10^2.

Repeat with 6,300,000; ____; 630; 6.3; _____ and other patterns as needed.

T: As you work on the Problem Set, be sure you are thinking about the patterns that we've discovered today.

Student Debrief (10 minutes)

Lesson Objective: Use exponents to name place value units and explain patterns in the placement of the decimal point.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- Explain to your partner the relationship we saw between the exponents and the number of the places the digit shifted when you multiply or divide by a power of 10.

Name_____

1. Write the following in standard form (e.g., $5 \times 10^2 = 500$).

a. $9 \times 10^3 =$ _____

b. $39 \times 10^4 =$ _____

c. $7{,}200{,}000 \div 10^3 =$ _____

d. $4.025 \times 10^3 =$ _____

e. $40.25 \times 10^4 =$ _____

f. $725 \div 10^3 =$ _____

2. Think about the answers to Problem 1(a–f). Explain the pattern used to find an answer when you multiply or divide a whole number by a power of 10.

3. Complete the patterns.

a. 0.03 0.3 _____ 30 _____ _____

b. 6,500,000 65,000 _____ 6.5 _____

c. _____ 9,430 _____ 94.3 9.43 _____

Explain how you knew what numbers filled in the pattern.

Name _____ Date _____

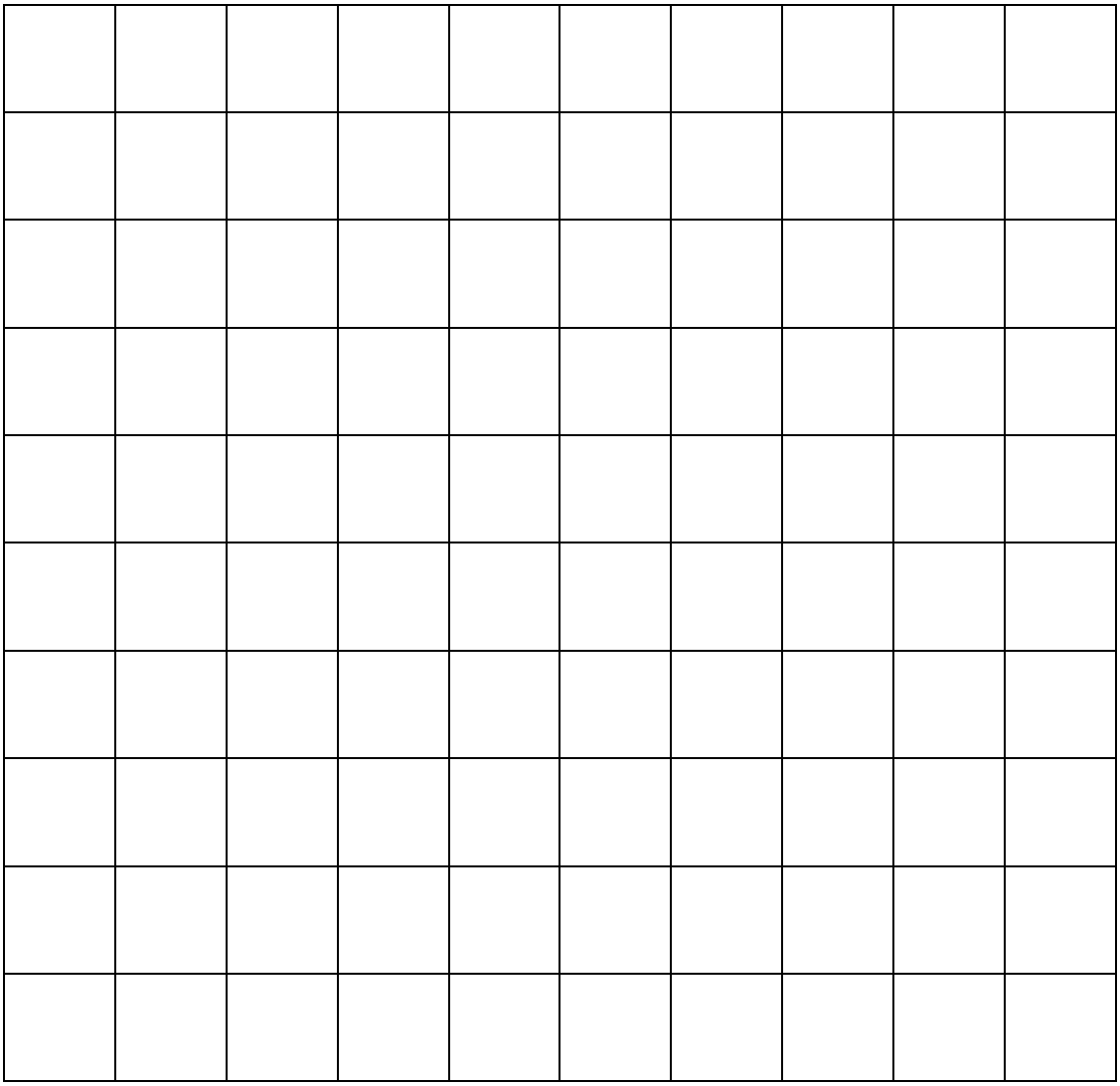
1. Marlon wrote $2.5 \times 10^2 = 2.500$ on his paper. Is Marlon correct or incorrect? Explain using words, numbers, and pictures.

Fifth Grade Unit 1 Lesson 3	
LESSON FOCUS	**Using a Place Value Chart to Understand Numbers up to 1,000,000**
MATERIALS	Digit Cards or Tiles (0-9), Place-Value Chart (See master at end of lesson), Number Representation Sheet (See master at end of lesson)
LAUNCH	**Modeling Numbers on a Place Value Chart** Give each partner a set of digit cards (0-9), a place-value recording sheet, and a number representation sheet. 1. Show blank Place Value Chart 2. Have students identify and label whole number place values up to a million. 3. Write 483,920 on the board. 4. Have students place digit cards on their Place Value Chart to represent the number. 5. Have students write the word form of the number. *6.* Ask, "How could we write this number in expanded form?" *7.* Have students write the expanded form. *8.* Ask questions to check to see if students understand the value of the digits. (ex: What is the value of the 2 in this number? How many tens in this number?) *9.* Repeat with another number.
EXPLORE	**Make a Number** Give each partner a set of digit cards (0-9), a place-value recording sheet, and a number representation sheet. 1. Students shuffle the digit cards and place the cards upside down. 2. One partner draws 7 digit cards and places them right side up. 3. Partners decide how to make the largest number possible and place the digit cards in the Place Value Chart. 4. Record the number in the center of the number representation sheet. 5. Partners then fill in the remaining squares to show multiple representations of the number. 6. Repeat as time allows.
SUMMARIZE	Pose the following question: How do you know you have made the largest/smallest number possible? Have students turn and talk to a partner. Facilitate a class conversation.

Standard Form	Word Form
326 SAMPLE	Three Hundred Twenty-Six
300 + 20 + 6 20 + 300 + 6 Expanded Notation	3 Hundreds 2 Tens 6 Ones and/or 2 Hundreds 12 Tens 6 Ones Place Value

Standard Form	Word Form
Expanded Notation	Place Value

Fifth Grade Unit 1 Lesson 5	
LESSON FOCUS	**Decimal Place Value**
MATERIALS	Base-Ten blocks, Hundred grid (See master at end of lesson), Decimal representation sheet (See master at end of lesson)
LAUNCH	**Modeling Decimals** 1. Show a hundred grid divided into tenths. Tell students this will represent the whole. 2. Ask, "What is the value of the entire grid?" (Whole) 3. Ask, "What is the value of each column?" (One tenth) 4. Ask, "What is the value of each little square?" (One hundredth) 5. Say, "If I shade in 40 of the little squares, how much of the grid would be shaded?" (Forty Hundredths) 6. Say, "We are going to find equivalent decimals for this amount. Equivalent decimals name the same amount. 7. Ask, "Name two other decimals equivalent to .40?" (Four Tenths or Four Hundred Thousandths) 8. Write the three decimals on the board. (0.4, 0.40, an 0.400) 9. Ask, "How are these decimals alike, and how are they different?" 10. Say, "Suppose you want to mail a package that weighs 2.56 pounds. How might you represent 2 and 56 hundredths on this hundred grid?" 11. Ask, "How would I write the decimal 2 and 56 hundredths?" (2.56) 12. Ask, "How would I represent this decimal using base ten blocks if the flat is the whole?" (Two flats, five rods, and six ones) 13. Ask, "What would this decimal look like in expanded form?" (2 + 0.5 + 0.06) 14. Say, "Can you find another way to represent this number in expanded form using the multiplication relationship of 10?" (2 + 5 x 1/10 + 6 x 1/100) Students need to be able to show the expanded form in these two ways. 15. Repeat with 4.79
EXPLORE:	**What's in the Bag?** Give partners some base-ten blocks, a paper bag, and a Decimal Representation Recording Sheet. 1. Have students place the base-ten blocks in the paper bag. 2. One partner draws a handful of blocks out the bag. 3. Partners determine the amount and record it in the base-ten model section of their recording sheet. 4. Partners fill in the other representations of the decimal
SUMMARIZE	Pose the following questions: What is the value of the 100's chart when working with decimals? What do you know about the size of tenth's, hundredths? (how much bigger/smaller are they to the next place value 10x more, 1/10 of) How can these numbers be written in different forms? Have students turn and talk to a partner. Facilitate a class conversation.



Standard Form (Using Place Value Chart)

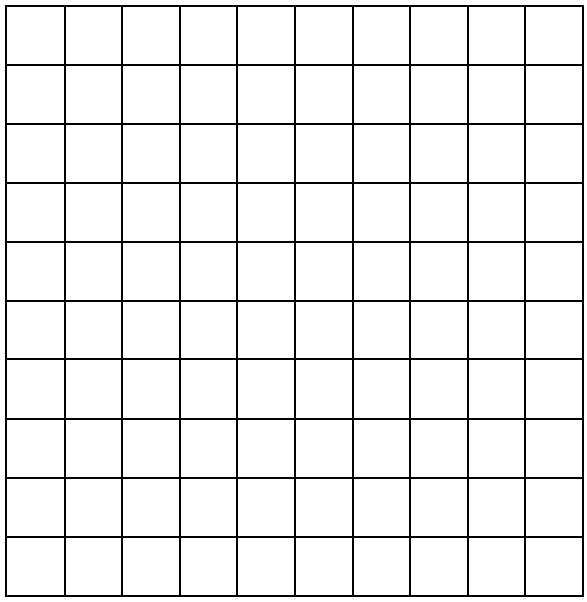
Hundreds	Tens	Ones		Tenths	Hundredths
			■		

Word Form:

Expanded Form:

Base Ten Model:

Grid: (Draw the whole numbers with base ten and shade the decimal on the grid)



Constructing Task: **Patterns R Us

In this task, students are asked to identify, describe, and explain any patterns they notice when multiplying numbers by powers of 10 such as 1,000, 100 and 10. **Students need to be provided with opportunities to explore this concept and come to this understanding; this should not just be taught procedurally**. In this unit we are only dealing with whole numbers. Decimals will be addressed in Units 2 & 3.

STANDARDS FOR MATHEMATICAL CONTENT

MCC5.NBT.1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

MCC5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

STANDARDS FOR MATHEMATICAL PRACTICE

SMP 2. Reason abstractly and quantitatively.
SMP 3. Construct viable arguments and critique the reasoning of others.
SMP 5. Use appropriate tools strategically.
SMP 6. Attend to precision.
SMP 7. Look for and make use of structure.
SMP 8. Look for and express regularity in repeated reasoning.

BACKGROUND KNOWLEDGE

Students should have experiences working with connecting the pattern of the number of zeros in the product when you multiply by powers of 10. Teachers should explicitly teach the concept of exponents before doing this task. Examples:

1. $2 \times 10^3 = 2 \times (10 \times 10 \times 10) = 2 \times 1{,}000 = 2{,}000$

   Students should be told that whole numbers have decimal points at the end. However, we do not see them unless the number includes an additional decimal value. Teachers may want to use the concept of money to illustrate this point. Students should reason that the exponent above the 10 indicates how many places the decimal point is moving (not just that the decimal point is moving but that you are multiplying or making the number 10 times greater three times) when you multiply by a power of 10. Since we are multiplying by a power of 10 the decimal point moves to the right.

2. The following table may be useful:

10^4	10^3	10^2	10^1	10^0
Ten Thousands	Thousands	Hundreds	Tens	Ones

COMMON MISCONCEPTIONS:

Students may think that 10^0 is equal to 0 and that 10^1 is equal to 10. When multiplying a number times a power of ten, the exponent does not indicate the number of zeroes in the product.

ESSENTIAL QUESTIONS:

- How does multiplying a whole number by a power of ten affect the product?

MATERIALS

- "Patterns-R-Us" Recording Sheet
- Calculators (one per team)

GROUPING

Partner/Small Group Task

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION:

Comments

This task is designed to serve as a discovery opportunity for the students. Students should notice that a pattern is created when a number is multiplied by a power of 10. While students may notice patterns in each individual part of the task, encourage them to look for a pattern when considering the overall task. Students should be able to explain and defend their solutions through multiple representations. For example, students should try several numbers for each part to verify that each number follows the same pattern. This activity lends itself to working in pairs for reinforcement.

Calculators are optional for this investigation. However, students will be more likely to explore a variety of numbers and be able to recognize patterns more efficiently with the use of a calculator. Require students to record what they put into the calculator and the result. If students could benefit from some practice with multiplication, require them to solve the problems in part one without a calculator and you can allow students to use a calculator for the rest of the task.

TASK

Students will follow the directions below from the "Patterns-R-Us" Recording Sheet.

A statistician is interested in finding out what pattern is created, if any, under certain situations. Your mission is to help come up with concrete rules for certain mathematical situations. Record all of your work and explain your thinking in order to defend your answer. Good luck!

PART ONE

1. Start with 4.
2. Multiply that number by 1000, 100, and 10.
3. What is happening?
4. Is there a pattern?
5. What do you think would happen if you multiplied your number by 1,000,000?

PART TWO

1. Start with 23.
2. Multiply that number by 1000, 100, and 10.
3. What is happening?
4. Is there a pattern?
5. What do you think would happen if you multiplied your number by 1,000,000?

PART THREE

1. Start with any whole number.
2. Multiply that number by 1000, 100, and 10.
3. What is happening?
4. Is there a pattern?
5. What do you think would happen if you multiplied your number by 1,000,000?

PART FOUR

1. $28 \times 10^2 = 2{,}800$
2. $28 \times 10^3 = 28{,}000$
3. What is the product of 28×10^4?
4. Is there a pattern?
5. Is there a similar pattern you've noticed?

FORMATIVE ASSESSMENT QUESTIONS

- Justify why your answer is correct.
- What would happen if you started with a different number?
- What patterns are you noticing?
- Can you predict what would come next in the pattern? Explain your prediction.

DIFFERENTIATION

Extension

- Have students extend the pattern of exponents to include 10^5 and 10^6. What numbers will be represented?

Intervention

- Pair students who may need additional time together so that they will have time needed to process this task.
- Students may need to use a 10 x 10 grid to relate back to 10^2 as having an area of 100 sq.
  units.

TECHNOLOGY CONNECTION

- http://www.mathagonyaunt.co.uk/INTERACTIVE/mult_divide/mult_div_lorry.html - Mathagony Aunt: Interactive mathematical practice opportunities
- http://www.bgfl.org/bgfl/custom/resources_ftp/client_ftp/ks1/maths/dice/ - Virtual 6-, 8-, and 10-sided dice

Name_____ Date_____

Patterns-R-Us

A statistician is interested in finding out what pattern is created, if any, under certain situations. Your mission is to help come up with concrete rules for certain mathematical situations and operations. Record all of your work and explain your thinking so that you can defend your answers.

Multiply and put it in the box	4
X 1,000	
X 100	
X 10	

What is happening?

Is there a pattern?

What do you think would happen if you multiplied your number by 1,000,000?

Multiply and put it in the box	23
X 1,000	
X 100	
X 10	

What is happening?

Is there a pattern?

What do you think would happen if you multiplied your number by 1,000,000?

Pick a whole number to multiply and put it in the box	
X 10	
X 100	
X 1,000	

What is happening?

Is there a pattern?

What do you think would happen if you multiplied your number by 1,000,000?

Complete the pattern	28
X 10^2	2,800
X 10^3	28,000
X 10^4	

Is there a pattern?

Is there a similar pattern you've noticed?

Looking at the patterns you have identified, what conjecture can you make about multiplying numbers by powers of 10?

How does the use of exponents in 10^2 and 10^3 connect to changes in the place value of numbers?

High Roller Revisited

In this task students will play games using place value charts to create the largest possible number by rolling a die and recording digits on the chart one at a time.

STANDARDS FOR MATHEMATICAL CONTENT

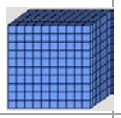
MCC5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

MCC5.NBT.3 Read, write, and compare decimals to thousandths.

- **c. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 x 100 + 4 x 10 + 7 x 1 + 3 x (1/10) + 9 x (1/100) + 2 x (1/1000).**
- **d. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.**

BACKGROUND KNOWLEDGE

You may want to share the following chart with your students to show the multiple representations for place value, fractions, and decimals.

Thousands	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
1,000	100	10	1	.	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$
				.			
1,000 wholes	100 wholes	10 wholes	1 whole	.	1 part of 1 whole that has been divided into 10 parts	1 part of 1 whole that has been divided into 100 parts	1 part of 1 whole that has been divided into 1,000 parts

It is important to use the language of fractions in the decimal unit because when students begin learning about decimals in fourth grade, they learn that fractions that have denominators of 10 can be written in a different format as decimals. In 5th grade, this understanding of decimals is extended to additional fractions with denominators that are powers of 10. For example:

- Read 0.003 as 3 thousandths, 0.4 as 4 tenths, which is the same as they would be read using fraction notation
- Read 0.2 + 0.03 = 0.23 as "2 tenths plus 3 hundredths equals 23 hundredths"

- This is the same as 0.20 + 0.03 = 0.23, read as "20 hundredths and 3 hundredths is 23 hundredths"
- Relate 0.2 + 0.03 to $\frac{20}{100} + \frac{3}{100} = \frac{23}{100}$

COMMON MISCONCEPTIONS

A common misconception that students have when trying to extend their understanding of whole number place value to decimal place value is that as you move to the left of the decimal point, the number increases in value. Reinforcing the concept of powers of ten is essential for addressing this issue.
A second misconception that is directly related to comparing whole numbers is the idea that the longer the number, the greater the number. With whole numbers, a 5-digit number is always greater that a 1-, 2-, 3-, or 4-digit number. However, with decimals, a number with one decimal place may be greater than a number with two or three decimal places. For example, 0.5 is greater than 0.12, 0.009 or 0.499. One method for comparing decimals is to make all numbers have the same number of digits to the right of the decimal point by adding zeros to the number, such as 0.500, 0.120, 0.009 and 0.499. A second method is to use a place-value chart to place the numerals for comparison.

ESSENTIAL QUESTIONS

- How does the placement of a digit affect the value of a decimal number?

MATERIALS

- "High Roller Revisited" Recording Sheet for each player; choose Version 1, Version 2, or Version 3 (Smallest Difference)
- One die (6-sided, 8-sided, or 10-sided); or a deck of number cards (4 sets of 0-9)

GROUPING

Partner/Small Group Task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Comments

These games should be played multiple times for students to begin to develop strategies for number placement. Students should discuss their strategies for playing the game and any problems they encountered. For example, students may roll several smaller (or larger) numbers in a row and must decide where to place them. Or, they may need to decide where to place any given number such as a 3. Variations:

- Students could also try to make the least number by playing the game "Low Roller."
- Players could keep score of who created the greatest or least number during the game.

- Students could be required to write the word name, read the number aloud, or write the number in expanded notation.

These games can also be played with the whole class. The class can be divided into two teams and a student from each team can take turns rolling the die or drawing a card. Students from each team would complete the numbers on a chart. Alternatively, the students can play individually against each other and the teacher. The teacher can play on the white board and use a think-aloud strategy when placing digits on the board. This provides students with an opportunity to reflect on the placement of digits.

There are three versions of "High Roller Revisited." Version 1 is easiest, and Version 2 is more difficult because it includes more place values. Version 3 is called "Smallest Difference," and it is the most difficult of all three versions. In "Smallest Difference," students use subtraction to compare their decimals instead of simply determining which number is bigger.

Students will follow the directions below for the three versions of the game.

High Roller Revisited – Version 1 (easiest)

Directions:

- The object of each round is to use 4 digits to create the greatest number possible.
- Each player takes a turn rolling the die and deciding where to record the digit on their place value chart.
- Players continue taking 3 more turns so that each player has written 4 digits.
- Once a digit is recorded, it cannot be changed.
- Compare numbers. The player with the greatest number wins the round.
- Play 5 rounds.
  The player who wins the most rounds wins the game.

Round	Ones	.	Tenths	Hundredths	Thousandths
1.		.			
2.		.			
3.		.			
4.		.			
5.		.			

High Roller Revisited – Version 2 (more difficult than Version 1)

Directions:

- The object of each round is to use 10 digits to create the greatest number possible.
- Each player takes a turn rolling the die and deciding where to record the digit on their place value chart.
- Players continue taking 9 more turns so that each player has written 10 digits.
- Once a digit is recorded, it cannot be changed.

- Compare numbers. The player with the greatest number wins the round.
- Play 5 rounds. The player who wins the most rounds wins the game.

	Millions	,	Hundred Thousands	Ten Thousands	Thousands	,	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
1.		,				,				.			
2.		,				,				.			
3.		,				,				.			
4.		,				,				.			
5.		,				,				.			

FORMATIVE ASSESSMENT QUESTIONS

- What strategies are you using when deciding where to place a high number that you rolled? Low numbers?
- What factors are you considering when you decide where to place a 1?
- What factors are you considering when you decide where to place a 3 or 4 (when using a six-sided die)?
- How do you decide where to place a 6 (when using a six-sided die)?

DIFFERENTIATION

Extension

- Have students write about "winning tips" for one of the games. Encourage them to write all they can about what strategies they use when they play.

Intervention

- Prior to playing the game, give students 9 number cards at once and have them make the largest number they can. Let them practice this activity a few times before using the die and making decisions about placement one number at a time.

Name _____ Date _____

High Roller Revisited

Version 1

Materials:

- 1 die (can be 6-sided, 8-sided, or 10-sided, numbered 0-9)
- Each player needs a recording sheet. **Number of Players:** 2 or more **Directions:**
- The object of each round is to use 4 digits to create the greatest number possible.
- Each player takes a turn rolling the die and deciding where to record the digit on their place value chart.
- Players continue taking 3 more turns so that each player has written 4 digits.
- Once a digit is recorded, it cannot be changed.
- Compare numbers. The player with the greatest number wins the round. • Play 5 rounds. The player who wins the most rounds wins the game.

Game 1:

Round	Ones	.	Tenths	Hundredths	Thousandths
1.		.			
2.		.			
3.		.			
4.		.			
5.		.			

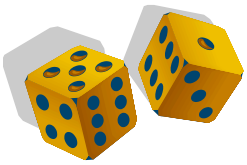
Game 2:

Round	Ones	.	Tenths	Hundredths	Thousandths
1.		.			
2.		.			
3.		.			
4.		.			
5.		.			

Name _____ Date _____

High Roller Revisited

Version 2



Materials:

- 1 die (can be 6-sided, 8-sided, or 10-sided, numbered 0-9)
- Each player needs a recording sheet. **Number of Players:** 2 or more

Directions:

- The object of each round is to use 10 digits to create the greatest number possible.
- Each player takes a turn rolling the die and deciding where to record the digit on their place value chart.
- Players continue taking 9 more turns so that each player has written 10 digits.
- Once a digit is recorded, it cannot be changed.
- Compare numbers. The player with the greatest number wins the round. • Play 5 rounds. The player who wins the most rounds wins the game.

Game 1:

	Millions	,	Hundred Thousands	Ten Thousands	Thousands	,	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
1.		,				,				.			
2.		,				,				.			
3.		,				,				.			
4.		,				,				.			
5.		,				,				.			

Game 2:

	Millions	,	Hundred Thousands	Ten Thousands	Thousands	,	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
1.		,				,				.			
2.		,				,				.			
3.		,				,				.			
4.		,				,				.			
5.		,				,				.			

Decimal Line-up

Students will place decimal numbers (tenths and hundredths) on a number line and order them.

STANDARDS FOR MATHEMATICAL CONTENT

MCC5.NBT.3 Read, write, and compare decimals to thousandths.

- **Read and write decimals to thousandths using baseten numerals, number nam es, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).**
- **Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons**

STANDARDS FOR MATHEMATICAL PRACTICE

1. **Make sense of problems and persevere in solving them.**
2. **Reason abstractly and quantitatively.**
3. **Construct viable arguments and critique the reasoning of others.**
4. **Model with mathematics.**
5. **Use appropriate tools strategically.**
6. **Attend to precision.**
7. **Look for and make use of structure.**
8. **Look for and express regularity in repeated reasoning.**

BACKGROUND KNOWLEDGE

In order to do this activity, students need to be very familiar with number lines and with counting using decimal numbers. One way to give students practice with counting using decimal numbers is to provide students with adding machine tape on which they can list decimals. Give them a starting number and ask them to write the subsequent numbers, counting by hundredths (or tenths). Students can be also given an ending number, or they can continue counting until they fill a strip of adding machine tape. Experiences with counting by tenths and hundredths will help to prepare students for this task.

ESSENTIAL QUESTIONS

- How are decimal numbers placed on a number line?
- How does the placement of a digit affect the value of a decimal number?

MATERIALS

"Decimal Line-up" student recording sheet (2 pages)

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

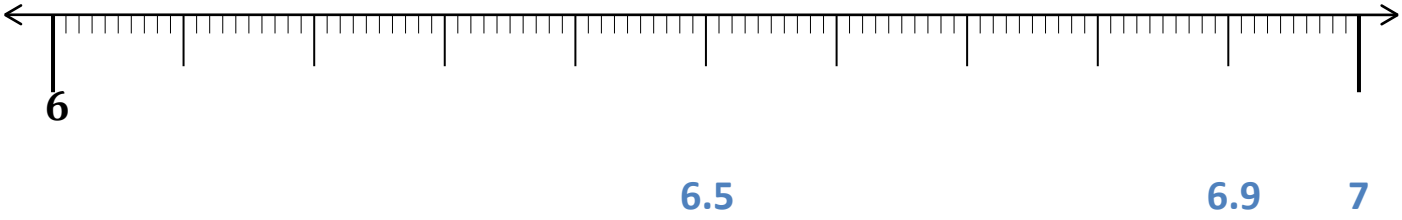
Comments

To introduce this task, discuss as a large group, the structure of a number line that includes decimals. Students need to recognize that like a ruler, tick marks of different lengths and thicknesses represent different types of numbers.

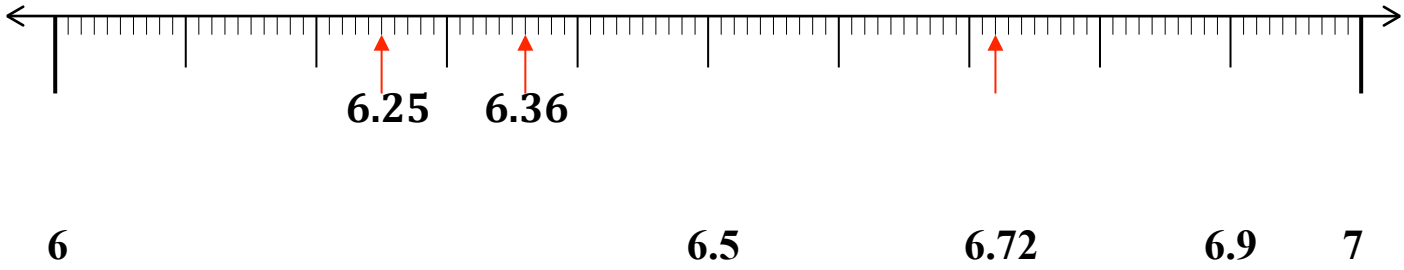
One way to begin this task is to display the number line shown below:

As a class, discuss where the following decimal numbers would be located on the number line: 6.5, 6.25, 6.36, 6.72, 6.9. Start by discussing which benchmark whole numbers would be required for this set of numbers to be placed on the number line. Students should recognize that the smallest number is greater than 6, so the number line would need to start at 6. The largest number is less than 7, so the number line would need to go to 7.

Once the benchmark numbers have been labeled, ask students how to place the following decimal numbers: 6.5 and 6.9. Students should be able to place these decimal numbers on the number line as shown below.



Once the tenths have been labeled, work as a class to place the decimal numbers 6.25, 6.36, and 6.72. While placing these decimal numbers on the number line, use the "think aloud" strategy to explain how to place it in the correct location on the number line. Alternatively, ask students to explain where to place these decimal numbers on the number line. Once all of the given decimal numbers are placed, the number line should be similar to the one shown below.



Task Directions

Students will follow directions on the "Decimal Line-up"student recording sheet. To complete this task, students will need to correctly label one number line with decimal numbers to the tenths and a second number line with decimal numbers to the hundredths. Finally, students will be asked to create their own decimal numbers and use their numbers to correctly label a number line. As students work on this task, they may require help determining what benchmark numbers to place on the number lines of the "Decimal Line-up" student sheet. They may also need guidance about the meaning of the different types of tick marks that are on the number lines. The longest and heaviest tick marks indicate whole numbers, the next heaviest indicate decimal numbers to the tenths, and the shortest and lightest tick marks indicate decimal numbers to the hundredths.

FORMATIVE ASSESSMENT QUESTIONS

- What factors are you considering as you decide where to place whole numbers on your number line?
- How are you using benchmark numbers on your number line?
- What benchmark numbers are you using? How are they helpful?
- Which tick marks are used to represent decimal numbers to the tenths? Hundredths?

DIFFERENTIATION

Extension

- Give students two numbers, for example 3.2 and 3.3. Ask students to list at least 9 numbers that come between these two numbers (3.21, 3.22, 3.23, 3.24...3.29). Ask students if they think there are numbers between 3.21 and 3.22.

Intervention

- Allow students to refer to a meter stick while working on number lines. Each decimeter is one tenth of a meter and each centimeter is one hundredth of a meter.
- Students can use base 10 blocks to model decimal numbers before placing them on the number line and ordering them.

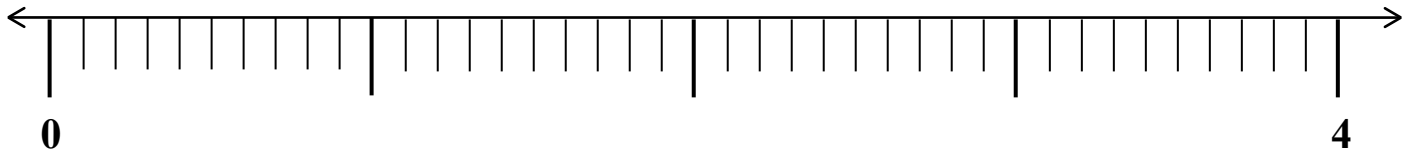
Name _____ Date _____

Decimal Line-up

1. Ordering tenths.

3.7 2.3 1.6 0.9 1.2

a. Place the decimal numbers on the number line below. Add whole numbers as needed to the number line.



b. Next, order the decimals from least to greatest.

_____ _____ _____ _____ _____

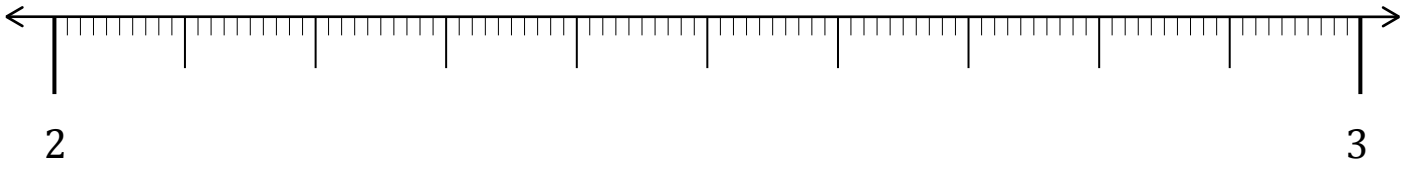
c. Explain how you know the decimal numbers are placed and ordered correctly.

_____
_____
_____
_____
_____

2. Ordering hundredths.

2.53 2.19 2.46 2.02 2.85

a. Place the decimal numbers on the number line below. Add benchmark numbers as needed to the number line.



b. Next, order the decimals from least to greatest.

_____ _____ _____ _____ _____

c. Explain how you know the decimal numbers are placed and ordered correctly.

3. Ordering decimals.

a. Write five decimals that you will be able to place on the number line below.

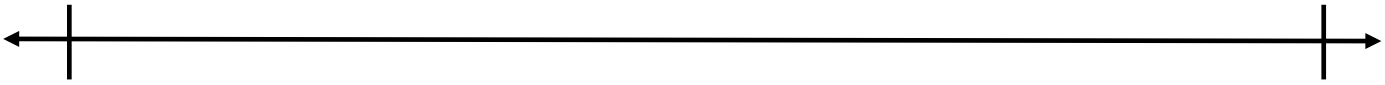
_____ _____ _____ _____ _____

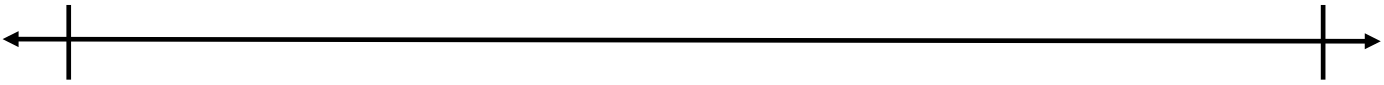
b. Next, place the decimal numbers on the number line below. Add benchmark numbers as needed to the number line.

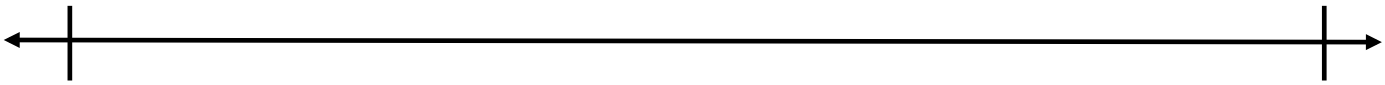
c. Order the decimals from least to greatest.

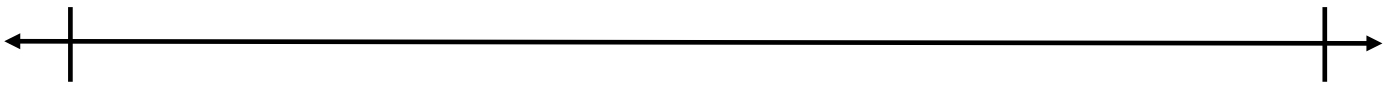
_____ _____ _____ _____ _____

d. Explain how you know the decimal numbers are placed and ordered correctly.









Batter Up!

Adapted from Florida

In this task students will construct a bar graph showing the batting averages of Atlanta Braves baseball players and answer questions about the data. They will order, compare, and round the decimals in the problem.

STANDARDS FOR MATHEMATICAL CONTENT

MCC5.NBT.3 Read, write, and compare decimals to thousandths.

a. Read and write decimals to thousandths using base ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).
b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

MCC5.NBT.4 Use place value understanding to round decimals to any place. Perform oper ations with multi-digit whole numbers and with decimals to hundredths.

STANDARDS FOR MATHEMATICAL PRACTICE

1. **Make sense of problems and persevere in solving them.**
2. **Reason abstractly and quantitatively.**
3. **Construct viable arguments and critique the reasoning of others.**
4. **Model with mathematics.**
5. **Use appropriate tools strategically.**
6. **Attend to precision.**
7. **Look for and make use of structure.**
8. **Look for and express regularity in repeated reasoning.**

BACKGROUND KNOWLEDGE

Students should be familiar with constructing bar graphs from raw data. They may need to review the vocabulary associated with graphs.

ESSENTIAL QUESTIONS

- How do we compare decimals?
- How are decimals used in batting averages?

MATERIALS

- "Batter Up!" Recording Sheet
- Centimeter graph paper
- crayons, colored pencils, or markers

GROUPING

Individual/Partner Task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Comments

This task can be introduced with an explanation of batting averages and how they are computed (# of hits per 1,000 at-bats). They can construct the graph using graph paper with each square representing a portion of the decimal number. Students should be allowed to experiment and decide the appropriate interval.

Task Directions

Students will follow the directions below from "Batter Up!" student recording sheet.

Using the data in the table, construct a bar graph showing the batting averages of these National League batting champions. You will need graph paper and markers, colored pencils, or crayons. Using the data and the graph, answer the questions on the recording sheet. Then students will follow the directions below from the "Batter Up!" student recording sheet.

FORMATIVE ASSESSMENT QUESTIONS

- How will you choose a scale for the graph? Is your scale reasonable?
- How will you show what each bar represents?
- How does rounding to hundredths affect the averages?

DIFFERENTIATION

Extension

- Explain why rounding batting averages would not be a good idea for the players.
- What might happen if a player missed half of the season with an injury? How would it affect his batting average?

Intervention

- Allow students to work with a partner.
- Allow students to use a calculator.

Player	Batting Average At the end of May
Justin Upton	.313
Brian McCann	.336
Freddie Freeman	.335
Chris Johnson	.319
Jason Heyward	.330

Batter Up!

1. How much better is the batting average of the player with the highest average than that of the player with the lowest average? How do you know?

2. If rounded to the nearest hundredth, which players will have the same average?

3. Write two generalizations you can make, based on the data.