

Jennifer Stirling
5th Grade
Dizzying Decimals
25 Days (20 Lessons/Activities)
Progress in Mathematics: 5th Grade
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Purpose Statement:

- This unit will cover decimals and how to add, subtract, multiply, and divide them, in that order. This unit is significant, as it will help students understand and apply the concept of decimals, through lessons, games, and simulations.

Goals (Unit Objectives):

- Students will understand and apply the concept of adding, subtracting, multiplying, and dividing, in reference to decimals.
- Students will collaborate and communicate with their fellow students, as well as critique and reason respectfully.
- Students will be able to understand and express the locations and situations in which decimals are used in the real world.

Scope and Sequence:

Concept to be Taught:	Number of Class Periods:
Understanding Decimals and Place Value -What is a Decimal? -Using the Number Line -Place Value	2-3
Adding Decimals -Restaurant Simulation -Adding Decimals with Place Value -Rounding/Estimation	4-5
Subtracting Decimals -Restaurant Simulation (Continued) -Subtracting Decimals -Stubborn Subtraction	4-5
Multiplying Decimals -Multiplying Decimals using Place Value -Restaurant Simulation using Sales Tax -Multiplying with Decimals	4-5
Dividing Decimals -Dividing Decimals using Long Division -Do we divide decimals in the “real world”?	4-5
Review and Test -Grocery Store Project	3-4

Materials:

- Anchor Chart Paper and Markers
- Laminated Number Line
- Place Value Chart
- Individual White Boards, Markers, and Erasers
- Sticky Notes
- Menus of Various Restaurants
- Resource Worksheets
- Explanation of Final Project Sheet

Prior Knowledge:

- Students will need to have a basic understanding of addition, subtraction, multiplication and division. They will also need to be open and ready to learn new concepts.

Weekly Schedule of Unit:

Monday	Tuesday	Wednesday	Thursday	Friday
<p style="text-align: center;"><u>Introduce Decimals</u></p> <p><i>Lesson Content:</i> -What is a Decimal? -Where do we see them in the real world?</p> <p><i>Class Activity:</i> -Brainstorm Ideas of Decimal Usage</p>	<p style="text-align: center;"><u>Place Value</u></p> <p><i>Lesson Content:</i> -Using a Number Line for Decimals</p> <p><i>Class Activity:</i> -Sticky Note Using the Number Line</p> <p><i>Assignments/Homework:</i> -Workbook Page</p>	<p style="text-align: center;"><u>Place Value</u></p> <p><i>Lesson Content:</i> -Understanding Place Value with Decimals</p> <p><i>Class Activity:</i> Practice Putting Different Decimals in their correct Place Value places.</p>	<p style="text-align: center;"><u>Adding Decimals</u></p> <p><i>Lesson Content:</i> -Overview of Adding Decimals and Basic Rules to Follow (Review of Addition)</p> <p><i>Class Activity:</i> -Trading Decimals to Practice Addition</p>	<p style="text-align: center;"><u>Adding Decimals</u></p> <p><i>Lesson Content:</i> -Quick Review of Addition</p> <p><i>Class Activity:</i> -Restaurant Simulation</p> <p><i>Assignments/Homework:</i> -Addition Practice using a Restaurant of Choice</p>
<p style="text-align: center;"><u>Adding Decimals</u></p> <p><i>Lesson Content:</i> -Addition of Decimals with Higher Place Value than the Hundreds Place</p> <p><i>Class Activity:</i> -White Board Adding</p> <p><i>Assignments/Homework:</i> -Worksheet on Adding All Types of Decimals</p>	<p style="text-align: center;"><u>Adding Decimals</u></p> <p><i>Lesson Content:</i> -Wrap-Up and Review</p> <p><i>Class Activity:</i> -Work in Groups to Complete Resource Worksheet</p> <p><i>Assignments/Homework:</i> -Finish Guide if Not Completed</p>	<p style="text-align: center;"><u>Subtracting Decimals</u></p> <p><i>Lesson Content:</i> -Overview of Subtracting Decimals and Basic Rules to Follow (Review of Subtraction)</p> <p><i>Class Activity:</i> -Trading Decimals to Practice Subtraction</p>	<p style="text-align: center;"><u>Subtracting Decimals</u></p> <p><i>Lesson Content:</i> -Subtracting Practice</p> <p><i>Class Activity:</i> -White Board Subtraction</p>	<p style="text-align: center;"><u>Subtracting Decimals</u></p> <p><i>Lesson Content:</i> -Quick Review of Subtraction</p> <p><i>Class Activity:</i> -Restaurant Simulation using Change</p> <p><i>Assignments/Homework:</i> -Subtraction Practice using a Restaurant of Choice</p>
<p style="text-align: center;"><u>Subtracting Decimals</u></p> <p><i>Lesson Content:</i> -Wrap-Up and Review</p> <p><i>Class Activity:</i> -Work in Groups to Complete Resource Worksheet</p> <p><i>Assignments/Homework:</i> -Finish Guide if Not Completed</p>	<p style="text-align: center;"><u>Multiplying Decimals</u></p> <p><i>Lesson Content:</i> -Overview of Multiplying Decimals and Basic Rules to Follow (Review of Multiplication)</p> <p><i>Class Activity:</i> -Trading Decimals to Practice Multiplication</p>	<p style="text-align: center;"><u>Multiplying Decimals</u></p> <p><i>Lesson Content:</i> -Multiplication Practice</p> <p><i>Class Activity:</i> -White Board Multiplication</p> <p><i>Assignments/Homework:</i> -Workbook Page to Practice Multiplication</p>	<p style="text-align: center;"><u>Multiplying Decimals</u></p> <p><i>Lesson Content:</i> -Multiplication of Decimals with Higher Place Value than the Hundreds Place</p> <p><i>Class Activity:</i> -White Board Multiplying</p>	<p style="text-align: center;"><u>Multiplying Decimals</u></p> <p><i>Lesson Content:</i> -Quick Review of Multiplication</p> <p><i>Class Activity:</i> -Restaurant Simulation using Sales Tax</p> <p><i>Assignments/Homework:</i> -Multiplication Practice using a Restaurant of Choice</p>
<p style="text-align: center;"><u>Multiplying Decimals</u></p> <p><i>Lesson Content:</i> -Wrap-Up and Review</p> <p><i>Class Activity:</i> -Work in Groups to Complete Resource Worksheet</p> <p><i>Assignments/Homework:</i> -Finish Guide if Not Completed</p>	<p style="text-align: center;"><u>Dividing Decimals</u></p> <p><i>Lesson Content:</i> -Long Division Review</p> <p><i>Class Activity:</i> -Shuffle Long Division</p> <p><i>Assignments/Homework:</i> -Work Page on Long Division</p>	<p style="text-align: center;"><u>Dividing Decimals</u></p> <p><i>Lesson Content:</i> -Overview of Dividing Decimals and Basic Rules to Follow</p> <p><i>Class Activity:</i> -Trading Decimals to Practice Division</p>	<p style="text-align: center;"><u>Dividing Decimals</u></p> <p><i>Lesson Content:</i> -Division Practice (Dividing Decimals with Higher Place Value)</p> <p><i>Class Activity:</i> -Shuffle Long Division with Larger Decimals</p>	<p style="text-align: center;"><u>Dividing Decimals</u></p> <p><i>Lesson Content:</i> -Wrap-Up and Review</p> <p><i>Class Activity:</i> -Work in Groups to Complete Resource Worksheet</p> <p><i>Assignments/Homework:</i> -Finish Guide if Not Completed</p>
<p style="text-align: center;"><u>Review</u></p> <p><i>Lesson Content:</i> -Quick Examples of Addition, Subtraction, Multiplication, and Division</p> <p><i>Class Activity:</i> -Group Work: White Boards</p>	<p style="text-align: center;"><u>Review</u></p> <p><i>Lesson Content:</i> -Quick Review of Decimals</p> <p><i>Class Activity:</i> -Restaurant Simulation using Addition, Subtraction, and Multiplication</p>	<p style="text-align: center;"><u>Review</u></p> <p><i>Lesson Content:</i> -Overview of Project including Rules and Expectations</p> <p><i>Class Activity:</i> -Grocery Store Field Trip</p>	<p style="text-align: center;"><u>Review</u></p> <p><i>Class Activity:</i> -Work on Grocery Store Project</p> <p><i>Assignments/Homework:</i> -Grocery Store Project</p>	<p style="text-align: center;"><u>Test</u></p> <p><i>Class Activity:</i> -Work on Grocery Store Project</p> <p><i>Assignments/Homework:</i> -Grocery Store Project</p> <p style="text-align: center;">Due: Monday</p>

Introducing Decimals Using the Number Line (Lesson 8.1)

Identification of the Class:

- Subject: Mathematics
- Topic: Decimals
- Population of Students: 6 Struggling w/Math, 16 Average, 3 Above-Average
- Grade: 5th Grade
- Number of Students: 25
- Grouping: Whole Class
- Time: 45 Minutes

Professional Teaching Standards:

- Content Standards:
 - CCSS.MATH.CONTENT.5.NBT.A.3
Read, write, and compare decimals to thousandths.
- Practice Standards:
 - CCSS.MATH.PRACTICE.MP1
Make sense of problems and persevere in solving them.
 - As this is a new topic, students may be unfamiliar with the concept of decimals. Therefore, they will need to be able to look at the problem, and even if they do not grasp it right away, be able to solve it.
 - CCSS.MATH.PRACTICE.MP4
Model with mathematics.
 - Students will be able to understand the uses of decimals in the real world. They will begin to see the importance of doing basic functions with these numbers.

Goals and Rationale:

- Goal: By being introduced to decimals and the way they are read and written, students will be able to comprehend the use of decimals, leading them to understand how to add, subtract, multiply, and divide these numbers.
- Rationale: Decimals are very important for students to understand, as they are present in our society and many others today. Decimals are a part of the money system, the measurement system, and so much more, making understanding and applying the concept essential for daily life.
- Concept Definition: A decimal is a number with a decimal point that separates the ones and the tenths places. These numbers can stop at the tenths place, or carry on into the hundredth and thousandth places.

Daily Objectives:

- When provided a decimal, students will be able to place it in the correct location on any given number line.

Materials/Equipment/Preparation:

- Materials:
 - Laminated Number Line with Erase Marker and Eraser
 - Sticky Notes
- Teacher Preparation:
 - Teachers must be prepared to teach the concept. They must be knowledgeable on place value, decimals, how to use number lines. To do this, they may want to examine some decimals and practice explaining them using place value terms (such as “in the tenths place” and “on the other side of the decimal point”) and then placing them on varying number lines.

Assessment Plans:

- Assessment of Prior Knowledge:
 - Students will have the concept of decimals in their schema, as they have probably seen it when using money or measuring items. However, they have rarely seen it in strict mathematical form. Students will, however, have background knowledge on using number lines, which we will review in the beginning of the lesson. I will ask the students to describe to me how to use the number line.
- Assessment of Objectives on Content Knowledge:
 - Students will apply their understanding towards the end of the lesson, as they will receive a sticky note with a decimal and place it in the correct spot on the number line. We will work with a few different number lines and students will also trade decimals. Students will also be given some problems to practice either during homework time or at home. This will show me if they have truly grasped the concept as well.
- Assessment of Objectives on Practice Standards:
 - Some students may struggle with the concept of decimals. Without a clear understanding of place value, students may get frustrated and want to quit. I hope to see some perseverance in working through tough problems. I also hope to see students collaborating if they need help. I will be observing to see if the students are using the number line model correctly and how it correlates with decimals.

Procedures:

- Introduction:
 - The students will be seated in table groups, listening attentively to start the lesson. “Alright fifth graders, who can tell me what this is?” I roll out the laminated number line and attach it to the board. “How have we used this previously in other grades or other class periods?” I will allow a student to demonstrate using the dry erase marker what key items a number line needs to have (like a beginning number, an end number, value marks, etc.).
 - “Today, we are going to be using our number line to talk about a new idea – decimals. Who can give me an example of a decimal?” “Where do we see

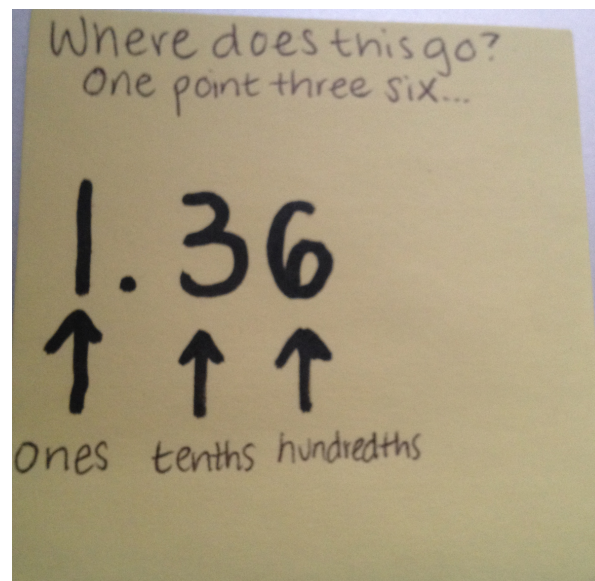
decimals? At the store? In your house? Where?" The whole group can answer most of these questions out loud, but if someone has a specific idea, they can raise their hand.

- Body:
 - "Okay, let's say my beginning number is 1 and my ending number is two, where would I put this decimal? Raise your hand when you know." I write 1.5 on the board and wait for the majority of the class to put their hands up. If they struggle, I may read the decimal as "one point five or one and a half." I will then call on a student, who will tell me where to write in the 1.5. We will repeat this process using the numbers 1.25, 1.2, 1.8, and lastly as a challenge, 0.5 (off the number line).
 - "Now, what would happen if I change my beginning and end numbers? What if instead of 1 and 2, I put 0.5 to 1.5? Or, what if I put 0.55 to 0.56? That would mean I would need another decimal place. For example, let's try 0.558. Where would that go on this number line? I think it goes here (wrong place). Is that right? Who can fix it?" A student will then be called up to fix my error. "Is he/she right?" Once we have arrived at the correct location, I will then change the beginning and end numbers again. "What if I put 0.558 to 0.559? We're getting even more specific! Okay, who can place 0.5583?" I would have this on a sticky note for a student to come place. "Does that make sense to everyone?"
 - "Now, we are going to get some more practice in. I have sticky notes with all kinds of decimals on them. Each one of you will get one and be responsible for placing it in the right spot on the number line. Remember to watch the beginning and end numbers as they may change. Let's start with 1 to 3." I will pass out the sticky notes and the students will come up by group to place them. If the student needs extra help, they can ask me, or they can ask their classmates. Once everyone has placed his or hers, we will go over it, reading each decimal to make sure it is correct.
 - Next, we will change the beginning numbers from 1 to 3 to 0 to 3, causing students to reevaluate where their sticky note needs to go. "If your sticky note needs to be changed (probably all), please come change it. Finally, as one final practice, the students will be asked to trade sticky notes with someone in their group, forcing them to use another decimal on the number line. During this application time, I will be observing students and their confidence with the concept. If students need help, I will be able to assist them as well.
- Closure:
 - "Okay, thumbs up, thumbs middle or thumbs down, do you feel you understand how to use decimals and number lines?" I will observe this vote, in order to see if it is something we need to revisit. "Okay, for homework, I am going to assign a workbook page, just to make sure that everyone understands this new idea of

decimals. Okay, it is time to get ready for recess, so sticky notes can go in the recycle bin and you can head out to get your coats. Great job everyone!”

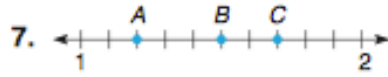
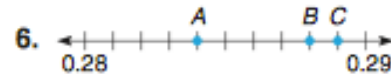
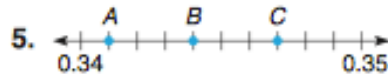
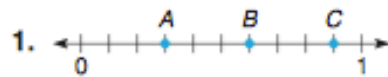
Differentiation:

- General Differentiation Plans:
 - To differentiate to students, I would try the following:
 - Slower Pacing: As a class, we moved very efficiently through many examples. Students may need time to slow down and comprehend the content.
 - Small Group or Individual Work: I could teach the same lesson, but focus on a small group or an individual. Some students have a hard time learning as a whole class, as it can be overwhelming.
 - Personal Number Line: Some students might prefer to have their own individual number line. I may give the struggling students a copy, so they can use it at home or in school.
- Plans to Reteach:
 - If I were to reteach this lesson, I would certainly slow down a bit and attempt to cover each example in detail so that everyone could understand. I would go into a little more depth on what a decimal is as well as what real world comparisons for the decimals. Students would receive their own number line and we would practice. I would be there as well for guidance and support.
- Plans to Extend:
 - If students already understand and can apply the concept, they can build their own number lines, with different, and potentially higher place value decimals. Also, the following lessons build off of their understanding of decimals, as we will move into adding, subtracting, multiplying and dividing them.



Example Sticky Note

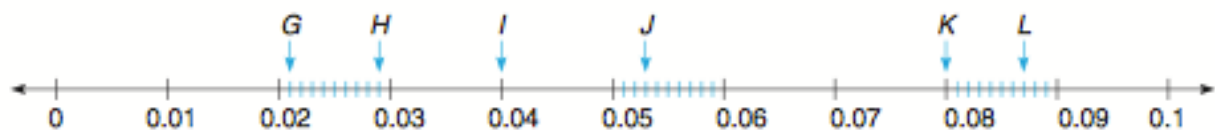
Name the decimal represented by *A*, *B*, and *C* on each number line.



Name the decimal for each point on the number line.

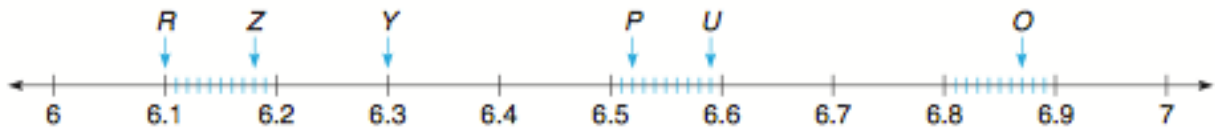


9. *A* 10. *B* 11. *C* 12. *D* 13. *E* 14. *F*

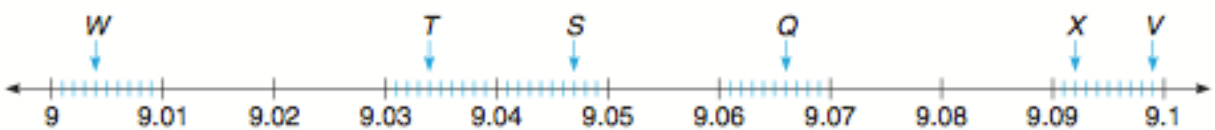


15. *G* 16. *H* 17. *I* 18. *J* 19. *K* 20. *L*

Name the point represented by each decimal.



21. 6.87 22. 6.18 23. 6.52 24. 6.1 25. 6.3 26. 6.59



27. 9.066 28. 9.004 29. 9.092 30. 9.034 31. 9.099 32. 9.047

Decimals and Place Value (Lesson 8.2)

Identification of the Class:

- Subject: Mathematics
- Topic: Decimals
- Population of Students: 6 Struggling w/Math, 16 Average, 3 Above-Average
- Grade: 5th Grade
- Number of Students: 25
- Grouping: Whole Class, Small Group, and Individual
- Time: 45 Minutes

Professional Teaching Standards:

- Content Standards:
 - CCSS.MATH.CONTENT.5.NBT.A.3
Read, write, and compare decimals to thousandths.
 - CCSS.MATH.CONTENT.5.NBT.A.3.A
Read and write decimals to thousandths using number names.
- Practice Standards:
 - CCSS.MATH.PRACTICE.MP1
Make sense of problems and persevere in solving them.
 - Putting decimals into words can be challenging, especially when attempting to understand place value. Therefore, students will need to work hard to break past their confusion and solve the questions put before them.
 - CCSS.MATH.PRACTICE.MP3
Construct viable arguments and critique the reasoning of others.
 - Sharing their answers with the group or the teacher is important, as students learn to express their opinions. At the same time it is essential that students know how to help others that are struggling or incorrect. Respect of others' answers is extremely important, particularly in mathematics.

Goals and Rationale:

- Goal: By understanding place value and naming decimals, students will have an easier time adding and subtracting decimals.
- Rationale: Students need to learn place value in order to function in society. Students will eventually have to pay bills, pay for food, measure items, and so much more, all involving decimals.
- Concept Definition: Place value is the idea that a number has a value based on its position, or place, in a number.

Daily Objectives:

- After learning place value, students will be able to place decimal numbers in the correct place value categories with 80% accuracy.
- After learning how to name a decimal, students will be able to name a decimal, with classmate and teacher support.

Materials/Equipment/Preparation:

- Materials:
 - Place Value Chart with Erase Marker and Eraser
 - Dry Erase Board, Marker and Eraser for Each Table
 - Scrap Paper and Pencils
- Teacher Preparation:
 - Teachers need to be knowledgeable on the concept of place value. To do this, teachers may want to review and practice putting decimals into proper place value positions. Also, teachers need to be familiar with how to name decimals. This might result in more practice of naming and reviewing the ideas of omitting zeros and reading the post-decimal-point digits as a whole number.

Assessment Plans:

- Assessment of Prior Knowledge:
 - Prior knowledge will be reviewed from the day before as the students had just learned about decimals in an academic setting for the first time yesterday. They now understand the concept of a decimal, but are unsure of how to say it or write them correctly.
- Assessment of Objectives on Content Knowledge:
 - Throughout the work period, I will be observing student work, making sure that they are grasping place value and naming. I will also be sure to examine their papers after the lesson, in order to see if they understand the concept or need more practice with it.
- Assessment of Objectives on Practice Standards:
 - During the work period, I will be checking in with groups to be sure they are sharing their reasoning and being respectful of one another. I will be sure to ask difficult questions that promote deeper thought. I will work with students who are frustrated in order to help them persevere in solving the problem.

Procedures:

- Introduction:
 - Once class is seated at their desks and quiet, I will begin. “Who remembers our sticky note practice from yesterday? What were we working on?” I will keep a sticky note from the previous day to look at. “Who was wondering what the words below the decimal were?” “Those are words that describe place value. This is a place value chart that will help us.” I will put the chart on the board and ask students to read the categories. “When we are writing decimals, we write them

into categories. The numbers before the decimal point are the ones, the tens and the hundreds, just like you all remember from learning how to add. Then, after the decimal point, we find the tenths, hundredths, and thousandths. These numbers were the ones that determined where we put our sticky notes on the number line yesterday. So, if I were to write 1.675, what place would each number fall into? Talk amongst your group and come up with an answer on your dry erase board.” I would then have the students hold up their erase boards to evaluate their understanding. I would call on groups to explain their reasoning whether they are right or wrong, in order to see their thinking.

- Body:
 - Once we had discussed potential answers, I would fill in my chart. “Okay, so the 1 is in the ones place, the 6 belongs in the tenths place since it is after the decimal point, then the 7 would be in the hundredths place, and the 5 is in the thousandths place.” “Okay, now, how do we say this number? Most people would say one-point-six-five, which is the simple version. Who is ready for the more difficult version?” “Okay! How many ones do we have? I will make note of the answer on the board. Okay, and then for the decimal point, we say and, so ‘one and’ what? When we look at the numbers to the right of the decimal point, we want to read them all together. So, that is six hundred and seventy-five, right? So we write, six hundred seventy-five thousandths, as it is important to note what place value we stopped at. So, we would say ‘one and six hundred seventy five thousandths.’ Let’s try another one. “How would we say or write 3.59? Three and fifty nine hundredths! Good!”
 - “Okay, now, I am going to give you a slip with five decimals on it. I want each person in your group to work on one decimal. Each of you will take a piece of scrap paper. I want you to write your decimal on the top, labeling it with what place value it falls into. Next, I want you to write the decimal out in word form. When your group is done, check each other’s work, and then raise your hand, and I’ll come around to check.” I will be checking with groups as they work, making sure they understand the concept and are applying it correctly.

1. 2.412 2. 1.530 3. 4.716 4. 27.205 5. 76.413

- Closure:
 - “Okay, let’s see what we have. Raise your hand if you did 2.412. Okay, what place values does it go into? Okay, and the word form would be ‘two and four hundred twelve thousandths.’ Great work!” We would repeat this process with each group, practicing explaining our reasoning and communicating with the group and the teacher. I would then collect their scrap papers, just to quickly look over, to make sure they have grasped the concept. “Okay, great work today! Now go get some energy out at recess!”

Differentiation:

- General Differentiation Plans:
 - To differentiate this lesson, I would:
 - Slower Pacing: Some students take longer to grasp concepts than others. They need a slower lesson in order to do so.
 - Individual Work: Some students like to have their own personal work time, where they do not have to compare their work with the work of others.
 - Personal Place Value Charts: Students could receive place value charts in order to help them practice. Some students need to be more hands-on with their learning and this is a great choice for them. They can use them at home or even have laminated ones on their desk to write on with eraser marker.
 - Work with Struggling Students: During group work time, I may spend more of my time with the struggling students, or the low ability students, in order to make sure that they have kept up with the pace. I also may have special handouts or examples to show them, just in case.
- Plans to Reteach: To reteach this lesson, I would once again go into greater detail on both place value and naming decimals. I would perhaps even split them up into two different lessons, allowing for students to fully grasp one topic before the other. I would also give students their own place value charts to practice on their own. They would also receive a template of how to write decimal names.
- Plans to Extend: If there are students who feel confident in the content, I would give them decimals with zeros or larger decimals to see how they can apply their knowledge. I could also begin to cover expanded form, which we will get to later in the unit.

Ones	Decimal point	Tenths	Hundredths	Thousandths
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Example of a Place Value Chart

Example of a Student's Work

4	.	6	5	3
ones	.	tenths	hundredths	thousandths

Adding Decimals

Identification of the Class:

- Subject: Mathematics
- Topic: Decimals
- Population of Students: 6 Struggling w/Math, 16 Average, 3 Above-Average
- Grade: 5th Grade
- Number of Students: 25
- Grouping: Whole Class
- Time: 45 Minutes

Professional Teaching Standards:

- Content Standards:
 - CCSS.MATH.CONTENT.5.NBT.B.7
Add decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- Practice Standards:
 - CCSS.MATH.PRACTICE.MP1
Make sense of problems and persevere in solving them.
 - Some students may struggle with adding decimals if they do not understand the basic concept or the rules to follow. Therefore, I hope to see students working hard to clarify their misconceptions and persevering through any difficulties.
 - CCSS.MATH.PRACTICE.MP3
Construct viable arguments and critique the reasoning of others.
 - During the lesson, I would like to see students working together in order to help each other learn. I will be watching to make sure they are respectful, but also critical of each other's work.

Goals and Rationale:

- Goal: By participating in this activity, students will have gained their initial experiences with adding decimals.
- Rationale: Learning to add decimals is important, particularly for transaction purposes, such as paying for food, paying bills, earning incomes, paying taxes, etc. All of these actions are necessary to live in our society.
- Concept Definition: Decimals are numbers that contain a decimal point. They may fall into the tenths, hundreds, and/or thousandths place value.

Daily Objectives:

- By participating in the food transaction activity, students will be able to gain basic knowledge on how to add decimals.

Materials/Equipment/Preparation:

- Materials:
 - Menus of Various Restaurants
 - Signs Showcasing the Restaurant
 - Paper and Pencils
- Teacher Preparation:
 - Teachers will need to have menus ready to go with easy to read numbers. They will need to have a rough understanding of what is on these menus, as well as the general prices, in order to field questions when they arise. They will also need to be prepared with any questions on how to add decimals. It is important that teachers remember the rules for adding decimals and potentially even practice in order to understand the necessary steps.

Assessment Plans:

- Assessment of Prior Knowledge:
 - I will assess the students' understanding and prior knowledge on adding during the beginning of the lesson. If they can tell me the steps, they are surely ready to add decimals, as it is very similar to column addition.
- Assessment of Objectives on Content Knowledge:
 - For this lesson/activity, my assessment will be mostly informal observations. While I am not collecting a piece of evidence, I will be looking over the students as they perform their addition to make sure they are doing so correctly. This is just an introductory lesson to decimals, in which students can make a mistake and learn from it. It is important for students to have these types of activities, in order to learn math in a comfortable setting and be able to interact with their peers.
- Assessment of Objectives on Practice Standards:
 - During the activity, I will interact with the students, making sure everyone is being respectful. I will also help students who are struggling to look at the problem and push to solve it. Students should feel able to help their fellow classmates and critique them kindly.

Procedures:

- Introduction:
 - When the class is settled in their table groups, I will begin. "Okay, today, we are going to do a really fun activity with adding decimals. But first, let's go over adding to remind ourselves of our rules, and I'm going to add a few that apply to decimals. Ready? Okay, so if I want to add:

$$\begin{array}{r} 432 \\ + 54 \\ \hline 486 \end{array}$$

What would I do? Six, then eight, and lastly 4. Good! Why 4? Yes! There is a placeholder, good! I like that we are using our previous knowledge so well today!

- Okay, now let's try using addition with decimals! If I want to add:

There is one simple trick that you need to know when adding decimals. That is to make sure the decimal points are lined up before you add!

$$\begin{array}{r}
 \cancel{15.03} \\
 + \quad 9.40 \\
 \hline
 \end{array}
 \Rightarrow
 \begin{array}{r}
 15.03 \\
 + \quad 9.40 \\
 \hline
 24.43
 \end{array}$$

- Body:
 - Everybody understand? Good! To practice, we are going to use money to buy food! Three table groups will be different restaurants, while two groups will be customers. If you are a customer, you will go up to the table and order what you want. It is then the restaurant's job to add up the amount due. You can use paper and pencil to help write it down, kind of like a receipt. Customers can order anything they want, but make sure everyone gets a turn to buy and sell. Got it? We will switch roles in a little bit! Does everyone understand? Feel free to ask me questions! Okay, let's get some restaurants open for business!"
 - After 20 minutes, I will have the groups switch and having 3 tables of customers and two restaurants. While that is more hectic, I want all students to have a chance to add decimals. If students who were seller the first time want to be sellers again, we might be able to open up a third restaurant for the second round.
- Closure:
 - Once the students are settled back in their seats and the materials are put away, we will talk briefly about why we did the activity that we did. "Okay, so let's wrap-up with this: why did we do this activity? What did it help us learn?" Answers could range from: "It helped me learn that I'm hungry!" to "It helped us with adding decimals, because the exchange of 'money' is where we use decimals most often."
 - We will talk about each answer and then end with thumbs up, middle or down vote to see who liked or disliked the activity. "Okay, great job today! Now, let's go get some lunch! All that food made me hungry!"

Differentiation:

- General Differentiation Plans:
 - To help students who are struggling, I would try a variety of options:
 - Individual Work: Some students may do very well in math, but do not have the social skills for this activity. Others may not wish to partake in this type of whole class, social learning. Therefore, I would allow students to demonstrate their knowledge individually by choosing their food items and adding up their totals.
 - Varying Menus: If students are struggling with decimals, it may be easier to give them menus with smaller numbers, or even decimals. This may help if students are frustrated or overwhelmed.

- Plans to Reteach:
 - To reteach the lesson, I would slow down and work with a smaller group, in order to cut down on the noise and chaos. Students could work independently or in a small group to practice adding their decimals.
- Plans to Extend:
 - If students grasp the concept, they can quickly begin to attempt subtraction of decimals and/or “making change” in this activity. If they are feeling really confident, they also could take it one step further and begin to calculate the tax on an order, which would be considered multiplication of decimals.

Example Menu:

 Menu Math			
Classics		Sides	
	\$3.29		\$1.49
	\$3.89		\$2.55
	\$3.59		\$1.69
	\$4.19		\$2.59
	\$3.99		\$1.69
	\$4.89		\$2.55
	\$4.89		\$1.89
	\$3.69	Wraps and Salads	
	\$3.29		\$5.49
	\$4.19		Chick'n Strips \$6.29
			Garden \$6.29
			Southwest \$5.49
			Fruit \$6.29
			Fruit \$6.59
		Med. Drinks	
			\$1.79
			\$1.69
			\$1.69
		Desserts	
			\$1.95
			\$3.09
			\$1.89
			\$1.25
			\$1.29

Bulletin Board Display:

- My bulletin board display would feature different items that can be purchased at the grocery store with a variety of shopping lists. Students can interact with the board by adding the prices of the items on the grocery list and create a receipt. They could do this with adding, but then again, with subtraction, and again with multiplication with sales tax. This is just another way for students to practice working with decimals, as well as seeing it relate to the real world. They also can work with other students to come up with the answers.



Websites:

- Khan Academy (<http://www.khanacademy.com>) – Students can use this in the classroom as well as at home to watch informative videos on decimals, place value, and the operations. Khan Academy also has practice exercises that go along with the videos.
- Cool Math (<http://www.coolmath.com/prealgebra/02-decimals>) – Students in my 5th grade class use this site during extra time to reinforce their learning. They love the interactive games and extra practice they receive.
- IXL Math (<http://www.ixl.com/math/grade-5>) – Students can use this in class as extra practice. They can also use the practice problems as a tool if they cannot understand their homework and need extra help.

Grocery Store Project

Ask yourself: What do you eat? How much does it cost?

*The average human pays ten dollars per day for food.
Can you budget correctly?*

Requirement: One item must be from produce. You must list the price and then divide to get the item price per pound.

Requirement: You will present your meals to the class, as well as the math cost.

Breakfast:

Food Item	Price

Lunch:

Food Item	Price

Dinner:

Food Item	Price

(All prices added together) **Subtotal:**

(Subtotal x .06) **Tax:**

(Subtotal + Tax) **Total:**

(Amount Paid) **Paid with:**

(Money Back From Cashier) **Change:**

Guest Speakers:

- Local Grocery Store Clerk:
 - Students will benefit from hearing a person talk about the use of decimals, particularly in a grocery store setting.
- Engineers:
 - The students will benefit from hearing a person talk about how they use decimals in their job on a day-to-day basis, especially if they make good money. Students at this age are interested in being successful and seeing a successful person using decimals will only make what they are learning more meaningful.

Field Trip:

- The students will take a trip to the local grocery store in order to examine the cost of food and budget correctly. They will use their newly acquired skill set to add, subtract, multiply, and divide decimals. They will plan a day of meals for themselves and present it to the class.

Concluding Additions:

- Special Considerations:
 - Students with Special Needs:
 - If I had a student who had a physical disability, I would be sure to assist his or her needs, particularly on our trip to the grocery store. I am a big promoter of inclusion and want everyone to be involved. If a student has a cognitive disability, I would also cater to his or her needs, like one-on-one help, extra explanation, adapting to the student's learning style/preference, and communicating openly, all to be sure that everyone in the class feels welcome, included, and excited to learn.
 - Students from Diverse Cultural Background:
 - If I had a student from a diverse cultural background, I may consider using their form of currency as a precursor to American currency. By doing this, it allows the student to relate their learning and can improve understanding greatly. I would eventually introduce American currency in relation to the student's currency, by relating money values. I would also offer extra explanation and one-on-one assistance, as that will mostly be necessary for the student to succeed.
- Supplemental Resources:
 - Besides the previously mentioned websites, I may allow students to use their technology resources to use the Internet or apps for more practice. This would also work well for students who need differentiation, whether up or down. As a teacher, I will hang up plenty of posters and charts for my students to reference. These resources will allow for greater understanding and practice with the concept.

Self Evaluation:

- Overall, I am really happy with the way the unit turned out. It may have a few kinks that need to be ironed out, but overall, I think it is solid. One of the major problems I run into is a lack of creativity. Often times I get set in my comfort zone and go straight to super traditional teaching of lectures and the class listening. With this unit, there is evidence of that, but I also attempted to be more creative with my final assessment. Allowing students to put their own spin on their assessment is extremely important, as they feel they are truly responsible for their learning. I like the idea of having a theme of decimals being involved in food service, so restaurants and grocery stores, but I also want the students to understand that decimals are used in other places as well. Overall, if I were to improve this unit, I might add a few more lessons with creative projects in them, especially if technology of any kind is available. I also might add some cushion days, in case students have a difficult time grasping the concept. This unit is a great start to what could be an amazing unit. It just needs to be adjusted to a particular class, keeping their needs in mind.