

Kindergarten Nemeth Braille Code Curriculum  
Module 2: Nemeth Numbers 11-15 and General Omission Symbol  
Teacher Reference Materials

*Prerequisite skills:*

- Ability to use rote counting number words in order
- Ability to verbally count objects
- Ability to tactually identify the numbers 0-10
- Ability to write the numbers 0-10
- Ability to tactually count tally marks (1-10)
- Ability to write tally marks

*Math symbols and concepts, including braille knowledge, addressed:*

- Counting to answer "how many"
- Numbers 11-15
- General omission symbol
- Patterns that incorporate the general omission symbol (introduced, but not assessed)
- Represent numbers 11-15 with concrete materials, including base ten blocks or Digi-Blocks
- "One more" and "one less" (introduced, but not assessed)

*Objectives:*

The student will be able to:

- 1) Tactually identify and read the numbers from 11-15
- 2) Tactually identify the general omission symbol in Nemeth code
- 3) Use the Accessible Equation Editor and/or braillewriter to write the numbers 11-15
- 4) Use the Accessible Equation Editor and/or braillewriter to write the general omission symbol
- 5) Count to answer "how many" questions about as many as 15 objects arranged in a line or rectangular array
- 6) Represent numbers 11-15 with concrete materials, including base ten blocks or Digi-Blocks

*Other ECC skills addressed:*

Listening skills; concept development; following directions; organization; tactual discrimination; left-to-right tracking; taking turns; hand positioning; light touch (as opposed to scrubbing); career exploration; recreation and leisure

### *Teaching tips:*

- If the student has completed the Kindergarten Module 1 yet continues to experience difficulty reading and writing any of the numbers, you may use activities from the Pre-Kindergarten curriculum to teach and/or reinforce the numbers 0-10.
- This module should be completed across multiple sessions.
- If the child is using a refreshable braille display, ensure that the child knows how to move to the next line of braille. Offer assistance as needed.
- Sorting trays often define the work space as well as assist students in determining which flash cards have already been read. If you do not have sorting trays, you can use cafeteria type trays, cookie sheets, small cake pans, and/or small storage boxes.
- Using small storage boxes with labels can make it easier for a child to independently locate stored items such as unit blocks, flash cards, etc.
- It may also help to place the flash cards and hard copy braille on a nonslip surface such as rubber shelf liner so they will not move as the student is reading.
- Base ten blocks and Digi-Blocks are often used in elementary general education classrooms. If you do not have base ten blocks or Digi-Blocks, request to borrow them from a classroom teacher.
- A two-compartment sorting tray may be used as the place value chart described below. Label the right compartment "ones" and the left compartment "tens" in braille. The sorting tray may assist students in easily keeping their units and rods in the correct columns.
- If you are using hard copy braille, the student may also underline or circle the answer with a grease marker or crayon. Placing a small sticker on top of the answer is another option.
- Using the braillewriter for some of the writing activities is encouraged as it facilitates the development of motor memory.
- It is very important to use the correct finger on each key when learning new Nemeth symbols. This will help the student become accurate in their writing!

### *Materials/technology needed:*

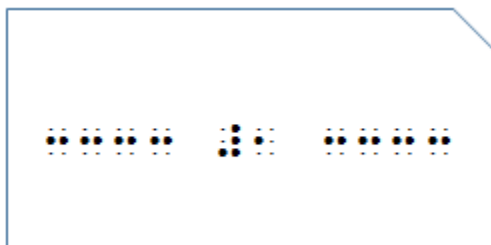
- Accessible Equation Editor and/or braillewriter
- Braille paper
- Index cards and sorting trays
- Base ten blocks (or Digi-Blocks) and a place value chart (available in contracted and uncontracted braille within the curriculum)

*Optional materials for follow-up activities or adaptation of activities:*

- Assortment of buttons or other small objects that are tactually distinctive
- Bag that will hold approximately 20 buttons
- Small stickers
- Timer
- Small storage boxes
- The story "The Lost Button" from *Frog and Toad Are Friends* by Arnold Lobel

*Explanation of activities embedded into module:*

- 1) Create flash cards for the numbers 0-15 with the index cards. Cut out the upper right corner for easy identification of orientation. Make five flash cards for each number. Use lines of dots 2-5 for leading in and away from the number. See below for an example. If you have number cards from the Pre-Kindergarten curriculum or Kindergarten Module 1, they can be used instead of creating new flash cards for 0-10.



The flash cards will be used to practice reading numbers at first. Give the student one number card at a time. Make sure that it is oriented with the cut out corner at the upper right.

- 2) In one of the activities, your student will represent a number from 1-15 by making a set of tally marks. The student will need a braillewriter, braille paper, and flash cards for numbers 1-15. Have the student begin by shuffling the flash cards and then drawing a flash card. He/she will read the number on the flashcard and then braille that many tally marks before pressing the line spacing key twice. If you would like, the student and a friend (or you, if no other students are present) can take turns drawing cards and brailleing that many tally marks. If needed, students can use popsicle sticks, straws, stick pretzels etc. when practicing tally marks.

- 3) In some of the activities, your student will listen carefully and then write the numbers and braille symbol that he/she hears. These activities can be completed using the Accessible Equation Editor and/or a braillewriter and braille paper.

Begin each time by asking the student to listen carefully as you read numbers. Afterwards he/she will write the number(s) in braille. Remind the student to space one time between the numbers and check his/her work. An answer key has been provided for these activities in the document entitled "B3 Module 2\_Answer Key for Writing Activities\_K".

If your student is using a refreshable braille display for this activity, explain about the additional keys on the far right and far left. If your student is using a QWERTY keyboard with the Accessible Equation Editor, it may be helpful to use tactile dots on the keys used for dot 1 and dot 4.

- 4) In one of the activities, the student will count the number of tally marks on several lines of braille. He/she will write the number of tally marks on each line using the Accessible Equation Editor and/or braillewriter. Remind the student to space one time between the numbers and check his/her work. An answer key has been provided for these activities in the document entitled "B3 Module 2\_Answer Key for Writing Activities\_K".
- 5) The student will locate the general omission symbol in several lines of braille in one activity. Afterwards the student will identify and write the missing number that the general omission symbol is representing. If needed, provide the student with a hard copy of numbers or number flash cards in order to help him/her identify which number is missing. It may help to place the flash cards on a nonslip surface such as rubber shelf liner so they will not move as the student is reading the cards. You may also use a strip of sticky back Velcro on the back side of each flash card and then arrange the flash cards on a long strip of Velcro on the student's desk.

The student will write the missing number either using the Accessible Equation Editor and/or his/her braillewriter and braille paper. Space one time between the numbers.

- 6) In one activity embedded in the Module, the student will learn how to build numbers using either base ten blocks or Digi-Blocks. These blocks will provide a spatial model of our base ten number system.

Place the units and rods in different containers, baskets or bowls. If preferred, Digi-Blocks (a different type of base ten blocks that nest) can be used. The student should begin by independently exploring with the base ten blocks and being introduced to the words “unit” and “rod”.

Before building any numbers, allow the student to explore and build with the blocks independently. Afterwards, have the student describe the different blocks to you. When discussing the rod, point out that it contains ridges. Then count how many squares are on each rod and explain that rods have ten squares.

Now introduce the student to the place value chart. It will provide a means for the student to organize his/her work as he/she explores the relationships among the blocks and determines how groups of blocks can be used to represent numbers.

Encourage your student to use his/her hands to explore the place value chart. Afterwards, ask the student to find the title and read it together. Then point out that there is a line going down the middle of the page. Have the student find the column headings at the top, and then help him/her read the headings. The column on the right is the ones, and the column on the left is tens.

A two-compartment sorting tray may also be used as the place value chart. Label the right compartment “ones” and the left compartment “tens” in braille. The sorting tray may assist students in easily keeping their unit blocks and rods in the correct columns. If you do not have a two-compartment sorting tray, use two small storage boxes.

Have the student begin by placing unit blocks, one at a time, in the ones column on the chart (or compartment labeled as “ones”). For each unit block that the student places, count the corresponding number of units placed (1, 2, 3, etc.). Continue this process until the student has accumulated 10 units. At this point have the student match his/her 10 units to 1 rod and trade those units for the rod. Then he/she will place the rod in the tens column.

Then work with the student to build numbers, beginning with 11. At first, show the student how the numbers can be built in two ways.

Depending on the child's response, the following questions may be needed. Can you represent the number using units? If so, how many units do you need? If not, why not? As the student counts the unit blocks, assist him/her if needed in placing them in the ones column on the place value chart or "ones" compartment. Can you represent a number using a rod and units? If so, how many of each kind do you need? If not, why not?

If needed, model placing the rods in the tens column and the unit blocks in the ones column using hand-under-hand technique.

- 7) The follow-up activity is an adaptation of a lesson plan entitled "How Many Buttons?" on the Illuminations website sponsored by National Council of Teachers of Mathematics. For more information, visit <http://illuminations.nctm.org/Lesson.aspx?id=286>.

The student will need a small bag of tactually distinctive buttons (approximately 20-25), two-compartment sorting tray, number flash cards from 5-15, two index cards on which you have brailled "One More" and "One Less", braillewriter, and braille paper. Before you begin the activity, have the student select one button from the bag of buttons and place it in his/her hand. Have the student tell you about the button (or object) that he/she selected.

Have the student keep holding the button as you read the story "The Lost Button" from *Frog and Toad Are Friends* by Arnold Lobel.

If you do not have tactually distinctive buttons, use other small objects that are tactually distinctive such as a paper clip, a coin, a pencil eraser, etc. If you do not have a two-compartment sorting tray, use two small storage boxes.

Do you think that the button (or object) in your hand could be the lost button? Why or why not?

Now shuffle the flash cards with the numbers 5-15 and have the student draw one flash card and read the number. As the student reads each number card, use a two-compartment sorting tray to separate which cards he/she has read and which cards he/she has not read.

Then have the student make a set with that many buttons. It will make it easier to count the buttons if the student places them in a line or rectangular array. Assist the student in placing the buttons in a row if needed. Then count the buttons together. If the student made an error, encourage the student to correct his/her error by counting again and removing/adding buttons as needed in order to have the correct number of buttons in the set.

Afterwards, have the student place the buttons back in the bag and draw another flash card. Repeat the process several times or until all of the number flash cards have been drawn.

Review or teach the meaning of the phrases "One More" and "One Less" before moving to the next part of the activity. Then make a set of buttons for the student to count. Have him/her count the buttons. Then have the student use the Accessible Equation Editor or braillewriter and record how many are in the set. Assist the student as needed in determining how many will be in a set with one more. Continue to assist the student as needed in determining how many will be in a set with one less. Have the student record his/her answer each time.

Then preview two new cards that read "One More" and "One Less". Have the student keep one of the cards and hand you the other one. Ask him/her to read the card that he/she has.

Shuffle the number flash cards again and then ask the student to draw a flash card. As the student reads each number card, have him/her use a sorting tray to separate which cards he/she has read and which cards he/she has not read. Then have the student write the number that is "One More" (or "One Less" depending on the flash card that the child has).

Repeat this process several times or until all of the number flash cards have been drawn. Then trade note cards with the words "One More" and "One Less" with the student. Ask the student to shuffle the number flash cards again and then draw a flash card. As he/she reads each number card, have him/her use a sorting tray to separate the cards that have been read and the cards that have not been read yet. Then have the student write the number that is "One More" (or "One Less" depending on the flash card that the child now has).

This activity can easily be completed with 2 or 3 students who read print or braille if preferred. If some of the players read print, add print

to each of the flash cards and have them write their answers on paper with a pencil.

*Materials Commercially Available:*

Materials that could be used from the American Printing House for the Blind ([www.aph.org](http://www.aph.org)) include

- Hundreds boards and Manipulatives Kit (1-03105-00)
- FOCUS in Mathematics Kit, Second Edition that includes base ten blocks (with print Teacher's Guide 1-08280-01, with braille Teacher's Guide 1-08281-01)
- Small Work-Play Tray with Dividers (1-03751-00, 1-03770-00) *also available within the FOCUS in Mathematics Kit*
- Textured sorting Circles and Shapes (1-08834-00)
- MathBuilders Unit 1: Matching, Sorting, and Patterning (with print Teacher's Guide 7-03560-00, with braille Teacher's Guide 5-03560-00)
- \*Picture Maker Wheatley Tactile Diagramming Kit (1-08838-00) *Many of these objects and a blue felt board are also available in the MathBuilders Unit 1 and the FOCUS in Mathematics Kits mentioned above.*
- \*Feel 'n Peel Stickers: Nemeth Braille-Print Numbers 0-100 (1-08876-00)
- \*Feel 'n Peel Point Symbols or Stars (1-08846-00; 1-08868-00; 1-08867-00)
- \*FOCUS in Mathematics: Base Ten Blocks: Units (61-115-278)
- \*FOCUS in Mathematics: Base Ten Blocks: Rods (61-115-274)

*\* WARNING: CHOKING HAZARD -- Small Parts. Not intended for children ages 5 and under without adult supervision.*

*Fun Facts from:*

2015 Action Sports Book entitled *BMX* by John Hamilton

2016 Adventure Sports Book entitled *Mountain Biking* by Stephanie Turnbull

Science Kids

<http://www.sciencekids.co.nz/sciencefacts/vehicles/bicycles.html>