

First Grade Nemeth Braille Code Curriculum
Module 5: Understanding Place Value and Numbers to 120
Teacher Reference Materials

Prerequisite skills:

- Ability to use rote counting number words in order to 100
- Ability to tactually identify the numbers 1-100
- Ability to represent a number 1-20 with concrete materials, including base ten blocks or Digi-Blocks
- Ability to write the numbers 1-20
- Ability to read and write the numbering of math problems from 1-20, including the punctuation indicator and period
- Ability to skip count by 10s to 100

Math symbols and concepts, including braille knowledge, addressed:

- Count aloud to 120 beginning with 1
- Count aloud to 120 beginning with different numbers
- Skip count by 10s to 120
- Represent numbers 1-120 with concrete materials, including base ten blocks or Digi-Blocks
- Numbers 21-120

Objectives:

The student will be able to:

- 1) Count aloud to 120 beginning with 1
- 2) Count aloud to 120 beginning with different numbers
- 3) Using a Counting to 120 Chart, skip count by 10s to 120, beginning with 10
- 4) Using a Counting to 120 Chart, skip count by 10s through the last row in the chart, beginning with different numbers
- 5) Tactually identify and read the numbers from 101-120
- 6) Locate numbers 1-120 on a braille chart
- 7) Write the numbers 21-120
- 8) Represent numbers 21-120 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; scan and interpret tactile

graphics used in math; hand positioning; light touch (as opposed to scrubbing); recreation and leisure

Teaching tips:

- Before opening any BRF files in Duxbury, go into the Global menu. Select "Formatted Braille Importer" and then check the box for "Read formatted braille without interpretation" at the top of the window. This will ensure that nothing is changed when opening the BRF files.
- 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 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. Later in the module, a Counting to 120 Chart is used. It is available in the curriculum.
- If the student stops counting before reaching 120, 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 120.
- 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.
- 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, and then later in the module a three-compartment sorting tray, may be used instead of the place value charts. Label the compartments as ones, tens, and hundreds in braille. The sorting tray may assist students in easily keeping their units, rods, and flats in the correct columns.
- 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
- Grid board and number cards
- Counting to 120 Chart (included in the curriculum)
- Construction paper
- Glue or glue stick
- Base ten blocks (or Digi-Blocks) and two place value charts (available in braille within the curriculum)
- Work and/or sorting trays
- Flash cards (available in the curriculum)

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

- Timer
- Small storage boxes
- Rubber shelf liner
- Graphic art tape (or other materials needed to create a grid board)

Explanation of activities embedded into module:

- 1) 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, ensure that all numbers except the ones specifically listed in the activity have been removed from the Grid Board. Have the student begin the activity by locating the numbers on the chart and reading them. Then build the chart together with the

student. If needed, 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.

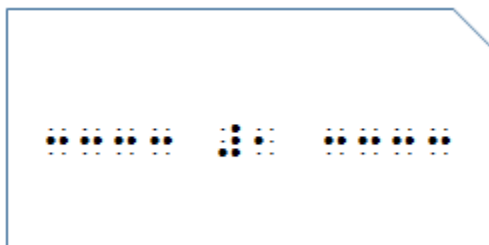
Once you have completed building the chart together, have the student touch each number and read it. This process can easily be completed multiple times if the student requires additional practice.

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.

- 2) For the activity on page 7 located in the module, you can either create flash cards with the numbers 101-120 using index cards or emboss the flash cards on pages 1-2 of the braille document entitled "Flash Cards for Module 5_1":

Cut out the upper right corner for easy identification of orientation. Make three flash cards for each number. If you are creating the flash cards, 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. Give the student one number card at a time. Make sure that it is oriented with the cut out corner at the upper right.

- 3) In two activities embedded in the module, the student will rebuild a Counting to 120 Chart that has been cut into puzzle pieces. For each of these activities, you will need a large piece of construction paper, a glue stick, and a Counting to 120 Chart.

For the first activity, cut the Counting to 120 Chart into 6 different pieces. The first piece should include the numbers 1-20, and the second piece should include the numbers 21-40. The third piece should include the numbers 41-60, and the fourth piece should include the numbers 61-80. The fifth piece should include the numbers 81-100, and the sixth piece should include the numbers 101-120. Place all of the pieces into a work tray or large zippered plastic bag.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

Before the student begins to rebuild the chart, have them tell you what he/she knows about the Counting to 120 Chart. If needed, briefly provide the Counting to 120 Chart as a refresher and motivator for beginning the activity.

After the student can easily rebuild the Counting to 120 Chart, let the student glue the pieces in order on a large piece of construction paper!

For the second activity, cut a second Counting to 120 Chart into 7 pieces. This time the pieces will be different sizes. The first piece should contain the following numbers: 1-4, 11-14, 21-24, 31-34, 41-44, 51-54, 61-64, and 71-74. The second piece should contain the following numbers: 5-10, 15-20, 25-30, and 35-40. The third piece should contain the following numbers: 45-50, 55-60, 65-70, and 75-77. The fourth piece should contain the following numbers: 78-80, 88-90, and 98-100. The fifth piece should contain the following numbers: 81-87, 91-92, 101-102, and 111-112. The sixth piece should contain the following numbers: 93-97, 103-106, 113-114. The seventh piece should contain the following numbers: 107-110 and 118-120. Place all of the pieces into a work tray or large zippered plastic bag.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

Note the print numbers have been added above the braille numbers in both pictures. Now these activities can easily be completed with the student and one of his/her friends. Another option is to have the

student cut one of the Counting to 120 Chart into pieces and assist a friend in rebuilding the chart.

- 4) In several activities 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 different types of blocks in different containers, baskets or bowls. If preferred, Digi-Blocks (a different type of base ten blocks that nest) can be used. If needed, allow the student to independently explore with the base ten blocks. It may also be helpful to re-introduce the words "unit" and "rod", and later in the module, introduce the word "flat".

The student should be re-introduced to the Place Value Chart, and then later in the module introduced to Place Value Chart 2. 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.

A two-compartment sorting tray, and then later in the module a three-compartment sorting tray, may be used instead of the place value charts. Label the compartments as ones, tens, and hundreds in braille. The sorting tray may assist students in easily keeping their units, rods, and flats in the correct columns. If you do not have a sorting tray, use small storage boxes.

If needed, model placing the blocks in the different columns using hand-under-hand technique.

- 5) In some of the activities, the student will listen carefully and then write the numbers 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 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_1".

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.

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.

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)
- Graphic Art Tape (1-08878-00)
- Embossed Graph Sheets: 1 Inch Squares, 10 x 10 Grid (1-04058-00)
- 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)
- *FOCUS in Mathematics: Base Ten Blocks: Units (61-115-278)
- *FOCUS in Mathematics: Base Ten Blocks: Rods (61-115-274)
- FOCUS in Mathematics: Base Ten Blocks, Flats (61-115-275)

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

Materials that could be used from Wikki Stix® (<https://www.wikkistix.com/>) include

- Wikki Stix

Materials that could be used from the Digi-Block Store (<https://www.digiblock.com>) include

- Classic Block-of-100
- Power Block-of-100

Fun Facts from:

National Aeronautics and Space Administration (NASA): Gliders

<https://www.grc.nasa.gov/www/k-12/airplane/glider.html>

Smithsonian National Air and Space Museum: Inventing a Flying Machine

<https://airandspace.si.edu/exhibitions/wright-brothers/online/fly/1900/index.cfm>

Encyclopedia.com

<https://www.encyclopedia.com/science-and-technology/technology/aviation-general/glider>

How Hang Gliding Works

<https://adventure.howstuffworks.com/hang-gliding.htm>