

Kindergarten Nemeth Braille Code Curriculum
Module 5: Introduction to Addition and the Braille Hundreds Chart
Teacher Reference Materials

Prerequisite skills:

- Ability to use rote counting number words in order to 50
- Ability to tactually identify the numbers 1-50
- Ability to tactually identify the general omission symbol and mathematical comma
- Ability to write the numbers 1-20
- Ability to write the general omission symbol and mathematical comma
- Ability to read and write the numbering of math problems from 1-20, including the punctuation indicator and period

Math symbols and concepts, including braille knowledge, addressed:

- Decompose numbers less than or equal to 5 (and then 10)
- Add within 5 (and then 10)
- Plus sign
- Equals sign
- Nemeth Braille Code equations in a horizontal format
- Count aloud to 100 beginning with 1
- Count aloud to 100 beginning with different numbers
- Skip count by 10s beginning with 10
- Skip count by 10s beginning with different numbers
- Numbers 51-100
- Numerical order
- "One more" and "one less"

Objectives:

The student will be able to:

- 1) Represent addition to 5 with objects (and then 10), acting out situations, Five Frame, Ten Frame, and verbal explanations
- 2) Decompose numbers less than or equal to 5 (and then 10) in more than one way by using objects, tactile representations, Five Frames, Ten Frames and/or a braillewriter
- 3) Tactually identify the plus sign in Nemeth code
- 4) Tactually identify the equals sign in Nemeth code
- 5) Tactually read Nemeth Braille Code equations in a horizontal format
- 6) Fluently add within 5, including with Nemeth Braille Code equations in a horizontal format

- 7) Use the Accessible Equation Editor and/or braillewriter to write the plus sign
- 8) Use the Accessible Equation Editor and/or braillewriter to write the equals sign
- 9) Use the Accessible Equation Editor and/or braillewriter to write Nemeth Braille Code equations in a horizontal format
- 10) Count aloud to 100 beginning with 1
- 11) Count aloud to 100 beginning with different numbers
- 12) Using a braille hundreds chart, skip count by 10s to 100, beginning with 10
- 13) Using a braille hundreds chart, skip count by 10s through the last row in the chart, beginning with different numbers
- 14) Tactually identify and read the numbers from 51-100
- 15) Place numbers 1-100 in order on a grid board
- 16) Locate numbers 1-100 on a braille chart
- 17) Identify a number that is "one more" or "one less" than a given number, ranging from 1-100

Other ECC skills addressed:

Listening skills; concept development; following directions; organization; tactual discrimination; left-to-right tracking; scan and interpret tactile graphics used in math; hand positioning; light touch (as opposed to scrubbing); recreation and leisure

Teaching tips:

- 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.
- If a student reads the Nemeth symbols or equation incorrectly, tell the student the correct way to read the symbol or equation.
- If the student stops counting before reaching 100, practice counting. There are multiple counting songs available online if you would like to incorporate music into the review of counting. Please note that by the end of kindergarten, a student should be able to count aloud to 100.
- If you do not have a Grid Board from the American Printing House for the Blind, you can use 1-inch graph paper to create a Grid Board. Another option is to use graphic art tape and braille paper to create a Grid Board. If preferred, you can use flash cards, Velcro, and a large piece of construction paper to create a braille chart.

- Sorting trays often define the work space. 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 number cards, etc.
- It may also help to place the number cards and hard copy braille on a nonslip surface such as rubber shelf liner so they will not move as the student is reading.
- 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
- Work and/or sorting trays
- Counting bears and/or pennies
- Five Frame and Ten Frame (available in contracted and uncontracted braille within the curriculum)
- Braille document entitled Partially Filled Ten Frame Activity (available in uncontracted and contracted braille within the curriculum)
- Grid board (either the Grid Board from the APH Hundreds Board and Manipulatives Kit or one that you create)
- Number cards from 1-100 that fit onto the grid board (either the Numbers Set from the APH Hundreds Board and Manipulatives Kit or a set of number cards that you create)

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

- Assorted objects, Unifix blocks, or base ten unit blocks
- Magnetic counters on a cookie sheet or magnetic board
- Rubber shelf liner
- Construction paper and graphic art tape (or other materials needed to create a grid board)
- Number board (either the Number Board from the APH Hundreds Board and Manipulatives Kit or one that you create)

- Small stickers
- Timer
- Small storage boxes

Explanation of activities embedded into module:

- 1) Create an addition story within 5. The student will need a braillewriter, braille paper, a variety of small objects, and a glue stick. You may also use sticky-back strips of Velcro and sticky-back circles of Velcro to attach the items to the braille paper. If preferred, you can glue the braille paper to cardboard or poster board.

Begin by telling the student that you will be working together to create an addition story. Ask the student to select a topic to write about. Offer suggestions as needed. Then collect objects to illustrate the story that can be easily counted like one smooth button, two birthday candles, or three keys. Afterwards, work with the student to create an addition story that incorporates the objects. Encourage the child to braille as much of the story as possible. The last step will be to attach the objects to the braille paper.

It may help to place the braille paper on a nonslip surface such as rubber shelf liner so it will not move as the student is attaching the items and reading the story. It may also help to use bowls or a sorting tray to keep the assortment of small objects organized. If you are using Velcro, you may want to glue an envelope or Ziploc bag to the back of the braille paper to hold the items inside.

Velcro is recommended so that the student can take the objects on and off of the braille paper when acting out the situation. If preferred, you can use hot glue instead of Velcro to attach the objects.

- 2) One of the activities is a game called "Zoom to 5" with a Five Frame and pennies! The student will need a sorting tray and 2 flash cards for each number from 0-5. Similar to the other activities in the module, you may also place the Five Frame on a cookie sheet or magnetic board and use magnetic counters instead of pennies.

Shuffle the flash cards and then have the student draw a flash card. He/she will read the number on the flashcard and then use the Five Frame and pennies to tell you how many more are needed to make 5. As the child 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.

If needed, remind the student that no additional pennies would be needed to make 5 when he/she selects a flash card with the number 5 on it.

The student wins the game if he/she can tell you how many more are needed to make 5 for all of the numbers before the timer goes off. The length of time for the game should be based on the individual needs of the student. If desired, this game can be played more than once. The length of time can be decreased each time in order to promote fluency.

Later in the module, the student will play the game again, but with a Ten Frame and 2 flashcards for each number from 0-10. It is called "Zoom to Ten" since the numbers range from 0-10.

- 3) In some of the activities, the student will listen carefully and then write the numbers, braille symbols, or equations 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, braille symbols, or equations. Afterwards he/she will write the numbers, symbols, or equations in braille. Remind the student to check his/her work. An answer key has been provided for these activities in the document entitled "B3 Module 5_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.

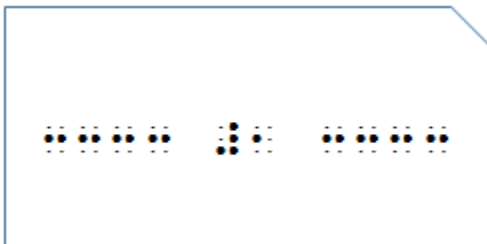
- 4) Create flash cards with the following equations using the index cards:
 $1+1 = ?$
 $2+0 = ?$
 $1+2 = ?$
 $0+5 = ?$
 $4+1 = ?$
 $2+3 = ?$

1+0 = ?
1+3 = ?
4+0 = ?
5+0 = ?
0+0 = ?
3+2 = ?
2+1 = ?

Cut out the upper right corner of each flash card for easy identification of orientation. Begin by shuffling the flash cards, and then have the student select a card. As the child reads each equation, have him/her use a sorting tray to separate which cards he/she has read and which cards he/she has not read.

Afterwards, have him/her tell you what number the general omission symbol stands for. If needed, the student can use manipulatives in order to determine what number the general omission symbol stands for. Once he/she can read all of the equations correctly, have him/her go back and time how quickly he/she can read the equations!

- 5) Create flash cards for the numbers 51-100 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.



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.

- 6) In some of the activities, the student will use a Grid Board to create a number chart. If you do not have a Grid Board and Numbers Set from the American Printing House for the Blind, you can use 1-inch graph paper to create a Grid Board. You can use a braillewriter and 1-inch pieces of index cards to create the number cards. Another option is to

use the Feel 'n Peel Stickers: Nemeth Braille-Print Numbers from the American Printing House for the Blind to create the number cards.

If preferred, you can use graphic art tape and braille paper to create a Grid Board. Another option is to use flash cards, Velcro, and a large piece of construction paper to create the charts.

Before beginning the activity each time, ensure that all numbers except the ones specifically listed in the activity have been removed from the Grid Board. When the student is creating a number chart to 100, you will place 4, 8, 11, 13, 27, 28, 32, 37, 45, 49, 51, 53, 64, 67, 71, 77, 82, 86, 91, 96 onto the Grid Board.

Have the student begin the activity each time by locating the numbers on the chart and reading them. Then build the chart together with the student. At first, model placing a few of the numbers and explaining how you know where the numbers fit. Then encourage the student to place some of the numbers and explain how he/she knows where the numbers fit. Once you have completed building the chart together, have the student touch each number and read it. This process can easily be completed multiple times if the student requires additional practice.

If needed, provide a hard copy of numbers in order or the APH Number Board to use as a model. You may also use an APH Consumable Hundreds Chart. It may help to place the numbers on a nonslip surface such as a rubber shelf liner or a work tray so they will not move as much.

Afterwards, have the student help you remove the numbers and then build the chart by himself/herself. It may be helpful to take notes about how quickly the student can place numbers and how well he/she can explain how he/she knows where the numbers fit.

- 7) In one of the activities, the student will listen carefully and then use his/her number chart to answer the math problem about "One More" or "One Less" that he/she hears. These activities can be completed using the Accessible Equation Editor and/or a braillewriter and braille paper.

Before beginning the activity, review or teach the meaning of the phrases "One More" and "One Less". Remind the student to listen carefully as you read each problem and to include a space after the period when numbering each problem. Also remind the student to press his/her line spacing key twice to move to the next line before numbering the problem each time.

Repeat saying each problem if needed. Also remind the student to move his/her fingers across the braille and check his/her work. An answer key in braille is provided in the document entitled "B3 Module 5_Answer Key for Writing Activities_K".

- 8) In a similar activity, the student will use his/her number chart to verbally identify the missing number that the general omission symbol is representing in problems about "One More" or "One Less".
- 9) One of the activities is called "Guess My Special Number". The only thing the student will need is his/her hundreds chart to complete this activity. Tell the student to listen carefully to the clues so that he/she can guess the special number. Ask the student if he/she knows what a clue is. Explain that it is information that gives him/her a hint about a special number.

After you give a series of clues about several special numbers, have the student give you clues so that you can figure out his/her special number. Offer assistance if the student has difficulty developing clues about his/her special number. If desired, the student can develop clues for additional special numbers.

- 10) Materials for the follow-up activity include the Grid Board and Number Set. Begin by having the student use the Grid Board to create a chart to 100. If needed, provide a hard copy of numbers in order or the APH Number Board to use as a model. You may also use an APH Consumable Hundreds Chart. It may help to place the numbers on a nonslip surface such as a rubber shelf liner or a work tray so they will not move as much.

Model a multi-step process to locate a number on the Grid Board initially. Begin by having the student place his/her hands on top of your hands as you find the number 63. Then move your hands down two rows. Then ask, "What is my number?" The number is 83.

Work to find the next number together. Begin by having the student find the number 40. Then ask him/her to move up three rows. Assist him/her to move up three rows if needed. Then ask him/her to move three to the right. Assist him/her to move three to the right if needed. Then ask, "What is my number?" The number is 13.

It will be important to pause at the end of each sentence to allow the student time to complete each step in the process. If the student seems to struggle, continue to model the process and/or create additional 2-step directions to different numbers.

Once the student is able to complete 2-step directions to locate numbers, have the student find several numbers by him/herself using multi-step directions. Here are the directions to give to the student:

Begin by finding number 73. Move up one row. Now move to the left two numbers. Next move down two rows. What number are you on?

Excellent work with the 100s chart! My special number was 81.

Let's see if you can follow the directions to another special number.

Begin by finding number 38. Move up three rows. Now move to the right one number. Next move down five rows. Finally move to the left two numbers. What is my special number?

You got it! My special number is 57.

Follow the directions to find my last special number.

Begin by finding number 88. Move up four rows. Now move to the left two numbers. Next move down two rows. What is my special number?

You got it! My special number is 66. Now it is your turn to give me directions to a special number!

Offer assistance if the student has difficulty developing directions to his/her number. If desired, the student can develop directions for additional numbers.

The follow-up activity can easily be completed with peers as long as each student has a chart to 100.

Materials Commercially Available:

Materials that could be used from the American Printing House for the Blind (www.aph.org) include

- Hundreds Boards and Manipulatives Kit (1-03105-00)

- Consumable Hundreds Chart (5-82710-00)
- 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*
- *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)

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

Fun Facts from:

Fact Monster

<http://www.factmonster.com/spot/scooter1.html>

KidzSearch: Scooter Facts for Kids

<http://wiki.kidzsearch.com/wiki/Scooter>