

Second Grade Nemeth Braille Code Curriculum
Module 2: Subtraction to 100 and the Cancellation Indicators
Teacher Reference Materials

Prerequisite skills:

- Ability to tactually identify the numbers 0-100
- Ability to tactually identify the minus sign and separation line
- Ability to write the numbers 0-100
- Ability to write the minus sign and separation line
- Ability to read the numbering of math problems, including the punctuation indicator and period
- Ability to represent subtraction within 20

Math symbols and concepts, including braille knowledge, addressed:

- Cancellation indicators
- Nemeth Braille Code problems and equations in a vertical format
- Fluently subtract within 100
- Relate counting backwards to subtract
- Use manipulatives and strategies based on place value to subtract within 100
- Subtract within 100 with Nemeth Code problems in a vertical format

Objectives:

The student will be able to:

- 1) Read Nemeth Code problems involving subtraction in a vertical format that include numbers 0-99, minus sign, and a separation line
- 2) Fluently subtract within 100, including with Nemeth Braille Code equations in a vertical format
- 3) Subtract within 100, using the count backwards strategy
- 4) Write the answer to a subtraction problem using correct Nemeth Code in a vertical format
- 5) Use the braillewriter to write Nemeth Braille Code problems and equations involving subtraction within 100 in a vertical format

Other ECC skills addressed:

Listening skills; concept development; following directions; organization; tactual discrimination; left-to-right tracking; top-to-bottom tracking; spatial alignment; hand positioning; light touch (as opposed to scrubbing); scan and interpret tactile graphics used in math; 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.
- It is highly recommended that this module be completed with hard copy braille and a braillewriter instead of a refreshable braille display.
- It may 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.
- If needed, remind the student to move his/her fingers across the braille and check his/her work during writing activities.
- It may be helpful to point out that braille page numbers are placed at the right margin on the last line. If needed, also point out that braille page numbers are transcribed in Unified English Braille, not Nemeth Code.
- As needed, manipulatives such as Unifix blocks, Digi-Blocks, or base ten blocks may be used.
- It is very important to use the correct finger on each key when learning new Nemeth symbols. This will help the student continue to be accurate in their writing!
- It may be helpful to provide assistance in lining up the embossing head with the addends.
- Encourage the student to verbalize the process they use when solving problems.

Materials/technology needed:

- Braillewriter
- Braille paper
- Index cards
- Flash cards (included in the curriculum)
- Work and/or sorting trays
- Counting to 120 Chart (included in the curriculum)

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

- Unifix blocks, Digi-Blocks, or base ten unit blocks
- Magnetic counters
- Teddy Bear counters
- Wikki Stix®

- Small storage boxes
- Math Window Braille Basic Math Kit in Nemeth
- Rubber shelf liner
- Timer
- Small stickers

Explanation of activities embedded into module:

- 1) In the activity on page 3, students will use flash cards to practice reading subtraction problems in vertical alignment and determining the sum.

You can either create flash cards with the problems below using index cards or emboss the flash cards on pages 1-2 of the braille document entitled "Flash Cards for Module 2_2". Answers are provided for you in parentheses to assist you in placing the answers on the back of the flash cards.

61	39	85
<u>- 0</u>	<u>- 1</u>	<u>- 5</u>
(61)	(38)	(80)

47	50	86
<u>- 4</u>	<u>- 3</u>	<u>- 2</u>
(43)	(47)	(84)

72	67	38
<u>- 6</u>	<u>- 2</u>	<u>- 5</u>
(66)	(65)	(33)

15	75	38
<u>- 3</u>	<u>- 4</u>	<u>- 2</u>
(12)	(71)	(36)

99	32	24
<u>- 0</u>	<u>- 1</u>	<u>- 5</u>
(99)	(31)	(19)

34	66	96
<u>- 3</u>	<u>- 4</u>	<u>- 1</u>
(31)	(62)	(95)

Cut out the upper right corner of each flash card for easy identification of orientation. If you would like for the student to be able to use the flash cards independently, place the answers on the back of each flash card using the Feel 'n Peel Stickers: Nemeth Braille-Print Numbers from American Printing House for the Blind.

Begin by shuffling the flash cards, and then have the student select a card. After the child reads each problem in vertical alignment and tells you the answer, have him/her use a sorting tray to separate which cards he/she has read and which cards he/she has not read.

- 2) In some of the activities, the student will listen carefully and then write the braille symbols, problems or equations that he/she hears. It is highly recommended that these activities be completed using a braillewriter and braille paper since spatially aligned problems require more than one line in braille.

Begin each time by asking the student to listen carefully as you read the braille symbols, problems, or equations. Afterwards he/she will write what he/she hears 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 2_Answer Key for Writing Activities_2".

- 3) The follow-up activity is a new game. You will need 2 or more players. It can easily be played with another student (or you if no other students are present) who reads print or braille. If the other player reads print, add print to each of the game cards.

Materials for the game include: a timer, a braillewriter for each player, and braille paper. As needed, base ten blocks or Digi-Blocks can be used. If one of the players is a print reader, they can use paper and pencil instead of a braillewriter.

First, decide how long the game will last and set a timer. Second, have the students write the number 99 at the top of his/her page. Third, decide which player will roll the die first.

As each player rolls the die, they can either take the number as a one or a ten. For example, if the player rolls a 3, they can take it as a 3 or a 30. Students subtract their numbers until a person either hits 10 or the timer rings!

The first number rolled is subtracted from 99, using spatial format. So if the player decides to take it as a 30, the problem would be:

$$\begin{array}{r} 99 \\ -30 \\ \hline 69 \end{array}$$

The next time the player rolls the die, they would start with the number 69.

On the other hand, if the player decides to take it as a 3, the problem would be:

$$\begin{array}{r} 99 \\ - 3 \\ \hline 96 \end{array}$$

The next time the player rolls the die, they would start with the number 96.

The goal is to reach 10 or be closer to 10 than your opponents when the timer rings, so choose your number carefully each time! If your number is less than 10, you automatically lose! Good luck, Nemeth superstar!

Materials Commercially Available:

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

- 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 Stickers: Basic Math Symbols (1-08892-00)
- *Feel 'n Peel Sheets: Carousel of Textures (1-08863-00)
- Addition and Subtraction Table (5-82699-00)
- Quick Pick Math: Blank Cards (1-03577-00; can be used with the Quick Pick Math folder)
- Math Flash for computers running Windows 7 or later (D-19910-ED; available for download at <https://tech.aph.org/>)
- Math Flash, Google Home Assistant Version (D-30028-AP; included with the Google Assistant app which is free)

- Math Flash, Amazon Alexa Version (D-19910-AS; included with the Amazon Alexa app which is free)
 - Math Robot app for the iPad (D-30000-AP; available for download at <https://tech.aph.org/>)
 - Cranmer Abacus (1-03150-00)
 - Large Abacus (1-03170-00)
- * 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

Materials that could be used from Math Window (<https://mathwindow.com/>) include

- Math Window Braille Basic Math Kit in Nemeth

Fun Facts from:

Science for Kids Club: Facts about Buses

<http://www.scienceforkidsclub.com/buses.html/>

Britannica

<https://www.britannica.com/technology/bus-vehicle>

Kids Encyclopedia Facts: Bus Facts for Kids

<https://kids.kiddle.co/Bus>