UEB MATH/SCIENCE FROZEN JUICE CONCENTRATE

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Today's Take-Aways

1. UEB Math/Science and UEB are the **same code**

2. **Line through previous item** indicator can save the day

3. APH has **Math Symbol Reference Booklets**

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TERMINOLOGY AND CODE BOOKS

Terminology:
UEB Math/Science & UEB with Nemeth

On September 21, 2020, the Braille Authority of North America (BANA) adopted a document entitled "Terminology: **UEB Math/Science** and **UEB with Nemeth**."

That document has been published on BANA's website, on a page with other BANA Position Statements and Fact Sheets.
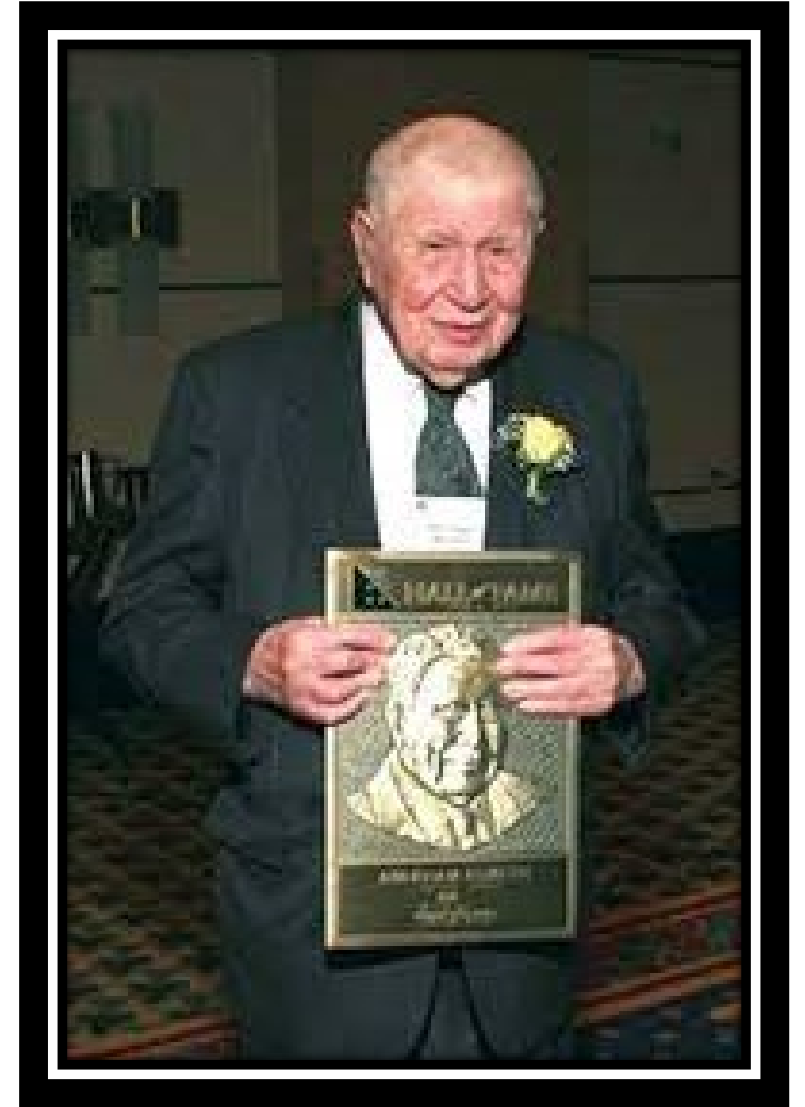
Terminology

The BANA-approved terminology for a transcription created by following the Rules of UEB, including the Guidelines for Technical Material is

UEB Math/Science

What is Nemeth Code?

A braille code (especially good for math and science) designed in the early and mid 20th century, largely by American mathematician Dr. Abraham Nemeth.

The Nemeth Code is a separate code from Unified English Braille.

What is GTM?

- GTM (Guidelines for Technical Material)
- **Part of** UEB
- An evolving document … It has <u>UPDATES</u>!
  - Including a new Section 3

UEB is All One Code

A Poll! #1

Poll #1

What is the BANA-recommended terminology for a transcription created by following the Rules of UEB (including the Guidelines for Technical Material)?
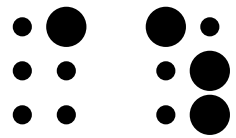
A. Math and Science

B. UEB Math/Science   as opposed to "UEB with Nemeth"

C. Guidelines for Technical Material
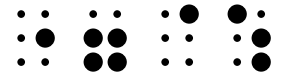
D. UEB with Nemeth

line through previous item indicator

What does ⠿⠿⠿⠿ do?

Indicates a "line through" the previous "item"

"Not equal to" is created with ⠆⠿⠆⠮

⠆⠿⠆⠮

Braille

≠

Print

2260

Unicode

not equal to [cancellation line through an equals]

Unicode name, alternate names [description]

"not equal to" Example

2×2 ≠ 22

UEBOnline Lesson Containing "not equal to"

- [Math Programs from UEBOnline](#)

  - UEB Mathematics Introductory

    - Lesson 2: Operation and Comparison Signs

Cancellation is Shown with ⠠⠿⠠⠿

Some examples are shown in GTM 4.1.6

Line Through Previous Item for Cancellation, print

$$\overset{3}{\cancel{4}}\overset{1}{2}$$
$$-\ 2\ 9$$
$$\overline{}$$
$$1\ 3$$

Line Through Previous Item for Cancellation, braille

⠿⠿

⠒⠒

⠿⠒⠪⠿

⠐⠿⠿⠿

⠪⠿⠿⠿⠿

⠒⠒

⠿⠿

⠮⠿⠮⠿   Numeric passage indicator

⠒⠿⠿⠒   Numeric terminator

RUEB 6.9

Cancellation 2, braille

Cancellation 2, print

$$
\begin{array}{r}
\overset{9}{} \\
4 \;\; \overset{10}{} \;\; {}^{11} \\
\cancel{5}\,\cancel{0}\,\cancel{1} \\
-\,2\,7\,6 \\
\hline
2\,2\,5
\end{array}
$$

Cancellation 2, print & braille

$$
\begin{array}{r}
\overset{\overset{9}{}}{\overset{4\ \cancel{10}\ 11}{\cancel{5}\,\cancel{0}\,\cancel{1}}} \\
-\ 2\,7\,6 \\
\hline
2\,2\,5
\end{array}
$$

A Poll! #2

Poll #2

Which is the correct transcription of the expression "5 multiplication 3 not-equal-to 53"?

$$5 \times 3 \neq 53$$

A. ⠼⠑⠦⠲⠼⠉⠒ ⠂⠆ ⠼⠑⠉⠒

B. ⠼⠑⠦⠲⠼⠉⠒ ⠐⠂⠂⠆⠶ ⠼⠑⠉⠒

C. ⠼⠑⠦⠲⠼⠉⠒ ⠐⠶⠠⠶ ⠼⠑⠉⠒

⠼⠑⠦⠲⠼⠂ ×

⠼⠑⠦⠲⠼⠂ ·

See updated
Section 3 of GTM

Example with Various Unique Symbols and Additions

Consider $\angle B$. $\overline{AB} \cong \overline{BC} \approx 0.\bar{7} \dots$

What is an item?

"Item" is a foundational concept of GTM.

The term is carefully defined in sections 7.1 and 12.1 of the GTM.

Indicators That Apply to an "Item"

- Bars and dots etc. over and under (GTM 12)
- Modifiers directly above or below (GTM 7.9)
- Superscripts⬨ and subscripts⚓ (GTM 7)

Symbols from "Various" Example

➢ ⠦⠿⠈⠿ Approximately equal to [tilde over tilde]

$$\approx 2248$$

➢ ⠦⠿⠈⠿ Angle sign

$$\angle\ 2220$$

➢ ⠦⠿⠈⠸⠿ approximately equal to [tilde over equals]

$$\cong\ 2245$$

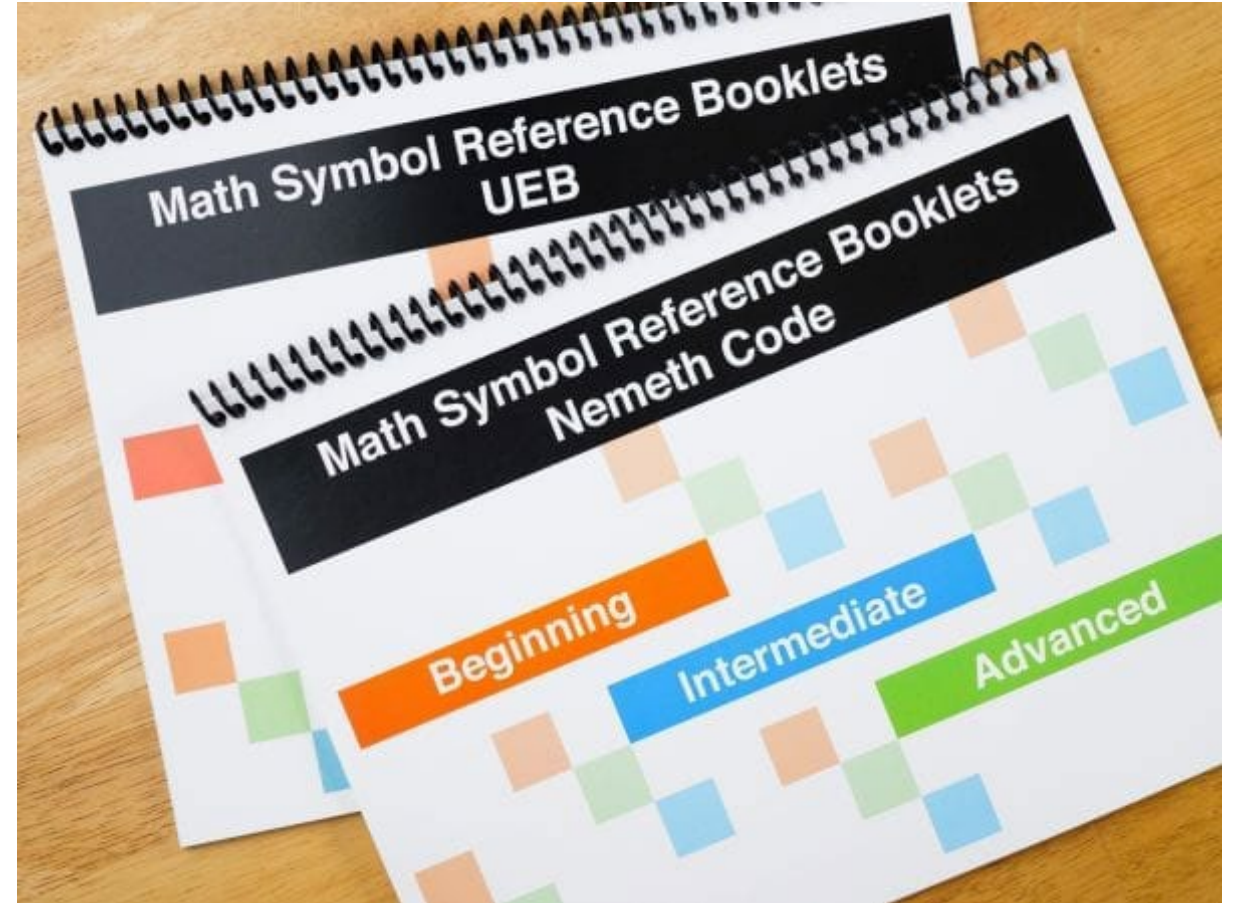Consider $\angle$ B. $\overline{AB} \cong \overline{BC} \approx 0.\overline{7} \ldots$

LOOKING UP SYMBOLS AND STUDYING

APH's Math Symbol Reference Booklets

APH's [Math Symbol Reference Booklets](#) are convenient and concise resources.

Math Symbol Reference Booklets

- Two booklets in the set ("UEB" and "Nemeth Code")
- Listings include
  - name
  - print symbol
  - braille cells
- Symbols are categorized by level
- Yes, there is also an embossed <u>braille version</u>

A Poll! #3

Poll #3

Which of the following is the "line through previous item" indicator?

A. ⠨⠱ (dots 46 34)

B. ⠐⠻⠕⠫ (dots 4 1246 123 2345)

C. ⠐⠳ (dots 4 156)

D. ⠳ (dots 156)

Study Sources for UEB Math/Science

- Math Programs from UEBOnline

  o Introductory, Advanced, Extension

- UEB Math Tutorial from APH

- Quizlet flashcards from BrailleTrainer

- Support from NBA, CTEBVI, VAVF
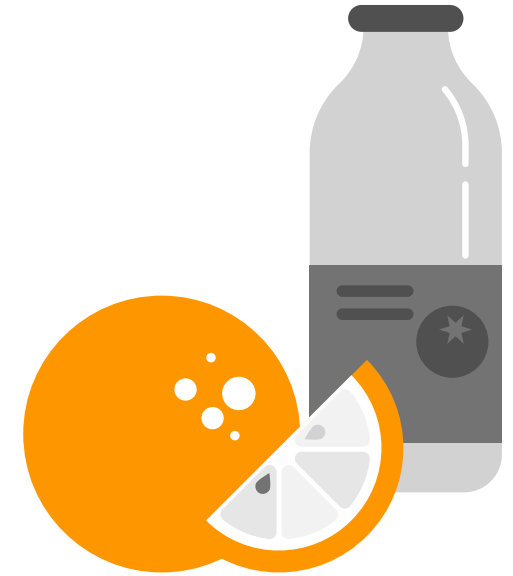
UEB Technical Course

As of today (03/28/2022), there is no NLS course in using UEB for math and science.

[CNIB's UEB Technical](#) is a self-directed course in UEB for technical material. It is not an instruction manual.

Navigation of Braille Certification

For more about braille study and certification, please visit the webinar Navigation of Braille Certification.

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SUPERSCRIPTS ✉〰

Superscript Examples

x^2

⠭�... ⠭��

$3x-4y+y^2 = x^2$

AFB Helen Keller Archive

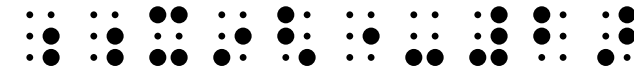AMERICAN PRINTING HOUSE

Superscript "Item" Examples

$x^{15}y^{15}$

⠭⠰⠴⠢⠽⠰⠂⠢

x^{-2}

⠭⠰⠐⠤⠆

A Poll! #4

Poll #4

Where can you purchase **Math Symbol Reference Booklets**?

A. Facebook: @AmericanPrintingHouse

B. APH.org

C. BrailleAuthority.org

MORE "CONCENTRATES"

Carefully Distinguish Symbols

A braille symbol may have both a grade 1 meaning and a contraction (grade 2) meaning. Some symbols may also have a numeric meaning.

from *Note* to RUEB 5.1

Different Modes, Different Meanings

71   7a

⠼⠛⠁   ⠼⠛⠰⠁

trapin2   trap²

⠞⠗⠁⠏⠊⠝⠼⠃   ⠞⠗⠁⠏⠰⠼⠃

457   45g

⠼⠙⠑⠛   ⠼⠙⠑⠰⠛

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A Poll! #5

Poll #5

Which is the best transcription of the expression "x-cubed"?

$$x^3$$

A. ⠿⠢⠔⠶⠕

B. ⠿⠢⠔⠶⠿

C. ⠰⠭⠰⠡⠔⠦⠟⠆
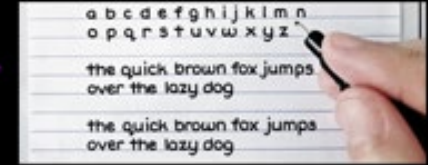
Principles of UEB

- usability by both beginning and advanced readers

- computability from print to braille and from braille to print

- readability

- compatibility with technical material

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Cells First,
Then Formats

Symbols must be accurate before formatting decisions can be implemented.

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Today's Take-Aways, Summary

1. "UEB Math/Science" and the GTM (Guidelines for Technical Material) are *not* separate from UEB

2. The "line through previous item" indicator exists and has special rules for its application (GTM 12 and 4.1.6)

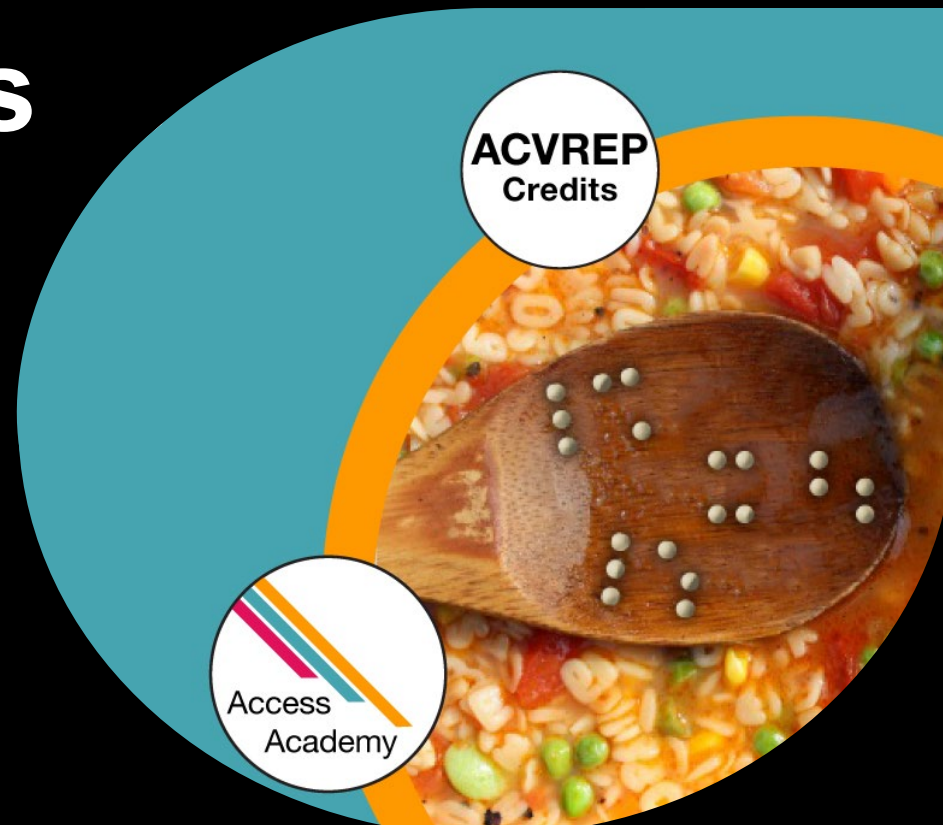3. APH's Math Symbol Reference Booklets are convenient and concise resources

Upcoming

Join us in April for

UEB with Nemeth: Bouillon Cubes

April 25th (Monday)
12:00-1:30 ET

BONUS MATERIAL
if we have time

Fractions

- [UEB Math Tutorial from APH](#)

  ➢ [Lesson 4.2](#): Simple Fractions

  ➢ [Lesson 4.3](#): Mixed Numbers

  ➢ [Lesson 6.4](#): Complex Fractions

- also in Math Programs from UEBOnline

  ➢ UEB Mathematics Introductory – Lesson 8: FRACTIONS

  ➢ UEB Mathematics Advanced – Lesson 2: Grade 1 Mode (Word and Passage) and Fractions (continued)

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A Poll! #6

Poll #6

Which is the correct transcription of the expression
"'bar over AB' not-equal-to 'bar over CD'"?

$$\overline{AB} \neq \overline{CD}$$

A. ⠈⠱⠁⠃⠐⠣⠒⠶⠒⠜ ⠀⠐⠱⠈⠡⠐⠱ ⠀⠈⠱⠉⠙⠐⠣⠒⠶⠒⠜⠰⠂

B. ⠱⠁⠃⠒⠶⠒⠜ ⠐⠱⠈⠡⠐⠱ ⠈⠱⠉⠙⠒⠶⠒⠜

C. ⠈⠱⠁⠃⠐⠣⠒⠶⠒⠜ ⠐⠱ ⠈⠱⠉⠙⠐⠣⠒⠶⠒⠜⠰⠂

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A Poll! #7

Poll #7

Which is the correct transcription of 72g?

A. ⠼⠛⠵⠿⠸⠏⠿

B. ⠼⠛⠼⠒⠿⠸⠿

C. ⠼⠛⠵⠿⠠⠿

Interestingly, **a capital indicator terminates numeric mode.** So, the correct transcription of 72G is simply ⠼⠛⠵⠿⠠⠿

Format is About Clarity

Formatting Principles Summary

❑ Use **only indented paragraphs**.

❑ For **displayed material, directions, and exercises**, follow *Braille Formats 2016*, including blank lines before and after all displayed material.

❑ A **nested list** format to any depth may be used in exercises, based on the item in that set with the largest number of subentries.

❑ Keep an **abbreviation and its related number** on the same braille line.

❑ Put a **number label for an expression** before the expression, regardless of print placement.

❑ For **spatial problems**, generally follow print formatting.

Format is About Clarity, repeat

Cells First, Then Formats (repeat)

Symbols must be accurate before formatting decisions can be implemented.

Mark your calendar for the 2022 VAVF Conference!

Dates: March 30, April 6, and April 13, 2022 (Wednesdays)

Location: Virtual (Times given in Eastern Daylight Time)

Visit VAVF.org for more information