



## **MGSE5.NBT.7 - Addition and Subtraction Video Transcript**

**00:01**

**[Opening Music]**

**00:16**

In this video, we will deconstruct standard NBT.7 of the grade 5 Georgia standards of excellence for mathematics.

**00:23**

This standard represents the operations of addition, subtraction, multiplication, and division using decimals to hundredths.

**00:30**

This video will specifically focus on using addition and subtraction strategies to compute with decimals.

**00:37**

Standard NBT.7 expects students to use concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to solve problems.

**00:50**

The students should relate the strategy to a written method and be able to explain the reasoning behind the chosen strategy.

**00:58**

NBT.7 builds on the work from 4th grade where students are introduced to decimals.

**01:02**

Students are expected to compare decimals using concrete models to build an understanding of their size.

**01:11**

In 5th grade, students begin adding, subtracting, multiplying and dividing decimals.

**01:15**

This standard requires students to extend the models and strategies they developed for whole numbers in grades 1-4 to decimal values.

**01:23**

It is important to note that students are not required to use the traditional algorithm to compute with decimals in fifth grade.

**01:31**

It is not until 6th grade when students are required to fluently add, subtract, multiply, and divide multi-digit decimals using the traditional algorithm for each operation.

**01:43**

Using concrete models is an important way to show the relationship between whole number strategies and how they can be used to compute with decimals.

**01:51**

To model the difference between 5.7 and 3.9, the student uses base-ten blocks as a concrete representation.

**02:00**

The student builds 5.7 to begin the subtraction problem.

**02:04**

Students will naturally subtract the whole numbers when given manipulatives.

**02:09**

As students model the subtraction with the concrete manipulatives, it is important to record, on paper, how this looks using the associative and commutative properties.

**02:19**

Using number talks, every day, in the classroom, is a great way to model how these equivalent expressions should be written.

**02:26**

Students will notice that they do not have enough tenths to take 0.9 away. This student took one whole and decomposed it to create an equivalent value of ten tenths.

**02:38**

The student was then able to remove the nine tenths from the seventeen tenths that were present. The result was one whole and eight tenths.

**02:49**

Number lines are another great strategy to model during Number Talks.

**02:53**

Students will naturally add up to find the difference of two numbers and using a number line will help in building number sense as it relates to decimals.

**03:03**

Students might compute the sum or difference of decimals by lining up the right-hand digits as they would whole numbers.

**03:10**

For example, in computing the sum of  $15.34 + 12.9$ , students will write the problem in this manner (vertically).

**03:19**

To help students add and subtract decimals correctly, have them first estimate the sum or difference.

**03:27**

Understanding decimal place value is key to using decomposing strategies that students are familiar with for adding and subtracting whole numbers.

**03:36**

It is important to facilitate the process and ensure that students have a strong understanding of place value in order for this strategy to be successful.

**03:45**

Many students will decompose the numbers by place value, create tens and friendly numbers to add, and then add all of those together as if they were all whole number values.

**03:55**

Having students round before they compute, will help clarify their mistakes.

**04:00**

Students should engage in conversations to discuss if their actual sum or difference is close to their estimated sum or difference.

**04:09**

Providing students the opportunity to engage in 3-Act tasks, will allow students to create their own question to solve.

**04:17**

In this Grade 5, Georgia standards of excellence for mathematics framework tasks, students are instructed to view a short clip of Joey Chestnut, hot dog competition champion.

**04:28**

Students then look at a graph displaying many of the competitive eating records.

**04:33**

Students brainstorm to create questions that they may have. As a class, students decide on the main question to answer from the graph provided.

**04:44**

In this fifth-grade class, students wonder how much food the contestants consumed altogether.

**04:50**

In order for the class to answer this question, students will engage in several different math skills.

**04:48**

First, students must be able to interpret data. Students must have an understanding of decimals to generate the numbers that will be used for each contestant.

**05:09**

Next, students will round decimals to create estimates and then find the sum of the decimals they named.

**05:16**

This student explains all of the steps she took to name the decimals from the graph and then tells what she will do to answer the guiding question for the task.

**05:26 (Video)**

**Teacher:** So, I see that you have all of your decimals written above the bar graph. Can you tell me how you got those decimals?

**Student:** So, what I did was, umm, I lined the ruler up to here...and, umm, we're supposed to be using the kilograms. So... umm, what I did was... I'll use the watermelon for an example...

**Teacher:** Ok.

**Student:** So, I put the ruler here. And then, I would see... right here... and... umm... I see... it would be in the five... and then, see... it's very close, here, to the 6. So, I did five point nine.

**Teacher:** Ok, and how would you say five point nine... the correct way?

**Student:** Five... tenths...

**Teacher:** Five and...

**Student:** Five and nine tenths.

**06:18**

**Teacher:** Very good. Ok. So, remember, our driving question is, "How much did all of the eaters eat all together?" So, how are you going to find out how much they eat all together?

**Student:** So, what I can do is I can come down here and start with these...

**Teacher:** Ok.

**Student:** And add all of those together, and then do these, and then add them together.

**Teacher:** Ok. Go ahead and do that for me, ok?

**06:53**

Before students begin adding, have students create estimates that will provide a nice range of numbers for their actual sum.

**07:01**

This will help serve as a guide for students to determine if they added their decimals correctly and can help clear up any misconceptions about adding those decimals.

**07:11**

This will also provide students the opportunity to make sense of the decimals and justify their prediction.

**07:19**

Students can guess to make a too low and a too high estimate; however, most students will provide 0 for too low and one million for too high.

**07:30**

To get students better acquainted with how to provide reasonable too low and too high estimates, have them round their numbers to the lowest whole and to the highest whole.

**07:40**

This will create a range of numbers for them that are close to the actual sum or difference.

**07:46**

Students can also round the decimals to the nearest whole number and find the sum or difference to create a better estimate.

**07:53**

Estimating provides students a great checkpoint for their work.

**07:58**

Since addition and subtraction with decimals is new, it is important for students to have a reference. Estimating also helps in building number sense.

**08:07**

Students are able to compare their answers to the estimated answer and provide reasoning on if their work is accurate.

**08:15**

Take a look as this student explains how he created a range for his actual sum.

**08:21 (Video)**

**Teacher: Alright. I see, over here, that you have a too-low and a too-high estimate. Can you explain to me how you got those?**

**Student:** So, I got all these decimals, right here, and I added them... umm... not added them. I rounded them up. And that gave... that was 78. And then I added them when I rounded down and that gave me 59.

**Teacher:** Ok. So, 59 is your too-low and 78 is your too-high. How is having a too-low and a too-high estimate going to help you with your actual sum?

**Student:** Usually, when you round up and when you round down, your sum will usually be somewhere in the middle of those numbers.

**09:04**

**Teacher:** Ok. So, when you add all of these decimals, the answer should be in between 59 and 78?

**Student:** Yes, Ma'am.

**Teacher:** Alright! Good. And if it's not in between 59 and 78? What does that tell you?

**Student:** That you rounded or added wrong.

**Teacher:** Probably added wrong. Good job.

**09:27**

Teachers should avoid telling students to "line up the decimals" and instead, allow the students to discover this on their own while working through the task.

**09:36**

Students will find that wholes should be added to wholes and tenths should be added to tenths. This discovery will allow for students to fully understand the "line up the decimal" rule.

**09:50**

**Student:** As I was doing it, I figured out that you just do regular addition and then add the decimal back in.

**Teacher [writing on the board]:** You just do regular addition and then add the decimal back in. So, you're telling me I do this?

**10:04**

**Student:** Well, you have to umm, have the decimal between the five and four tenths and the three wholes and two tenths.

**Teacher:** So, like that? Ok, tell me about this number [pointing to five wholes].

**Student:** That is five wholes.

**10:21**

**Teacher:** Five wholes. Good! That is exactly what I wanted you to say! Tell me about this number [pointing to three wholes].

**Several Students:** Three wholes.

**Teacher:** Tell me about this number.

**Student:** Six tenths.

**Student:** Six wholes.

**Student:** No, it's six wholes.

**Teacher: Six wholes... So, where does that six need to be?**

**10:36**

**Several Students: On the left. On the left side.**

**Teacher: I need to add that to my wholes, don't I?**

**Student: And then put a zero where the six is now.**

**Teacher: Oh, so I can do this?**

**Student: Yes... And then put the decimal.**

**Teacher: Oh, ok.**

**10:53**

For additional support and resources, please visit [georgiastandards.org](http://georgiastandards.org), where you can find additional tasks, intervention materials, and more.

**11:03**

**[Closing Music]**