

## Introduction to the First Grade Nemeth Braille Code Curriculum

(Note: This is a Nemeth curriculum that will support math instruction, but not replace the math curriculum.)

*Materials for each module include:*

- Teacher reference materials
- Module content (available for download as a PDF document)
- Student braille materials
- Answer key for exercises within module
- Teacher materials for administering check-up
- Student braille materials for check-up
- Answer key for check-up
- Teacher recording sheet

Additionally, there is a posttest, review activities, and cumulative checklist.

**It is recommended that the posttest also be used as a pretest to establish a baseline of Nemeth skills.** For your convenience, the posttest has been renamed and placed into the Introduction and Pretest folder. Once a student is unable to complete or miss 3 problems in a row within a part of the pretest, it is suggested that you move to the next part at this point. If students are proficient in adding and subtracting within 10, you may elect to begin on page 11 in Module 1, where the long dash is introduced. However, if students would benefit from a review of adding and subtracting within 10, you may want to begin at the beginning of Module 1.

*Modules*

- Addition and Subtraction to 10, English Letter Indicator and the Long Dash
- Spatial Arrangements
- Addition to 20 and Drawing and Building Shapes
- Subtraction to 20 and Equal Shares of Circles and Rectangles
- Understanding Place Value and Numbers to 120
- Writing and Comparing Numbers

*Math symbols and concepts, including braille knowledge, addressed across the modules:*

- Counting to 120
- Numbers 1-120 in standard form
- Represent numbers 1-120 with concrete materials, including base ten blocks and/or Digi-Blocks
- Numbers 1-99 in expanded form

- Plus sign
- Minus sign
- Equals sign
- Less than
- Greater than
- Long dash
- General omission symbol
- English letter indicator
- Punctuation indicator
- Nemeth Braille Code problems, equations, and inequalities in a horizontal format
- Nemeth Braille Code problems and equations in a vertical format
- Fluently add and subtract within 10
- Add and subtract within 20 with Nemeth Code problems in both horizontal and vertical format
- Multiple strategies to add and subtract within 20
- Relationship of three numbers in equations involving addition and subtraction within 10
- Comparison of two numbers and recording the results
- Tactual identification and attributes of shapes, including a half-circle and trapezoid
- Tactile drawing tools to create and partition shapes
- Tactual identification of equal and unequal shares of shapes

*Objectives:*

The student will be able to:

- 1) Count to 120
- 2) Tactually identify and read numbers from 0-120
- 3) Represent numbers 1-120 with concrete materials, including base ten blocks or Digi-Blocks
- 4) Tactually identify the following Nemeth symbols in expressions, equation, and inequalities:
  - Plus sign
  - Minus sign
  - Equals sign
  - Less than sign
  - Greater than sign
  - Long dash
  - General omission symbol
  - English letter indicator

- Punctuation indicator
- 5) Use the Accessible Equation Editor and/or braillewriter to write the numeric indicator and numbers 0-120
  - 6) Use the Accessible Equation Editor and/or braillewriter to write the long dash, general omission symbol, plus sign, minus sign, equals sign, greater than sign, and less than sign in Nemeth code
  - 7) Read Nemeth Braille Code problems, equations, and inequalities in a horizontal format
  - 8) Use the Accessible Equation Editor and/or braillewriter to write Nemeth Braille Code problems, equations, and inequalities in a horizontal format
  - 9) Read Nemeth Braille Code problems and equations in a vertical format
  - 10) Use the Accessible Equation Editor and/or braillewriter to write Nemeth Braille Code problems and equations in a vertical format
  - 11) Use the Accessible Equation Editor and/or braillewriter to number math problems from 1 – 20
  - 12) Represent addition and subtraction process within 20, using concrete objects and verbal explanations
  - 13) Fluently add and subtract within 10
  - 14) Add and subtract within 20 with Nemeth Code problems in both horizontal and vertical format
  - 15) Use multiple strategies when adding and subtracting within 20
  - 16) Compare two numbers and record the results of comparisons with the Nemeth symbols for greater than and less than
  - 17) Read a numbered math problem and associated answer choice label that include an English letter indicator
  - 18) Systematically examine simple tactile graphic organizers, shapes, and charts
  - 19) Tactually identify shapes, including half-circle and trapezoid, regardless of size and orientation
  - 20) Verbally describe attributes of shapes
  - 21) Use tactile drawing tools to create shapes and partition shapes
  - 22) Tactually identify equal and unequal shares of shapes

*Other ECC skills addressed across the modules:*

Listening skills; following directions; taking turns; concept development; tactual discrimination; left-to-right tracking; hand positioning; light touch (as opposed to scrubbing); scan and interpret tactile graphics used in math; taking turns; organization; career exploration; 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.
- Administer the pretest before beginning. This will provide important information about pre-existing knowledge of the Nemeth symbols addressed in the modules and guide instruction.
- If the student has completed the Kindergarten curriculum yet continues to experience difficulty with the symbols and concepts addressed at this grade level, you may use activities from the Kindergarten curriculum to teach and/or reinforce these skills before beginning the First Grade Nemeth Curriculum.
- Continue to pay attention to the child's hand movements. Give help and model tracking if the student does not use both hands or if the student does not move both hands smoothly from left to right.
- Encourage a light touch. This will help in tactile identification and increase reading speed across time.
- If needed, the swing cell from the American Printing House for the Blind may be used when first introducing the student to a new symbol. It provides a concrete model of the relationship between the dots in a braille cell and the keys on a braillewriter.
- If a student reads the Nemeth symbols or equation incorrectly, tell the student the correct way to read the symbol or equation.
- 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.
- A two-compartment sorting tray, and then later 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.
- Use a nonslip surface such as rubber shelf liner so braille pages and flash cards will not move as much.
- It may be helpful to point out that braille page numbers are placed at the right margin on the last line.
- Using the braillewriter for some of the writing activities is encouraged as it facilitates the development of motor memory.

- If needed, remind the student to move his/her fingers across the braille and check his/her work during writing activities.
- 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!
- If your student is using a refreshable braille display, 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.
- When teaching the child how to tactually discriminate 2-dimensional shapes, use a variety of sizes for the shapes. The child will also need to explore shapes in different orientations.
- It is recommended that shapes be drawn by using a continuous, clockwise motion.
- The student may draw the shapes free-hand or by using stencils.

### *Planning of lessons*

- It is recommended that each module be completed across multiple sessions.
- Provide frequent breaks and keep lessons short.
- As needed, supplement with other materials.
- General education classroom manipulative kits for 1st grade often include base ten blocks and two-dimensional shapes in different sizes.
- You may use alternative materials as needed. For example, if you do not have a Math Window Braille Basic Math Kit in Nemeth, you can use a cookie sheet and magnets with Nemeth numbers and symbols to build vertically aligned problems.
- If you elect to emboss the braille materials, you will notice that the pages are numbered and use a 32-cell margin. You are welcome to bind the pages with a comb-binder if you would like.
- Most modules include follow-up activities for enrichment and/or additional practice.