

Grades 2-5 Lesson 1 (17:38)

SPEAKER: Welcome to an introduction to Nemeth code symbols used in grades two to five and strategies for supporting elementary students in building math skills. This is lesson one. Nemeth code signs of operation, signs of comparison, and switch indicators.

Slide two has the objectives. First you're going to learn how to read and write Nemeth code symbols for signs of operation and signs of comparison. Next we're going to focus on linear problems that use the long dash or the general omission symbol to represent a missing number, sign of operation, or sign of comparison. And then we're going to talk about Nemeth code switch indicators and how you use these.

Slide three is really important. I'm sure you're aware that as of January 4, 2016 in the United States, we no longer use Nemeth code. Instead we use Nemeth code within UEB context. If you have access to books or other resources that were published before 2016, these are not accurate. And that is because the text surrounding the math is in English Braille American Edition, EBAE, and not in Unified English Braille, UEB. In addition, there are other things that are not accurate when it comes to the way the material is presented.

We highly recommend you do not use these resources, because you're going to make mistakes in how you're preparing materials. We really recommend that you go to the Braille Authority of North America website and print off the document "Guidance for Transcription Using the Nemeth Code Within UEB Contexts" that explains to you how to prepare materials following the rules that we are now using in the United States.

Okay, let's get started on slide four with signs of operation. I have five of them here. The plus sign is dots 3-4-6. The minus sign is dots 3-6. There are two ways to show multiplication. As somebody who is preparing materials for a braille reader, you need to use the same symbol that's in the print, and your student needs to be familiar with both symbols. So the multiplication cross takes two cells, dot 4, dots 1-6. And the multiplication dot takes only one cell, dots 1-6. The division sign or the divided by sign is dots 4-6 in the first cell and dots 3-4 in the second cell.

Let's look at slide five that talks about the signs of comparison. I have three of these. They each take two cells. The equals sign is dots 4-6, 1-3. Greater than sign is dots 4-6, dot 2. And the less than sign is dot 5, 1-3. So I've got two examples. You'll notice that with signs of comparison, there always is a space on either side of the sign of comparison.

My first one reads 65 is less than 73. So numeric indicator, 65, space, my less than sign, which is dot 5, 1-3, space, my numeric indicator, 73. My second one reads 105 is greater than 25. So I've got my numeric indicator, 105, space, my greater than sign, which is 4-6 dot 2, space, and my numeric indicator, 25.

On slide six, I'm going to introduce you to the general omission symbol. This is brailled using the full cell, dots 1-2-3-4-5-6. You're going to use the general omission symbol when the student has a question mark in print or there's a blank space shown that something's missing. So typically

after a math problem, you may have equals and then there's nothing. And the print reader knows they need to write in the number.

For our braille reader, we're going to put the general omission symbol to make sure that they're clear that, hey, you need to write in something. You're going to space the general omission symbol the same way it is spaced for what it's standing for. So if you look at my sample problem, I have 88 divided by question mark equals 11. So I'm going to do numeric indicator, 88, my division sign, which is 4-6, 3-4, my general omission symbol, 1-2-3-4-5-6, space equals, 11.

Let's go on to slide seven and talk about the long dash. The way I braille the long dash is I use four cells, dot 3-6 four times. Regardless of how long that long dash or that line looks in print, in Nemeth code it is always four cells of dot 3-6. We're going to generally place a space before and after a long dash unless there's a mark of punctuation next to it, such as a comma.

So let's look at our two examples. The first one is seven, multiplication dot, long dash, equals 56. So I start off with my numeric indicator seven, my multiplication sign, which is 1-6 when it's a dot, then I put a space, my long dash, space, equals sign, 56. Now, you're saying, but wait, I thought the rule was no space around a sign of operation. The long dashes are exception, folks. Okay?

My next example shows you again long dash minus 12 is less than 35. So I start out with that long dash, four cells, the dots 3-6, my space, then my minus sign, 12, space, then I've got my less than sign, space, and 35.

Look at slide eight and talk a little bit about linear problems and using signs of operation and comparison. My problem begins with a numeric indicator. There's no space on either side of a sign of operation or a sign of comparison. But remember, we just learned that little exception on slide seven, didn't we? Unless our long dash is next to a sign of operation, then we get to break that rule and put in a space.

But here I have four examples. The first one is 100 minus 25 equals 75. So numeric indicator, 100, minus, 25, space, equals, 75. The next one is 79 question mark 6 equals 85. So we're wanting our student to fill in a sign of operation, in this case a plus. So we do numeric indicator, 79, general omission symbol, 6, space, equals, space, 85. I want you to go back and look at that general omission symbol. Because it's replacing the plus sign, I treat it the exact same way I would the plus sign, so there is no space on either side of it.

My next example is 9 times 11 is greater than 88. So we're gonna do 9, this is a multiplication cross. so dot 4, 1-6, 11, my greater than sign, which has a space on either side of it, and then my 88. And in my last example, I have 64 divided by 8 equals long dash. So here I'm going to do 64, my division sign, which is 4-6, 3-4, 8, space, my equal sign, and my long dash. Remember, it's always four cells of 3-6.

Slide nine. It's your turn. You're going to interline the linear problems in activity 1A. When you're done, please come back and check your work. Okay. Slide 10 is the answer key for activity 1A. Make sure that you've brailled everything properly.

All right, let's look at activity 1B. I want you to braille the following problems. When you're done, please come back. And the answer key here on slide 12 for activity 1B. Did you get them all correct?

We're going to slide 13, and we're going to talk about the Nemeth code switch indicators. The opening Nemeth code indicator is dots 4-5-6, 1-4-6. When the braille reader sees this symbol, they know that Nemeth code is beginning. The Nemeth code terminator is dots 4-5-6, 1-5-6. When the braille reader sees that terminator, they know that Nemeth code has ended.

So let's look at our first one. It says "Examples," and then I've got four math problems. Notice that after the word "Examples" I have a space and then I have 4-5-6 1-4-6. So that braille reader knows after I read that title that says "Examples," I'm going into Nemeth code.

So everything I'm going to see now until I get to the Nemeth code terminator is Nemeth. So after the braille reader sees that last math problem, which is 18 divided by question mark equals 2, there is a space, and then the braille reader sees the terminator 4-5-6, 1-5-6. There's always a space after the math and before the terminator.

Let's talk a little bit about positioning on slide 14. The opening Nemeth code indicator can be placed at the end of a line of literary text, as we just saw on the previous slide, or on its own line. And I'll show you that in just a second. The Nemeth code terminator can also be placed after the math it ends, as we just saw, or on its own line. When deciding where to place indicators, you need to be consistent.

Your braille reader, if you're doing a document for them, you need to make sure that every time they see these Nemeth code indicators that they're seeing them in the same position. That being said, you don't know how other people are going to be preparing braille for your student, what the high stakes test is going to be like. So students need to get familiar with seeing Nemeth code switch indicators in different positions.

Let's go ahead on slide 15 and take a look. So this was our example on the previous slide where we had the word "Examples" in the title, and then at the top we opened up right on that same line as the title we opened up Nemeth code with our opening Nemeth indicator and we terminated with our Nemeth terminator after the problem 18 divided by question mark equals 2.

But look at the second example. In this example, I have the title "Examples." And then on the next line, I open up Nemeth. So I have 4-5-6, 1-4-6 to open all on a line by itself and then I go in to my four problems. After I finish the last problem, I go to the next line and I braille my Nemeth terminator. In both these instances, they're taking the first two cells of the line.

Slide 16 talks about the two different ways that you can let the braille reader know that you have a word within Nemeth code. This is only when you have one word, a single word. You can braille the word with no contractions or you can use the Nemeth single word switch indicator, which is dot 6, dot 3.

Just as we talked about being consistent with where you open and terminate Nemeth code, you need to be consistent about whether you go for no contractions or whether you go for using the dot 6-3 each time you have a single word in Nemeth code. You want your student, again, to be familiar with both ways of doing this.

So let's take a look at the example. Are 4 plus 4 and 2 times 4 equal? So I start out in UEB "Are," I'm going to open up Nemeth, so 4-5-6, 1-4-6. 4 plus 4, then space. And my first problem I spell out "and," A-N-D, space, 2 times 4, and then I'm terminating Nemeth with my 4-5-6, 1-5-6, equal.

The only difference between that problem and the next problem is the way I brailled the word "and." So I brailled "Are," open Nemeth 4 plus 4 and then I did my dot 6, my dot 3 - my one word switch indicator, my contracted version of the word "and," 2 times 4, terminating Nemeth, equal. Very important that your student get familiar with both ways to see and braille single words that appear in Nemeth.

Slide 17 talks about when you're not going to use Nemeth code switch indicators. And basically, this is when you have a whole number, such as 750, such as 14, such as 109. So if I have 750, 14, 109, those are whole numbers. I have the option of using UEB. By the time a student's in second grade, we recommend that you use UEB numbers. With younger students, you may want to use Nemeth numbers just so they're not going back and forth as much. But at the second grade level, they should be able to do this with no problem.

So I have my math problem. It's a word problem, number 13. Jackie is tracking the growth of a sunflower in her backyard. If the plant grew 183 millimeters between July 1 and July 31, how many millimeters did it grow each day? So I braille along until I get to 183 milliliters. This is on the third line of the braille. 183 is a whole number. So I braille it as a whole number.

Then I get to 1 as in July 1, and I braille that as a UEB, a whole number, upper cell, just as I did with the 183, upper cell. And then I get to July 31, So UEB again. Going to braille my 31 in the upper cell. Notice I'm using a UEB comma because 31 is a UEB number. Some people get a little confused about that. So it's a UEB comma next to a UEB number.

Last thing we're going to do in this lesson is activity 1C, which is on slide 18. There's four problems for you to braille. I want to point out that in problem 16, there are two ways to braille it, and I'd like you to give it a try to brailing it both ways. When you're done, please come back and check your work. Slide 19 shows you how to braille the answers for activity 1C for problems 13, 14, and 15. Be sure that you brailled your numbers properly, and that you opened and closed Nemeth when you needed to.

On slide 20, we have the second answer key page for activity 1C. And this is problem 16, which I asked you to braille two ways. So one way to braille problem 16 is to braille the word "or" out in the problem. The second way is to use the one word switch indicator, dot 6 dot 3.

So remember, you have two possible ways that you can braille the one word when it comes within Nemeth code. Also I want to point out to you that whenever possible, we want you to put

the entire chunk of information that goes between the opening Nemeth indicator and the Nemeth terminator on the same line.

So if you look at the second example of number 16 brailled out, I have 16, which is greater comma on the first line and then starting in cell three, which is where I put my runover, I have my opening Nemeth indicator, and then I braille 29 minus 16 or 18 minus 5. And then I have my terminator and my question mark. I could not have gotten all that on the same line as the beginning of the problem. So I carried all to the second line. And that's what's recommended in the guidance.

Thank you so much for taking part in lesson one. I hope that you are feeling confident with the skills that you've learned in this lesson and are ready to move on to lesson two.