**Subtracting Decimals Lesson**

**Grade Level:**  5th Grade

**Subject Area:** Math

**Materials Needed:** Smart board, math journals, pencils, colored pencils

**Standard:**

* ***5.NBT.7🡪*** Using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, add, subtract, multiply, and divide decimals to hundredths
* ***5.LS.1 🡪*** Support an argument that plants get the materials they need for growth chiefly from air and water

**Objectives:**

* Students will explain the process used when subtracting decimals by creating a booklet.
* Students will demonstrate their understanding of decimal subtraction by completing problems.
* Students will measure amounts of water and heights of plants to the nearest decimal and subtract them.
* Students will compare measurements of their water amounts and plant heights to understand how water affects plant growth.

**Learning Activities:**

* + OPENING ELEMENT= REVIEW OF ADDITION/COMPARISON
* So yesterday you were working on adding decimals. What can you tell me about the way you add decimals? Are there any special rules?
	+ *Students should remember that they have to keep their decimals lined up.*
* Subtraction is very similar. You still have to remember to keep your decimals lined up. What about when we have two numbers but one number goes out to tenths and the other number goes out to hundredths? For example, what if I have 1.53 – 1.315? What do I do?
	+ *Students should suggest adding a zero to help line up all the numbers.*
* Right. We call that extra zero a placeholder because it basically just stands in that place so we know that we have a number to work with there.
	+ - * NEW VOCAB= PLACEHOLDER
* After we get that part. The rest is just like regular subtraction for us. We work from right to left and borrow when we need to.
	+ *The teacher will work out the problem on the board while talking it out to get answers from the students.*
* The last thing we have to remember since we are not working just with whole numbers here is that our decimal point has to come straight down.
* Are there any questions on what we just did here?
	+ *The teacher will take the time to address any concerns students may have.*
* Okay, now I want you all to get out your math journals and one colored pencil. I am going to have you make yourself a little guide to help you remember all of the steps involved.
	+ GUIDED PRACTICE STRATEGY: BREAKING INTO PARTS
* Let’s turn our journals sideways and I want you to draw a line dividing your paper in half horizontally and then draw four lines up and down making four equal columns.
	+ *The teacher will model for the students on the board.*
* In this first box we are going to write Step 1: do we remember what our first step is? We line up our decimals vertically (right on top of each other). So that’s what I am going to write in this first box. Below the box I am going to write an example problem. Let’s use 3.25 – 1.322. That’s all we do for that.
* Next, we move on to the second box along the top. Looking at the problem we have we can see that our numbers do not have the same number of digits. How do we fix that? We add an extra zero to hold that place. Let’s write our instructions on top and then do in in the box below. This is where you are going to need your colored pencils, every time we add a new step, I want you to do that in a different color so that it is easy for you to see what was changed so when you look at it later it’s easy to understand because we are going to do a few of these together as a class and then I want you to try some on your own. So with your colored pencil, I want you to write in a zero behind the 5.
* Step 3: goes in the next box and this is the step where we subtract as usual from right to left. Just like subtraction with whole numbers, we start with the smallest place value and work our way up. In this problem we will need to do some borrowing. So let’s rewrite our problem in pencil and go back with our colored pencils to show how we are going to do that. (*Teacher will talk through the process and have students come up with each answer.*)
* Finally we get to Step 4: and this is very important; when working with decimals, we need to remember to write nice and neat and then bring our decimal straight down. This might be something that could be easy to screw up if you go too fast so remember to take your time because where that decimal ends up will actually change what your number is. One last time let’s rewrite this problem with pencil and then just use our colored pencil to make an arrow showing that our decimal point comes straight down.
	+ *The class will work through 3-4 more problems as a class. The problems will be written in their math journals so they have more to reference in the future. Problems will be written on the board and students will be given individual work time, when the majority of students are finished, individual students will be asked to come up to the board and show their work. The class can help them if they get stuck or get the wrong answer.*
	+ DIFFERENTIATION:
		- Visual🡪 practice on the board
		- Auditory 🡪 talking through the process
		- Kinesthetic 🡪 making their own guide
* So now that I think you all have a handle on this and have gotten through the practice successfully I am going to give you some work time to get started on the homework pages.
* Once students have finished practicing, they will be able to transition to science.

***Science***

* “Okay, now that you all seem to be understanding the process of subtracting decimals, let’s give our problems some context. We are going to take the data we have been collecting in our science journals while we have been growing our plants and see how using the math we learned today (subtracting decimals) to help us determine how the water we have been giving our plants have been affecting the growth of our plants.”
	+ Each small group of students will have been assigned an amount of water they were to feed their plant daily. Students have also been tracking the length of their plants.
	+ “Make sure you make your measurements for today’s growth. We want our information to be as current and accurate as possible.”
	+ The teacher will have students come to the board and write their results for example:
		- 2.5 mL //Day 1: 4.5 cm// Day 2: 4.6 cm// Day 3: 4.6 cm etc.
		- 3.7 mL// Day 1: 4.5 cm// Day 2: 4.8 cm// Day 3 5.0 cm etc.
	+ Students will use decimal subtraction to figure out how much their plant has grown since Day 1.
	+ Students will then compare results from other groups (using decimal subtraction) to decide which water amount has yielded the greatest amount of growth.
	+ Students will use the information from whose plant is thriving best to understand how too much or too little water can negatively impact the plant.

**Assessment:**

* Informal Formative Assessments are done as the teacher walks around the room to spot check while students are working and when students come up to the board to show their work.
* Students will individually complete page 185 and 186 out of their workbooks.
	+ Skip problem number 9 on page 185
* Summative Assessment will be provided by their regular classroom teacher at the end of the unit.