Course 2: An Introduction to Nemeth Code Symbols Used in Grades 2 to 5 for Fractions and Spatial Problems, Instructional Tools, Materials, and Technology

Resource List

This is a comprehensive list of resources for Grades 2-5. The starred items are highlighted in this course. This same document is also included for Course 2, An Introduction to Nemeth Code Symbols Used in Grades 2 to 5 and Strategies for Supporting Elementary Students in Building Math Skills. This document was updated 9-27-2022. We encourage you to do a search if a link is broken.

Books/Documents to Assist You in Preparing Nemeth Code within UEB Contexts Materials

- ** Guidance for Transcription Using the Nemeth Code within UEB Contexts, Revised April 2018*
  https://brailleauthority.org/nemeth-code
  This document explains the basics of preparing Nemeth Code within UEB Contexts materials.
- ** Braille Formats: Principles of Print-to-Braille Transcription, 2016* referred to as "Braille Formats."
  http://brailleauthority.org/formats/formats2016.html
  This document is designed for transcribers, however, teachers of students with visual impairments and others preparing materials need to be familiar with the rules explained in Braille Formats.

- *National Federation of the Blind Course in Nemeth Code Transcribing Course Manual Revision (Provisional)*
  https://www.nfb.org/programs-services/braille-certification/mathematics-braille-transcribing

Instructional Resources

- ** Common Core State Standards Initiative*
  http://www.corestandards.org/Math/
  This website presents a depth of information regarding common core state standards in mathematics for Grades Kindergarten through Grade 12. The math standards provide clarity and specificity rather than broad general statements. Areas include standards in mathematical practices, standards by domains, and a mathematical appendix.

- *Maryland's College and Career Ready Standards for Unified English Braille and Nemeth Code: Mathematics*
  https://mdk12.msde.maryland.gov/INSTRUCTION/commoncore/Documents/MD_CCRS_UEB_Math.pdf *makes you sign in
  This document is produced by the Maryland State Department of Education. It was updated in 2015. It contains domains, clusters, standards, essential skills and knowledge, and standards for mathematical practice by grade level and is aligned with the Common Core State Standards (CCSS Initiative, 2010).

- *The *Nemeth Braille Code Curriculum* (Pre-K through 2nd Grade)
  https://accessibility.pearson.com/resources/nemeth-curriculum/index.php
  This resource is designed to teach students who are visually impaired how to read and write the Nemeth Code. It is aligned with the Common Core State Standards (CCSS Initiative, 2010) and includes hands-on activities and games that reinforce grade-level math concepts and make learning the Nemeth Code fun and meaningful for children of all ages.

- *The *Nemeth Braille Code Focused Lessons* (3rd Grade through 8th Grade) https://accessibility.pearson.com/resources/nemeth-curriculum/index.php
  These lessons provide a fun and supportive way to learn new symbols and practice reading and writing these symbols within grade-level math problems. Topics include: division, Exceptions to the five-step rule, the five-step-rule, fractions, mixed numbers, multiplication, number lines, and radical expressions.

- *The *Nemeth Symbol Library*
  https://accessibility.pearson.com/resources/nemeth-curriculum/nemeth-symbol-library/index.php
  Both braille and print readers can use this online symbol library to access examples of math symbols shown in both print and braille. Brief explanations of symbols are provided. Users can download BRF files in Nemeth in EBAE or Nemeth within UEB contexts, or a PDF file in Nemeth in Print and SimBraille.

    o Video of Sara Larkin doing a walk-through of the *Nemeth Symbol Library* with NVDA. (This is a separate video available on the resources webpage.)

- *Nemeth at a Glance: A Math Resource, Grade Level Chart, and Evaluation Tool*
  http://www.tsbvi.edu/store/ecom/index.php?action=ecom.pdetails&mode=nemeth
  This resource contains a chart of Nemeth Code symbols by grade level in addition to an evaluation tool that teachers of students with visual impairments can use in evaluating their student's Nemeth Code skills. It also discusses various topics related to the Nemeth Code and the underlying math concepts.

- *Nemeth Reference Sheets* from the National Braille Press
  https://www.nbp.org/ic/nbp/NEMETH.html
  The braille edition introduces each Nemeth symbol within UEB contexts and each braille math symbol is accompanied by a raised line drawing of the corresponding print math symbol.

- *APH Nemeth Tutorial* https://tech.aph.org/nemeth/
  The Nemeth Tutorial has 11 chapters with multiple lessons organized by grade level. The lessons are accessible to both print and braille readers. Rules are explained and examples provided for each topic. There are reading, writing, and proofreading exercises that users can complete to practice the new Nemeth symbols covered under the topic.

- *Nemeth Braille Code for Instructors and Paraeducators*
  https://www.tsbvi.edu/statewide-resources/professional-development/online-learning
  Organized by grade level, these instructional modules provide explanations of math symbols, relevant rules, and how to use these

symbols in math examples. Each module has a short quiz for users to test their knowledge after watching the module.

Products from the American Printing House for the Blind

- *Addition and Subtraction Table (5-82699-00)
  https://www.aph.org/product/addition-and-subtraction-table/
- Analog Clock Model (1-03125-00)
  https://www.aph.org/product/analog-clock-model/
- AnimalWatch Vi Suite (for iPad)
  https://itunes.apple.com/app/animalwath-vi-suite/id1051014170?mt=8
- Beginner's Abacus (1-03180-00)
  https://www.aph.org/product/beginners-abacus/
- *Braille Pocket folders (1-04294-00)
  https://www.aph.org/product/braille-pocket-folders/
- Braille-Large Print Protractor (1-04115-00)
  https://www.aph.org/product/braille-large-print-protractor/
- Braille-Large Print Yardstick (1-03002-00)
  https://www.aph.org/product/braille-large-print-yardstick/
- Clock Face Sheets in Braille (1-03111-00)
  https://www.aph.org/product/clock-face-sheets-in-braille/
- *Consumable Hundreds Chart (5-82710-00)
  https://www.aph.org/product/consumable-hundreds-chart/
- Consumable Number Lines: Braille-Tactile (1-03013-00)
  https://www.aph.org/product/consumable-number-lines-braille-tactile/
- *Cranmer Abacus (1-03150-00)
  https://www.aph.org/product/cranmer-abacus/
  Desktop Stick-On Number Lines: Large Print-Braille (5-pack) (1-03481-00)
  https://www.aph.org/product/desktop-stick-on-number-lines-large-print-braille-5-pack/
- *DRAFTSMAN: Tactile Drawing Board (1-08857-00)
  https://www.aph.org/product/draftsman-tactile-drawing-board/
- Draw2Measure Protractor (for iOS devices) (D30023-AP)
  https://itunes.apple.com/us/app/draw2measure-protractor/id1097557700?mt=8
- Embossed Graph Sheets: 1 Inch Squares, 7 x 10 Grid (1-04055-00)
  https://www.aph.org/product/embossed-graph-sheets-1-inch-squares-2/
- *Embossed Graph Sheets: 1 Inch Squares, 10 x 10 Grid (1-04058-00)
  https://www.aph.org/product/embossed-graph-sheets-1-inch-squares/

- Embossed Graph Sheets: 0.75 Inch Squares, 13 x 13 Grid (1-04057-00)
  https://www.aph.org/product/embossed-graph-sheets-0-75-inch-squares/
- Embossed Graph Sheets: 0.5 Inch Squares (1 inch margin on 3 sides), 18 x 21 Grid (1-04059)
  https://www.aph.org/product/embossed-graph-sheets-0-5-inch-squares-1-inch-margin-on-3-sides/
- Expanded Beginner's Abacus Kit (1-03181-00)
  https://www.aph.org/product/expanded-beginners-abacus-kit/
- Feel 'n Peel Sheets: Carousel of Textures 1-08863-00
  https://www.aph.org/product/feel-n-peel-sheets-carousel-of-textures/
- Flip-over Concept Book- Fraction: Nemeth (1-08821-00)
  https://www.aph.org/product/flip-over-concept-book-fractions-nemeth/
- *Feel 'n Peel Stickers: Nemeth Basic Math Symbols (1-08892-00)
  https://www.aph.org/product/feel-n-peel-stickers-nemeth-basic-math-symbols/
- Feel 'n Peel Stickers: Nemeth Braille-Print Numbers 0-100 (1-08876-00)
  https://www.aph.org/product/feel-n-peel-stickers-nemeth-braille-print-numbers-0-100/
- Flip-over Concept Book- Fraction: UEB (1-08822-00)
  https://www.aph.org/product/flip-over-concept-book-fractions-ueb/
- * FOCUS in Mathematics Kit, Second Edition (1-08280-01)
  https://www.aph.org/product/focus-in-mathematics-print-kit-second-edition/
- Fractional Parts of Wholes Set (1-03290-00)
  https://www.aph.org/product/fractional-parts-of-wholes-set/
- Game Kit: Materials Bag with 4 Dice, 6 Game Tokens (61-131-045)
  https://www.aph.org/product/game-kit-materials-bag-with-4-dice-6-game-tokens/
- Geometro: Student Workbook Kit (1-03021-00)
  https://www.aph.org/product/geometro-student-workbook-kit/
- Geometro: GS16 Mini Set (1-03022-00)
  https://www.aph.org/product/geometro-gs16-mini-set/
- Geometro: GS22 Medium Set (1-03023-00)
  https://www.aph.org/product/geometro-gs22-medium-set/
- Geometro: GS56 Large Set (1-03024-00)
  https://www.aph.org/product/geometro-gs56-large-set/

- Geometro: Decagons, 12-pack (1-03025-00)
  https://www.aph.org/product/geometro-decagons-12-pack/
- Geometro: Octagons, 6-pack (1-03026-00)
  https://www.aph.org/product/geometro-octagons-6-pack/
- Geometro: Hook Material Rods, 3-pack (1-03027-00)
  https://www.aph.org/product/geometro-hook-material-rods-3-pack/
- Geometro: Rectangles, 6-pack (1-03028-00)
  https://www.aph.org/product/geometro-rectangles-6-pack/
- Geometro: Isosceles Triangles, 6-pack (1-03029-00)
  https://www.aph.org/product/geometro-isosceles-triangles-6-pack/
- Geometro: GS10 Cylinder and Cone (1-03030-00)
  https://www.aph.org/product/geometro-gs10-cylinder-and-cone/
- Graphic Aid for Mathematics (1-00460-01)
  https://www.aph.org/product/graphic-aid-for-mathematics-2/
- Graphic Art Tape (1-08878-00)
  https://www.aph.org/product/graphic-art-tape/
- *Hundreds Board and Manipulatives, Nemeth Code (1-03107-00)
  https://www.aph.org/product/hundreds-board-manipulatives-nemeth/
- * Math Drill Cards: Number and Math Sign Cards (Nemeth) (1-03551-00)
  https://www.aph.org/product/math-drill-cards-number-and-math-sign-cards-nemeth/
- *Math Drill Cards: Addition Cards (Nemeth) (1-03552-00)
  https://www.aph.org/product/math-drill-cards-addition-cards-nemeth/
- *Math Drill Cards: Subtraction Cards (Nemeth) (1-03553-00)
  https://www.aph.org/product/math-drill-cards-subtraction-cards-nemeth/
- *Math Drill Cards: Multiplication Cards (Nemeth) (1-03554-00)
  https://www.aph.org/product/math-drill-cards-multiplication-cards-nemeth/
- *Math Drill Cards: Division Cards (Nemeth) (1-03555-00)
  https://www.aph.org/product/math-drill-cards-division-cards-nemeth/
- Math Flash Software (D-19910-01 or D-19910-ED)
  https://www.aph.org/product/math-flash-digital-download/
- Math Flash, multiple versions
  https://www.aph.org/search-results/?fwp_search_term=Math+Flash
- Math Flash: Amazon Alexa Version (D-19910-AS)
  https://www.aph.org/product/math-flash-amazon-alexa-version/
- Math Robot (for iPad) (D-30000-APL) Non-Quota Order Available from the App Store
  https://itunes.apple.com/app/math-robot/id704570512

- MathBuilders, Unit 1: Matching, Sorting, and Patterning (7-03560-00) https://www.aph.org/product/mathbuilders-unit-1-matching-sorting-and-patterning-large-print-kit-includes-teachers-guide-in-print/
- MathBuilders, Unit 5: Measurement and Estimation (7-03562-00) https://www.aph.org/product/mathbuilders-unit-5-measurement-and-estimation-print-kit/
- MathBuilders, Unit 6: Geometry (7-03563-00) https://www.aph.org/product/mathbuilders-unit-6-geometry-large-print-kit-includes-teachers-guide-in-print/
- MathBuilders, Unit 7: Fractions, Mixed Numbers, and Decimals (7-03564-00) https://www.aph.org/product/mathbuilders-unit-7-fractions-mixed-numbers-and-decimals-large-print-kit-includes-teachers-guide-in-large-print/
- MathBuilders, Unit 8: Data Collection, Graphing, and Probability/Statistics (7-03565-00) https://www.aph.org/product/mathbuilders-unit-8-data-collection-graphing-and-probability-statistics-large-print-kit-includes-teachers-guide-in-print/
- Meterstick (Braille) (1-03000-00) https://www.aph.org/product/meterstick-braille/
- *Multiplication and Division Table Kit, Revised (5-82700-01) https://www.aph.org/product/multiplication-and-division-table-kit-revised/
- Number Line Device (1-03480-01) https://www.aph.org/product/number-line-device/
- Picture Maker - Wheatley Tactile Diagramming Kit (1-08838-00) https://www.aph.org/product/picture-maker-wheatley-tactile-diagramming-kit/
- Picture Maker Geometric Textured Shapes (1-08838-01) https://www.aph.org/product/picture-maker-geometric-textured-shapes/
- *Place Value Setter (1-08284-00) https://www.aph.org/product/place-value-setter/
- Practice2Master Fractions (D30030-AP) https://itunes.apple.com/us/app/practice2master-fractions/id1257764758?mt=8
- *Quick Pick Math: Addition (1-03570-00) https://www.aph.org/product/quick-pick-math-addition/
- *Quick Pick Math: Subtraction (1-03571-00) https://www.aph.org/product/quick-pick-math-subtraction/

- * Quick Pick Math: Multiplication (1-03572-00)
https://www.aph.org/product/quick-pick-math-multiplication/
- * Quick Pick Math: Division (1-03573-00)
https://www.aph.org/product/quick-pick-math-division/
- Ruler: Toss-Away, Large Print-Braille (24-pack) (1-03010-00)
https://www.aph.org/product/ruler-toss-away-large-print-braille-24-pack/
- Ruler: 18-Inch Flexible Braille-Large Print (5-pack) (1-03050-00)
https://www.aph.org/product/ruler-18-inch-flexible-braille-large-print-5-pack/
- Ruler: Ruler: 30-Centimeter Flexible Braille-Large Print (5-pack) (1-03031-00)
https://www.aph.org/product/ruler-30-centimeter-flexible-braille-large-print-5-pack/
- Ruler: 1-Foot Braille English Measurement (1-03070-00)
https://www.aph.org/product/ruler-1-foot-braille-english-measurement/
- Ruler: 1-Foot Braille Metric-English Measurement (1-03100-00)
https://www.aph.org/product/ruler-1-foot-braille-metric-english-measurement/
- Slapstack Math (for iOS devices) (D-30025-AP)
https://itunes.apple.com/us/app/slapstack-math/id1209184917?mt=8
- StackUps: Spatial Reasoning Using Cubes and Isometric Drawings (1-08960)
https://www.aph.org/product/stackups-kit-spatial-reasoning-using-cubes-and-isometric-drawings/
- Tactile Compass for Math and Art (1-08894-00)
https://www.aph.org/product/tactile-compass-for-math-and-art/
- * Tactile Demonstration Thermometer (1-03020-00)
https://www.aph.org/product/tactile-demonstration-thermometer/
- Tactile Five and Ten Frames (1-03567-00)
https://www.aph.org/product/tactile-five-and-ten-frames/
- Tactile Tangrams Kit (1-08439-00)
https://www.aph.org/product/tactile-tangrams-kit/
- *TactileDoodle Kit (1-08824-00)
https://www.aph.org/product/tactiledoodle-kit/
- Textured Paper Collection (1-03275-00)
https://www.aph.org/product/textured-paper-collection/
- Textured Sorting Circles and Shapes (1-08834-00)
https://www.aph.org/product/textured-sorting-circles-and-shapes/

- Venn Diagram Template Kit (1-04095-00)
  https://www.aph.org/product/venn-diagram-template-kit/
- Work-Play tray, Large 21 1/4x13 ¼ inches Black (1-03761-00) Yellow (1-03740-00)
  https://www.aph.org/product/large-work-play-tray-black-21-25-x-13-25-inches/
- *Work-Play tray, Dividers for Small Work-Play tray (1-03770-00)
  https://www.aph.org/product/small-work-play-tray-dividers-4-pack/
- *Work-Play tray, Small 17x11 ¾ inches Black (1-03751-00) Yellow (1-03660-00)
  https://www.aph.org/product/small-work-play-tray-black-17-x-11-75-inches/

Manipulatives and Tools from Other Sources

- Digi-Block Store https://www.digiblock.com
    - Classic Block-of-100
    - Power Block-of-100
- *InTACT Sketchpad
  https://www.easytactilegraphics.com/product/intact-sketchpad/
- *Math Window https://mathwindow.com/
- *Omnifix Cubes from Didax
  https://www.didax.com/catalogsearch/result/?q=Omnifix+cubes
- Plastic Geometric Models 25 Shapes from Assessment Services
  https://www.assessmentservices-edu.com/plastic-geometric-models-25-shapes
- Primary Shapes Template Set from Learning Resources
  https://www.learningresources.com/item-primary-shapes-template-set
- Tactile Calipers from Tactile Vision Graphics
  https://tactilevisiongraphics.com/product-category/braille-calipers/
    - Braille Caliper in Inches
    - Metric Braille Caliper
- * Wikki Stix® https://www.wikkistix.com/

Digital Workflow Resources

- * Accessibility Tip Sheet by Dr. Ting Siu
  (This handout is updated regularly so bookmark the web address.)
  http://bit.ly/a11ytips-siu

- * Assistive Technology for Blind and Low Vision Accessibility (Print and Braille)
  https://www.aph.org/product/access-technology-for-blind-and-low-vision-accessibility-print/

- * Accessible Math Workflow Using Equatio and MS Word (YouTube: AT Neal)
  https://www.youtube.com/watch?v=wzarEOCPma8&feature=youtu.be&app=desktop

- * Needs Assessment by Dr. Ting Siu (This is a separate hand-out available on the resources webpage.)

- * Digital Workflow Planning Tool by McDonnell (This is a separate hand-out available on the resources webpage.)

- * Digital Workflow Video Tutorials: YouTube Channels
  - AT Neal (distance and remote tips)
    https://www.youtube.com/channel/UCBAJYVyOPopcg-j8GgJCFeg
  - viteacherJes (digital workflows)
    https://www.youtube.com/user/viteacherjes
  - Diane Brauner (Apple, nonvisual)
    https://www.youtube.com/channel/UCSsHoghKRJ8VEm7U1s7KKjg
  - Luis Perez (Apple)
    https://www.youtube.com/user/lfperez72
  - Dr. Denise M. Robinson (PC, nonvisual)
    https://www.youtube.com/user/yourtechvision
  - VI Program SFSU (TechTalks)
    https://www.youtube.com/c/VIProgramSFSU
  - Vignettes bit.ly/coursea11y Guest Interviews