LESSON 1

- INTRODUCTION TO CODE SWITCHING
  - Placement of the Code Switch Indicators
- THE HYPHEN AND THE DASH
- SIGNS OF OMISSION
- INTRODUCTION TO IDENTIFIERS

Format

- Keep Together—Mathematical Expression
- Margins for Narrative (3-1)
- Margins for Itemized Material with No Subdivisions (1-3)
- FORMAT SUMMARY #1

Answers to Practice Material

HOW TO PREPARE THE EXERCISES

EXERCISE 1

LESSON PREVIEW

Introduction to the rules regarding code switching and use of Nemeth code switch indicators. The hyphen and the short dash are studied. Three signs of omission are introduced: the ellipsis, the long dash, and the general omission symbol. Two Nemeth Code formats are illustrated: 3-1 narrative and 1-3 itemized material.

Do not begin Lesson 1 until you have completed the Preliminary Lesson.

INTRODUCTION TO CODE SWITCHING

1.1 A Complete Transcription

The base code used in a "UEB with Nemeth" transcription is Unified English Braille ("UEB"). When mathematical content occurs anywhere in the transcription, the non mathematical notation follows UEB rules while the mathematical notation follows the rules of the Nemeth Code. The reader will be reading Unified English Braille unless signaled otherwise by the use of a code switch indicator.

⠩	Opening Nemeth Code indicator
⠱	Nemeth Code terminator

These symbols must be listed on the Special Symbols page in the transcriber-generated portion of each volume. See the Final Lesson for further details.

The opening Nemeth Code indicator is followed by a space (one blank cell). The Nemeth Code terminator is preceded by a space (one blank cell). These spaces do not represent a space in print.

The opening Nemeth Code indicator and the Nemeth Code terminator may also be referred to as "code switch indicators" or "switches".

The following principle is central to a smooth reading of UEB with Nemeth transcription: *UEB symbols are not used inside of the Nemeth code switches. Nemeth symbols are not used outside the switches.*

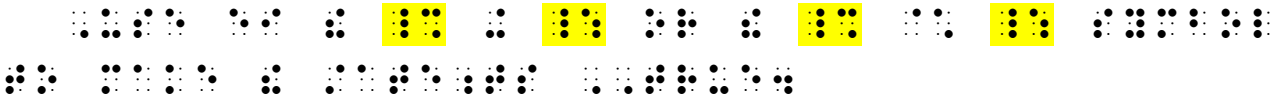
1.2 Use of the Code Switch Indicators

Switch to Nemeth when a mathematical symbol or a mathematical expression is encountered.

The code switch indicators are highlighted throughout this lesson.

Example 1-1

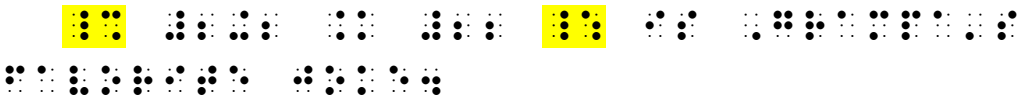
Use either the + or the × symbol to make the statements TRUE.



Recall that the space after the opening Nemeth Code indicator and the space before the Nemeth Code terminator do not represent a space in print.

Example 1-2

$2 + 2 = 22$ is Grampa's favorite joke.



Instructions: Transcribe PRACTICE 1A by beginning each sentence in cell 3, with any runovers in cell 1. Compare your transcription to the answers at the end of this lesson. (Read about the practice material in the Preliminary Lesson on page P-4.)

PRACTICE 1A

What does $16 + 4 + 100$ equal?

If $10 \times 10 \times 10 = 1{,}000$ what does $10 \times 10 \times 10 \times 10$ equal?

Does $5 \div 2$ name a whole number?

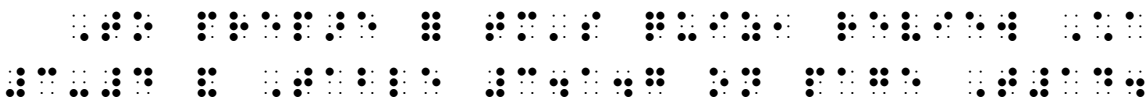
% ("percent") means parts per hundred; ‰ ("per mille") means parts per thousand.

1.3 Which Code?

1.3.1 **UEB Required.** Recall that page numbers and labels to figures, tables, sections, etc. are transcribed in UEB. Examples are shown in Section P3.1 of the Preliminary Lesson. Here is another example that does not require code switching.

Example 1-3

To prepare for tomorrow's quiz, review Chapters 3-4 and Table 3.1.7 on page T14.

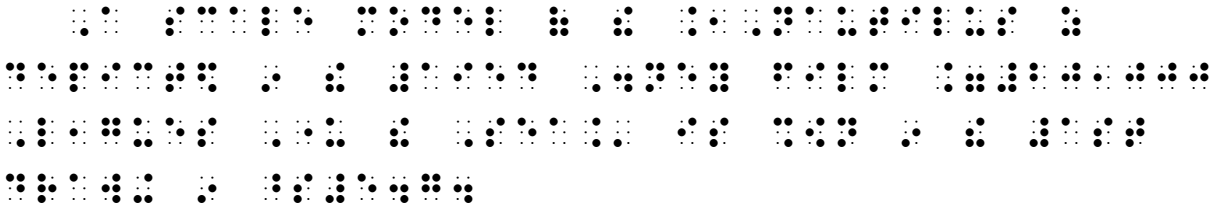


1.3.2 **UEB Allowed.** It is best not to overdo switching just for the sake of a simple item that is easily read in either code. Recall from the Preliminary Lesson that numbers with mathematical meaning within narrative context may be transcribed in UEB as long as the number is freestanding and is unmodified. "Unmodified" in this context means there is no mathematical symbol associated with the number.

The definition of "freestanding" includes numbers with internal commas, with an ordinal ending, or with a plural ending such as "s" or "apostrophe-s". This applies to incidental numbers encountered in narrative, as well as to freestanding numbers in a word problem. When the surrounding text is UEB, there is no need to switch to Nemeth Code for such numbers. (This rule does not apply if a long number must be divided. See 1.7.1.)

Example 1-4

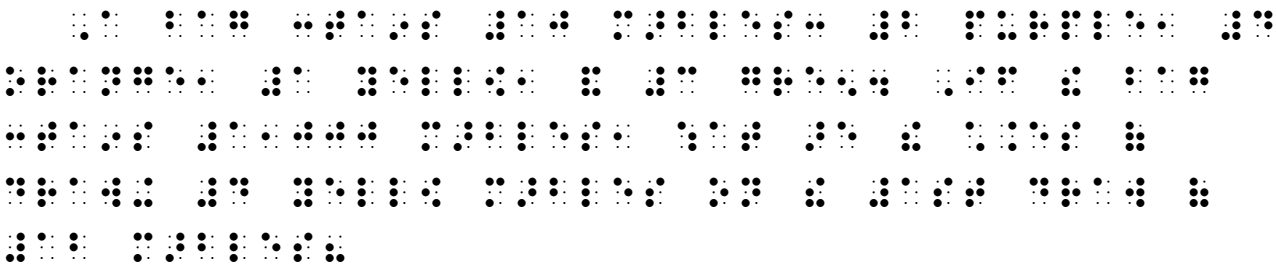
A scale model of the *Nautilus* as depicted in the 1954 Disney film *20,000 Leagues Under the Sea* is shown in the 1st drawing in §5.7.



Within this narrative sentence, the number with the internal comma is transcribed in UEB, as is the ordinal. The UEB section sign is used for the section reference.

Example 1-5

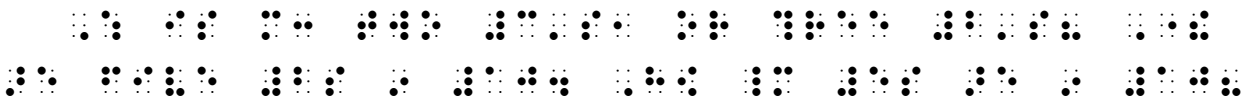
A bag contains 10 marbles: 2 purple, 4 orange, 1 yellow, and 3 green. If the bag contains 1,000 marbles, what are the chances of drawing 4 yellow marbles on the 1st draw of 12 marbles?



In this word problem, the freestanding, unmodified numbers are transcribed in UEB.

Example 1-6

Which is more: two 3's, or three 2's? There are five 2s in 10. How many 5s are in 10?

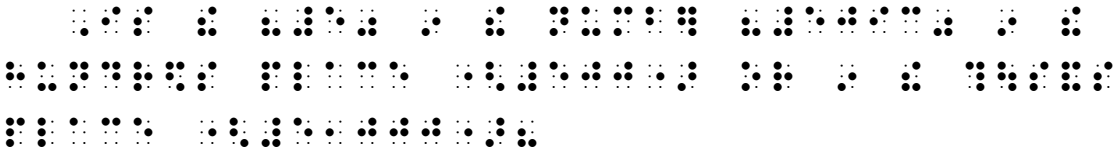


In this word problem, plural numerals are transcribed in UEB.

a. When an unmodified number is touching literary punctuation such as quotes or parentheses, it is still considered to be freestanding and may be transcribed in UEB.

Example 1-7

Is the "5" in the number "5093" in the hundreds place (500) or in the thousands place (5,000)?



> *Throughout this course, isolated examples which illustrate Nemeth constructions are marked with a chevron symbol. Nemeth switch indicators are omitted in order to focus on the construction itself. In the context of a complete transcription, code switch indicators are required. In many cases, the isolated construction is incorporated into the example which follows, where use of the code switch indicators is also demonstrated.*

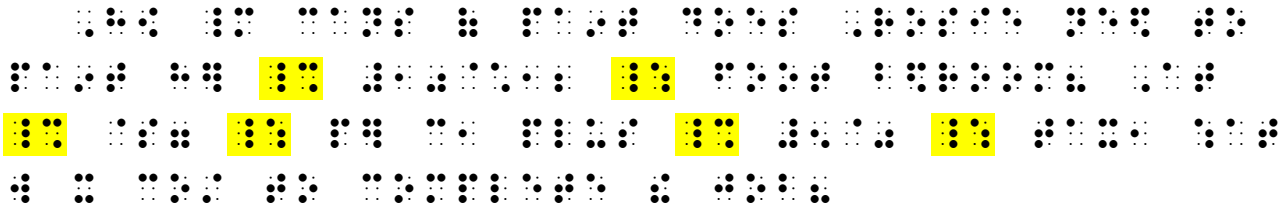
1.3.3 **Nemeth Required.** If a freestanding number or letter is combined with anything other than an ordinal, an internal comma, or a plural, it is considered to be modified and is transcribed in Nemeth. Here are some examples.

a. A numeral associated with an operation sign must be transcribed in Nemeth Code. A numeral associated with a monetary symbol or with a percent sign is included inside the switches.

- ⫸ 10×12
- ⫸ $7
- ⫸ 5%

Example 1-8

How many cans of paint does Rosie need to paint her 10×12 foot bedroom? At $7 per can, plus 5% tax, what will it cost to complete the job?



A switch to Nemeth Code is required for the multiplication symbol, for the monetary symbol, and for the percent sign. The numbers associated with those symbols are also transcribed in Nemeth.

b. A negative numeral must be transcribed Nemeth Code. A decimal number with mathematical meaning is transcribed in Nemeth Code.

- ⩾ −5 ⠤⠼⠑
- ⩾ 3.14159 ⠨⠼⠁⠲⠁⠙⠁⠑⠊

Example 1-9

Which is colder, −5 degrees Celsius or 5 degrees Fahrenheit?
What does this famous decimal number represent? 3.14159

⠠⠓ ⠕⠇ ⠠⠉⠕⠇⠙⠻⠲ ⠤⠼⠑ ⠙⠑⠛⠗⠑⠑⠎ ⠠⠉⠑⠇⠎⠊⠥⠎ ⠕⠗ ⠼⠑ ⠙⠑⠛⠗⠑⠑⠎ ⠠⠋⠁⠓⠗⠑⠝⠓⠑⠊⠞⠲
⠠⠓⠕⠺ ⠙⠊⠙ ⠠⠊⠞ ⠙⠑⠛⠗⠑⠑ ⠠⠓⠕⠺ ⠙⠊⠙ ⠠⠊⠞ ⠙⠑⠛⠗⠑⠑
⠠⠓⠕⠺ ⠙⠊⠙ ⠠⠊⠞ ⠠⠓⠁⠝⠙ ⠠⠓⠕⠺ ⠙⠊⠙ ⠠⠊⠞ ⠠⠓⠁⠝⠙ ⠠⠓⠕⠺ ⠙⠊⠙ ⠠⠊⠞ ⠠⠓⠁⠝⠙
⠠⠓⠕⠺ ⠙⠊⠙ ⠠⠊⠞ ⠠⠓⠁⠝⠙

Instructions: Center the heading. Begin each problem in cell 3 with runovers in cell 1.

PRACTICE 1B

If $47 - 41 > 1$, do you suppose that $41 - 47 < 1$? Why or why not?

If $5 + 10$ equals 15, what does $10 + 5$ equal? Explain.

Format

1.5 Keep Together—General Principle Regarding Mathematical Expressions

A mathematical expression that will fit on one braille line within the current margins must not be divided between lines. The entire expression is brought down to the next line.

⟫ $0.999 = 1$ ⠼⠚⠊⠊⠊⠐⠶⠂⠼⠁

The equation constitutes one mathematical expression.

Example 1-11

Catherine says she can prove that $0.999 = 1$ but I need convincing.

⠉⠁⠞⠓⠑⠗⠊⠝⠑ ⠎⠁⠽⠎ ⠎⠓⠑ ⠉⠁⠝ ⠏⠗⠕⠧⠑ ⠞⠓⠁⠞ ⠼⠚⠊⠊⠊⠐⠶⠂⠼⠁ ⠃⠥⠞ ⠊ ⠝⠑⠑⠙ ⠉⠕⠝⠧⠊⠝⠉⠊⠝⠛.

In the "keep together" examples, full cells of shadow dots show the space remaining on the preceding line.

Placement of the Switch Indicators

1.5.1 **Keep Together If Possible.** Within a paragraph, the switch indicators should appear on the same line as the expression <u>if the mathematical expression and the two indicators will fit on one braille line</u> within the current margins. In the previous example as well as the next one a new line is forced to begin with the opening Nemeth Code indicator even though the indicator could fit on the previous line.

Example 1-12

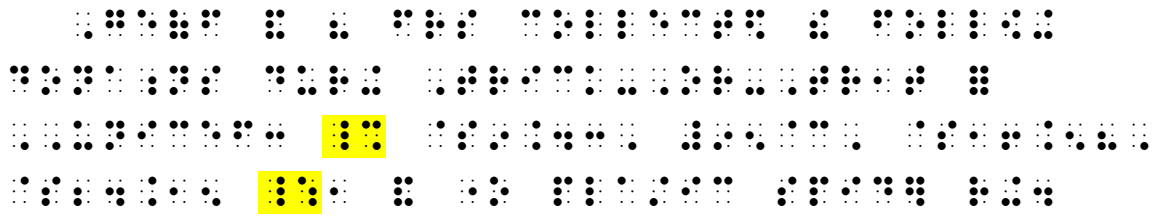
The final term can be expressed as $2 \times 100 + 1$ in this series.

⠞⠓⠑ ⠋⠊⠝⠁⠇ ⠞⠑⠗⠍ ⠉⠁⠝ ⠃⠑ ⠑⠭⠏⠗⠑⠎⠎⠑⠙ ⠁⠎ ⠼⠃⠦⠼⠁⠚⠚⠔⠼⠁ ⠊⠝ ⠞⠓⠊⠎ ⠎⠑⠗⠊⠑⠎.

a. If two or more math expressions occur between the same code switch indicators, the line may wrap at the space between the expressions, even if the entire Nemeth portion could fit on one line.

Example 1-13

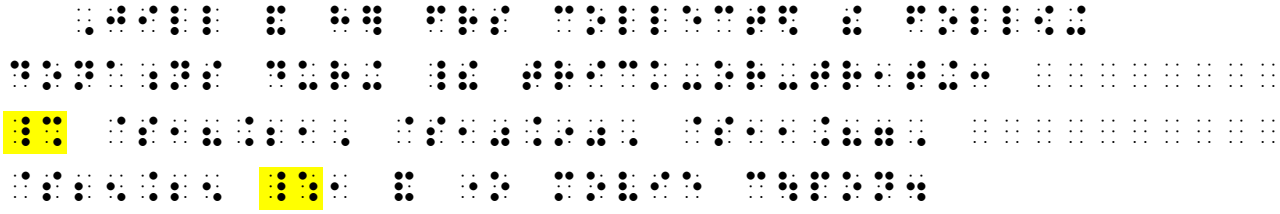
Geoff and his friends collected the following donations during Trick-Or-Treat for UNICEF: $9.43, 95¢, $16.58, $24.15, and one plastic spider ring.



b. Within a paragraph, a switch indicator should not stand alone on a line if there is room for it to fall on the line with the math expression to which it applies.

Example 1-14

Jill and her friends collected the following donations during their trick-or-treating: $18.21, $10.90, $11.87, $25.25, and one movie coupon.

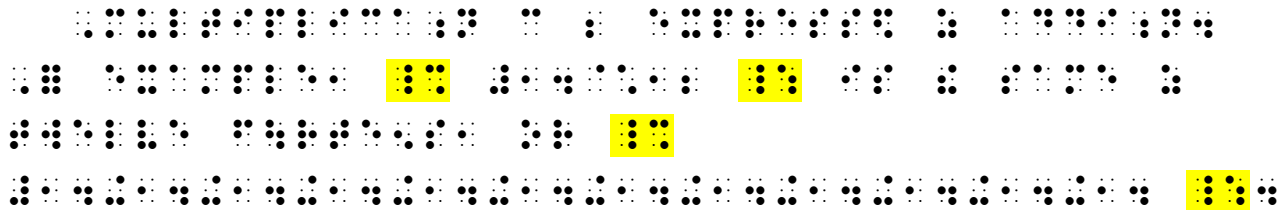


The opening Nemeth Code indicator is placed on the same line as the first dollar amount, even though there is room for just the indicator on the previous line. The last dollar amount is placed on the same line as the Nemeth Code terminator, even though there is room for just the dollar amount on the previous line.

1.5.2 **A Switch Indicator May Stand Alone on a Line.** If a math expression will fit on one line but there is not room for one or both of the switch indicators, one or both switch indicators may stand alone on a line. Keeping the mathematical expression intact on one line is the priority. Several layouts are illustrated below.

Example 1-15

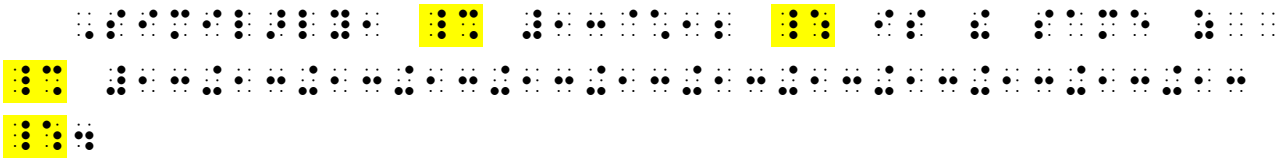
Multiplication can be expressed as addition. For example, 14×12 is the same as twelve fourteens, or 14 + 14 + 14 + 14 + 14 + 14 + 14 + 14 + 14 + 14 + 14 + 14.



This opening Nemeth Code indicator falls on the line before the long expression.

Example 1-16

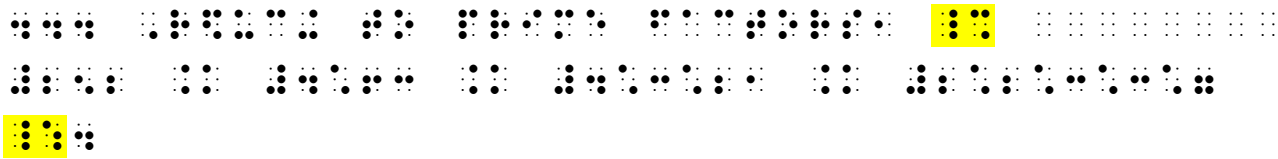
Similarly, 13×12 is the same as 13 + 13 + 13 + 13 + 13 + 13 + 13 + 13 + 13 + 13 + 13 + 13.



The opening Nemeth Code indicator does not fit on the line before the the long expression. The Nemeth Code terminator (along with the related punctuation) falls on the line after the long expression.

Example 1-17

... Reducing to prime factors, $252 = 4 \cdot 63 = 4 \cdot 3 \cdot 21 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 7$.



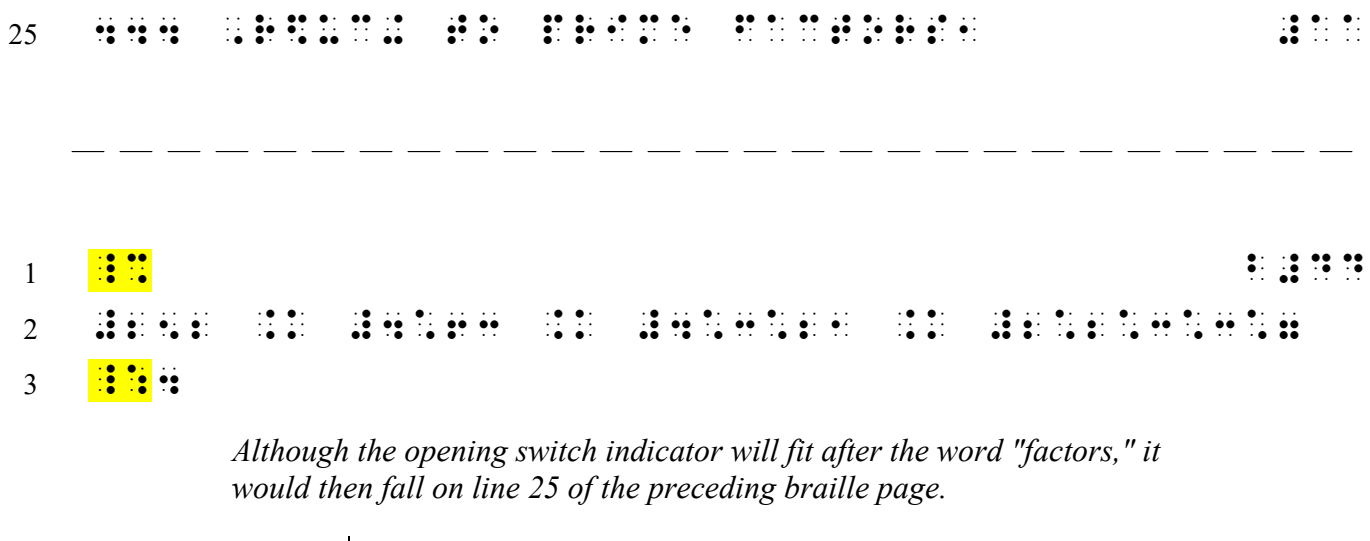
Because the expression takes up the full available line width, both the opening Nemeth Code indicator and the Nemeth Code terminator fall on separate lines.

Note: A sign of comparison links the symbols on the left side of the comparison sign with the symbols on the right side of the comparison sign and so is considered to be one mathematical expression. The math portion in the example above is one expression, not four, and should not be divided between lines if it will fit on one line within the current margins.

1.5.3 **Switch Indicators at Braille Page Turns.** The effect of the opening Nemeth Code indicator is not terminated by transition to a new braille page. If, however, the switch to Nemeth occurs at a braille page turn, place the opening switch indicator on the same braille page as the mathematical material to which it applies. Similarly, the Nemeth Code terminator should be placed on the same braille page as the end of the mathematical material.

Example 1-18

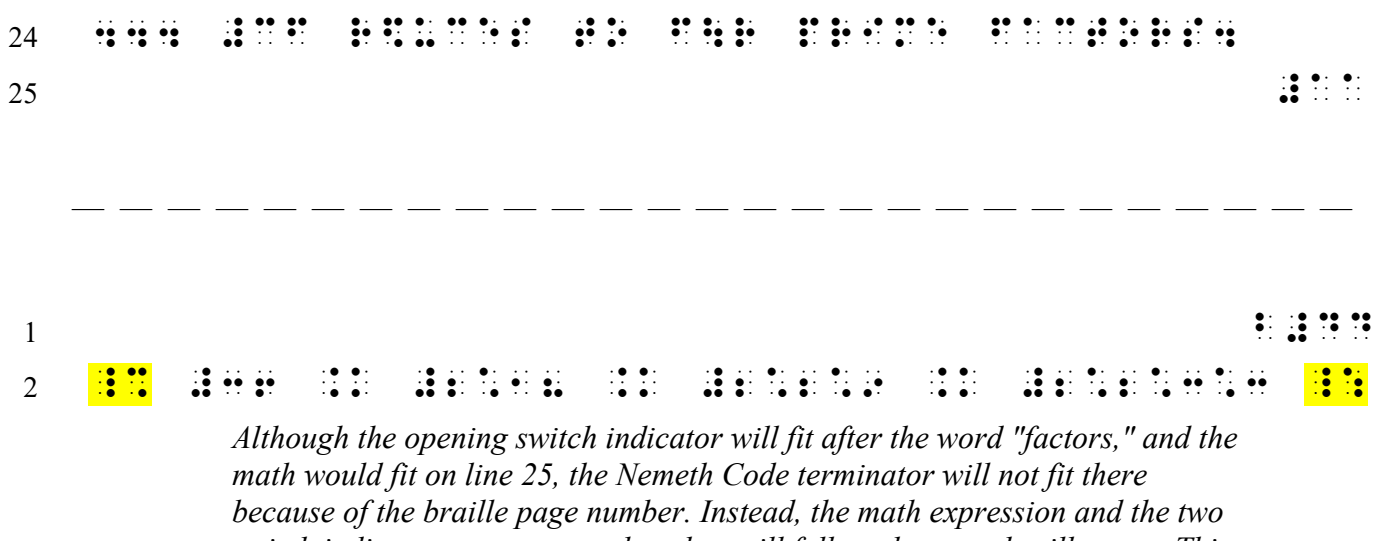
... Reducing to prime factors, $252 = 4 \cdot 63 = 4 \cdot 3 \cdot 21 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 7$.



Although the opening switch indicator will fit after the word "factors," it would then fall on line 25 of the preceding braille page.

Example 1-19

... 36 reduces to four prime factors. $36 = 2 \cdot 18 = 2 \cdot 2 \cdot 9 = 2 \cdot 2 \cdot 3 \cdot 3$



Although the opening switch indicator will fit after the word "factors," and the math would fit on line 25, the Nemeth Code terminator will not fit there because of the braille page number. Instead, the math expression and the two switch indicators are arranged so they will fall on the same braille page. This expression and its two code switch indicators will fit on one line so it begins on line 2.

Switch indicators at print page turns will be discussed in Lesson 3.

Instructions: Begin each paragraph in cell 3 with runovers in cell 1.

PRACTICE 1C

How many squares can you find on an 8 × 8 checkerboard? (*Hint*: There are more than 65 squares.) First determine how many 1 × 1 squares, then how many 2 × 2 squares, and so on, you can find.

12×11 is also the same as twelve elevens, or 11 + 11 + 11 + 11 + 11 + 11 + 11 + 11 + 11 + 11 + 11 + 11.

1.6 Consistency with Mathematical Symbols

Although UEB provides symbols for math notation and measurement, the transcriber's objective is to maintain consistency in the appearance of the mathematical symbols throughout the transcription. A symbol that is used in mathematical context is transcribed in Nemeth, even within narrative. This includes the symbols learned in the Preliminary Lesson—signs of operation, signs of comparison, monetary, percent, and prime signs.

This example uses Nemeth symbols for prime signs representing minutes and seconds of arc. A switch to Nemeth Code is required.

⫸ 67'44''

Example 1-20

Convert 67'44'' to decimal degree form.

The next example uses the Nemeth decimal point in a mathematical numeral. A switch to Nemeth Code is required.

⫸ 1.6180339887

Example 1-21

1.6180339887 is known as the Golden Number, **Phi**.

PRACTICE 1D

Percent to Decimal. To convert 48.6% to a decimal number, divide the percent by 100. For example, to convert 48.6%, 48.6 ÷ 100 = 0.486.

With a 7% sales tax added, how much will a $6 bus ticket actually cost?

Julio's lot measures 56' wide and 100' deep. The garden shed sits 20'8'' back from the street.

THE HYPHEN AND THE DASH

1.7 The Hyphen and the Dash As Punctuation

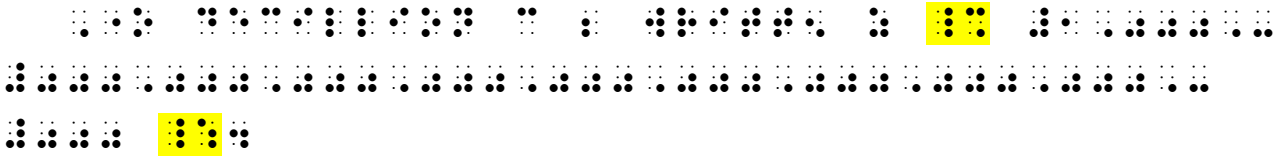
As punctuation marks, the hyphen and the dash will most often be found in non mathematical context, in which case the UEB symbols and rules are applied. When these symbols are encountered within mathematical context, the Nemeth symbols are used and Nemeth spacing rules are followed. The hyphen is the same in either code. The dash is not. If a dash occurs in mathematical context, the "short dash" of the Nemeth Code is transcribed.

⠤	Hyphen	-
⠤⠤	Dash ("short")	—

1.7.1 **A Hyphen May Divide a Long Numeral.** If a long numeral cannot be contained on one braille line it is divided after a comma (if a comma is present) and a hyphen is inserted. A divided number must be transcribed in Nemeth, even if it is freestanding and unmodified. When a numeral is divided between braille lines the numeric indicator must be used before the first digit of the numeral on the next line.

Example 1-22

One decillion can be written as 1,000,000,000,000,000,000,000,000,000,000,000.

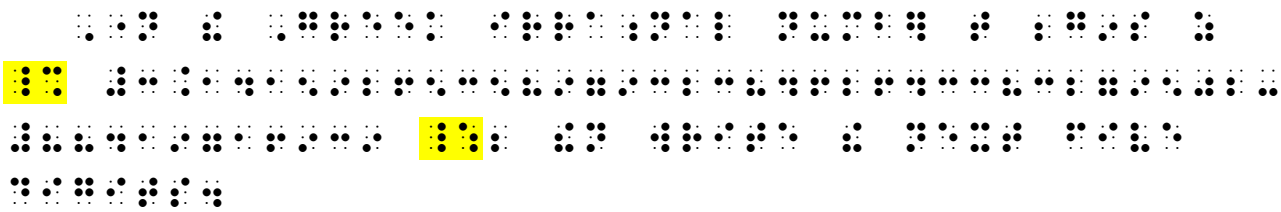


Because this long numeral must be divided, it is transcribed in Nemeth. Each line of the divided numeral begins with a numeric indicator.

a. **No Comma.** If the long numeral does not contain a comma, the hyphen may be inserted after any digit.

Example 1-23

Name the Greek irrational number that begins as 3.14159265358979323846264338327950288419716939; then write the next five digits.



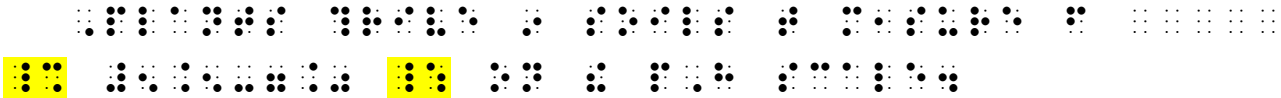
The semicolon applies to the sentence structure and is placed after the Nemeth Code terminator.

1.7.2 **A Hyphen May Connect Numerals.** Freestanding, unmodified numbers which are connected by a hyphen may be transcribed in UEB. If one or both numbers are modified, the two numbers are transcribed in Nemeth. In Nemeth Code, the numeric indicator is not used after the hyphen.

- 5.5-7.0
- 4-5"

Example 1-24

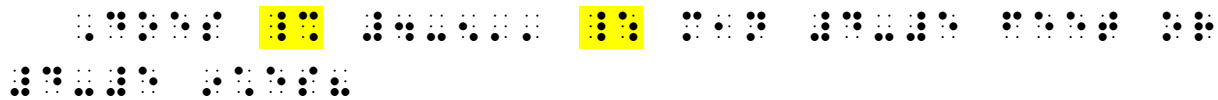
Plants thrive in soils that measure from 5.5-7.0 on the pH scale.



Because the numbers representing quantities contain a decimal point, they are transcribed in Nemeth.

Example 1-25

Does 4-5" mean 4-5 feet or 4-5 inches?

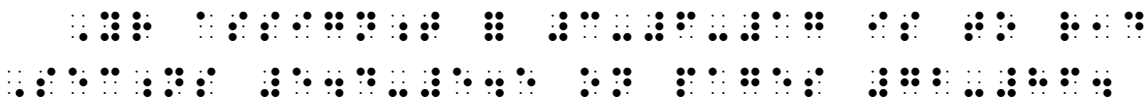


Nemeth is required for 5" because of the double prime sign. The entire hyphenated range 4-5" is transcribed in Nemeth. The other freestanding <u>un</u>modified number ranges are transcribed in UEB.

a. **UEB Context.** Non mathematical or non scientific numerals connected by hyphens such as dates, page number ranges, chapter or section ranges, etc. follow the rules of UEB.

Example 1-26

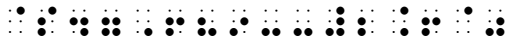
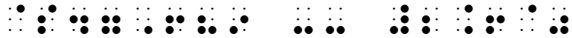
Your assignment for 3-6-17 is to read Sections 5.4-5.5 on pages 72-86.



The decimal points in the section numbers are transcribed in UEB.

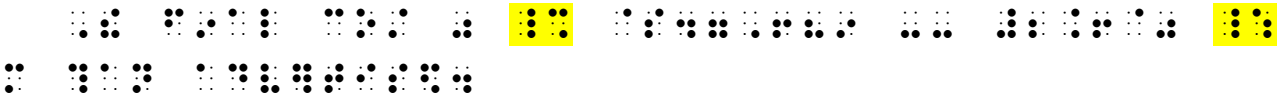
1.7.3 **The Short Dash.** A dash as a mark of punctuation implies a pause or a break in thought. The numbers on either side of a dash may be transcribed in different codes. As in UEB context, follow print spacing before and after a dash. A dash may begin or end a line but the sign itself must not be divided.

In mathematical context, the Nemeth short dash is used to represent a dash used as a mark of punctuation. A numeric indicator is required following a dash even though that number may not be preceded by a space.

- $47,689—2.6% 
- $47,689 — 2.6% 

Example 1-27

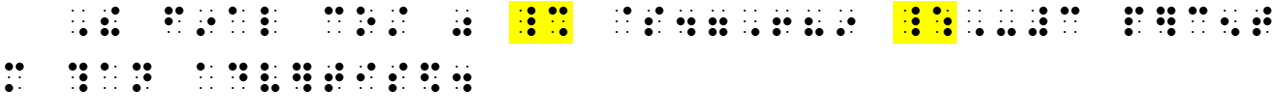
The final cost was $47,689 — 2.6% more than advertised.



The numbers on both sides of this dash require Nemeth Code. The Nemeth short dash is transcribed. Spacing follows print.

Example 1-28

The final cost was $47,689—3 percent more than advertised.

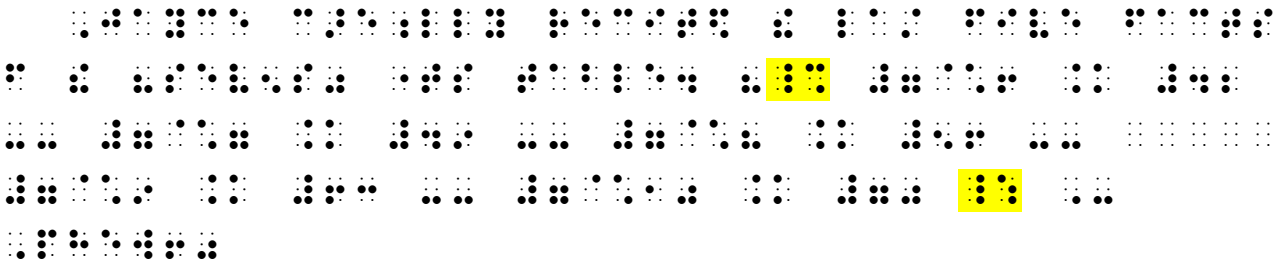


The first number requires Nemeth Code, but the second number does not. Nemeth Code is terminated after the dollar amount and the UEB dash is transcribed. Spacing follows print.

a. Even though the symbols differ between UEB and Nemeth, you may use the two dash forms within a sentence.

Example 1-29

Jayce carefully recited the last five facts from the "sevens" times table.
"$7 \times 6 = 42$ — $7 \times 7 = 49$ — $7 \times 8 = 56$ — $7 \times 9 = 63$ — $7 \times 10 = 70$ — Phew!"

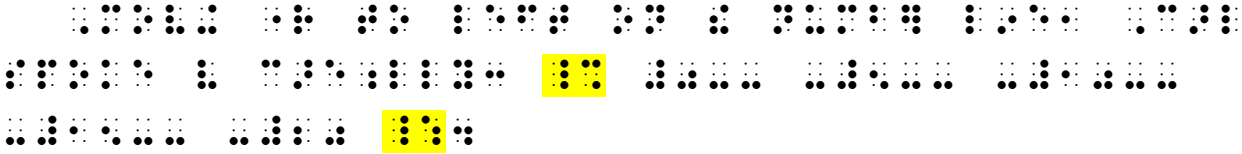


The Nemeth dash is used in the math portion, and the UEB dash is used after Nemeth is terminated. Each dash is preceded and followed by a space, as in print. Recall that the space before the Nemeth Code terminator does not represent a space in print.

1.7.4 **Hyphen, Dash, or Minus Sign?** Read carefully to determine whether a symbol is a hyphen, a dash or a minus/negative sign. A space must come between a hyphen and a minus sign or between a dash and a minus sign in order to distinguish the similar constructions.

Example 1-30

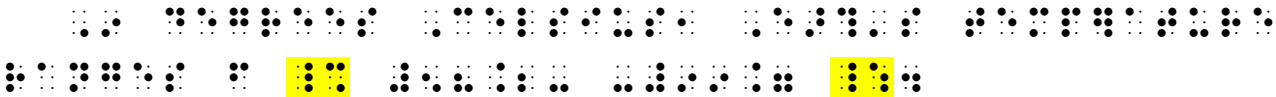
Moving right to left on the number line, Carl spoke very carefully: 0— −5— −10— −15— −20.



Although the numbers will fit all together on one line, they are five individual expressions and so the fullest available extent of the line is used.

Example 1-31

In degrees Celsius, Earth's temperature ranges from 58.2- −99.7.



Because a space must be inserted between the hyphen and the minus sign, a numeric indicator is required for −99.

PRACTICE 1E

Represent cents as decimals—$0.89—not like this—89¢.

Marcus' answer was 37¢ — 38¢ is the correct change.

In degrees Fahrenheit, Earth's temperature ranges from −126-136.

Expressed in seconds, the shortest meaningful interval of time (Planck Time) contains 46 decimal places: 0.00000000000000000000000000000000000000000000054 !

SIGNS OF OMISSION

1.8 General Use of Signs of Omission

Omission of mathematical or literary material may be shown by dots, a low line (underscore), a blank space, a question mark, or a combination of these or other signs devised by the author. Unless otherwise stated, the omission symbol used in braille should correspond to the print sign.

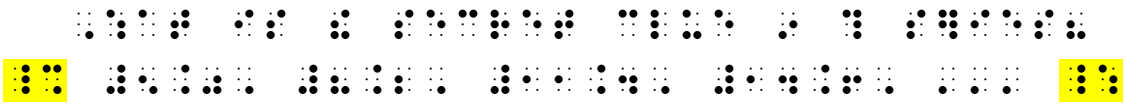
1.9 Ellipsis

An ellipsis is a series of dots which represent an omission. In UEB context, the UEB ellipsis is transcribed. In Nemeth context, the ellipsis of the Nemeth Code is transcribed. In Nemeth context, three dot 3s represent the ellipsis, regardless of how many dots are used in print. (One exception will be presented in Lesson 17 for ellipses within an array.)

⠨⠨⠨	Ellipsis ...

Example 1-32

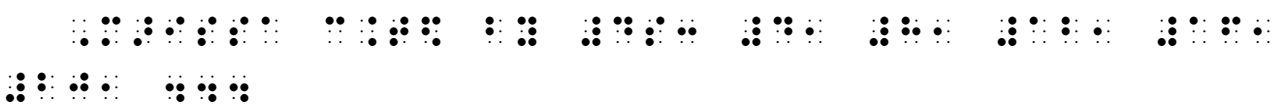
What is the secret clue in this series? 5.0, 8.2, 11.4, 14.6, ...



The Nemeth ellipsis is used inside the switches.

Example 1-33

Marissa counted by 4s: 4, 8, 12, 16, 20, ...



The UEB ellipsis is used in nonmathematical context.

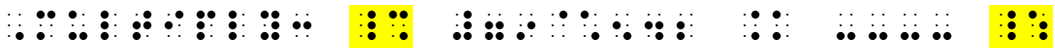
1.10 Long Dash

When a low line (underscore) is used to denote an omission in print, within mathematical context the Nemeth "long dash" is transcribed. Outside of the code switches, the UEB underscore is used.

⠸⠸⠸⠸	Long Dash _____

Example 1-34

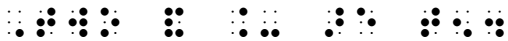
Multiply: $79 \times 542 =$ _____



The Nemeth long dash is used inside the switches.

Example 1-35

Two and ___ are ten.



The UEB underscore is used in nonmathematical context.

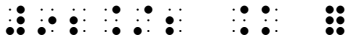
Exception: When a long dash is used to show missing digits within a number, the general omission symbol is used to represent the omission, as explained in the next section.

1.11 General Omission Symbol

An omission may be printed as a question mark, or a blank space may indicate a missing sign. The printed question mark can be standing alone, underlined, or be shown with hyphens. In all cases, the general omission symbol is transcribed.

⠿	General Omission Symbol

All four examples below are transcribed the same way.

- $92 \div 2 = ?$ 
- $92 \div 2 =$ –?–
- $92 \div 2 =$
- $92 \div 2 =$?_

a. The general omission symbol follows the spacing rules of the material which it represents.

⟫ $6 + ? = 15$

The omitted digit is unspaced from the plus sign and spaced from the equals sign.

⟫ $1{,}5?4 + 200 = 1{,}734$

The omitted digit in the tens place is unspaced from the digits in the hundreds place and the ones place.

Example 1-36

Greater than or less than? $24 \div 3$? $24 \div 4$

The omitted comparison sign is preceded and followed by a space, according to the spacing rules for signs of comparison.

b. The number of general omission symbols used in braille must correspond to the number of omission signs used in print. A box or a shaded region that does not show a specific number of places is represented by a single general omission symbol.

Example 1-37

$678 \times 27 =$? ? ? ? ?

A 5-digit answer is implied by showing five omission signs, which represent the five question marks shown in print.

Example 1-38

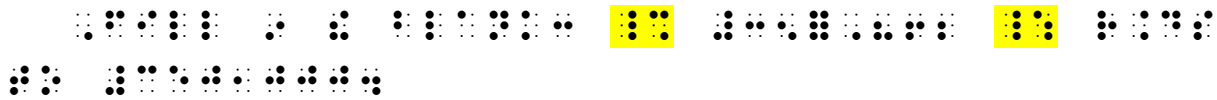
$197 \times$ ▭ $= 4925$

A gray rectangle indicates a missing factor.

c. When an internal dash or underscore is used to show missing digits within a number, the number is considered to be "modified" (as defined in the Preliminary Lesson, section P3.1) and so is transcribed in Nemeth. The general omission symbol is used to represent the omission in this case.

Example 1-39

Fill in the blank: 35___,862 rounds to 350,000.



The omission is printed as a low line (long dash).

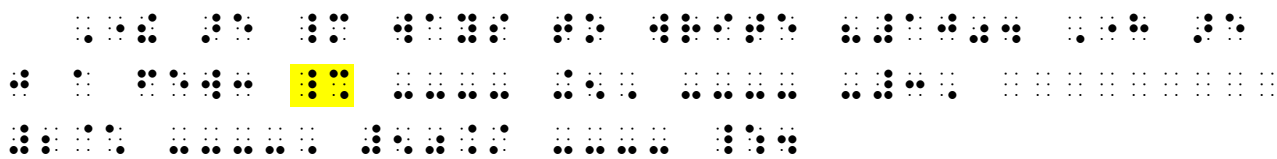
1.12 Spacing of the Ellipsis and Long Dash

The ellipsis and the long dash are preceded and followed by a space in most circumstances, even when next to an operation sign. The print copy may or may not show a space but to avoid misreading the ellipsis or the long dash as other math symbols Nemeth spacing rules must be followed.

a. Insert a space between an ellipsis or a long dash and a symbol of operation.

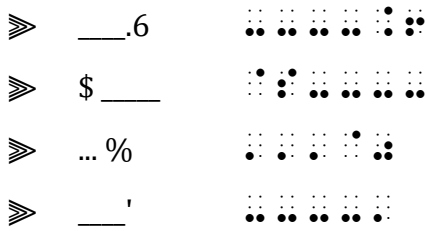
Example 1-40

There are many ways to write "10". Here are just a few: ___ + 5, ___ − 3, 2 × ___, 50 ÷ ___.



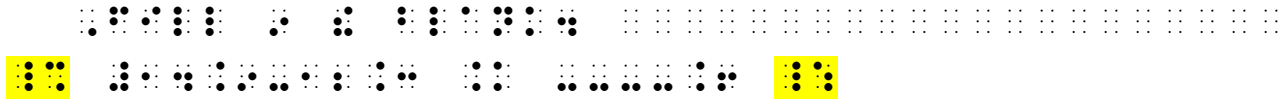
Note that 2x___, is not divided between lines even though there is a space before the long dash.

b. No space is left between an ellipsis or long dash and a related decimal point, monetary symbol, percent, or prime sign, even if a space is present in print.



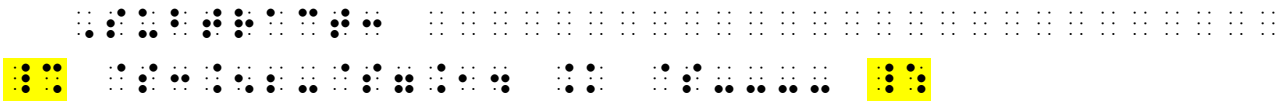
Example 1-41

Fill in the blank. 14.9 − 12.3 = ___.6



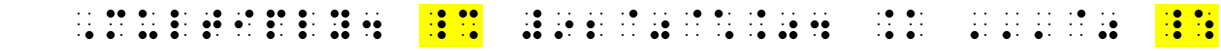
Example 1-42

Subtract: $\$3.52 - \$7.14 = \$$ ____



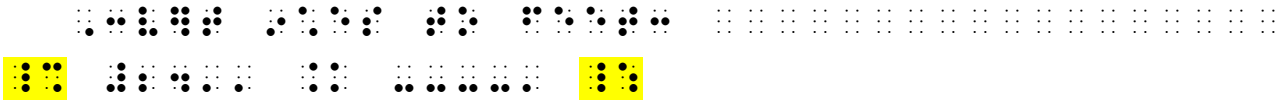
Example 1-43

Multiply. $92\% \times .04 = \ldots\ \%$



Example 1-44

Convert inches to feet: 24" = ___'



c. More rules regarding the spacing of an ellipsis or a long dash will be addressed in later lessons.

1.13 Other Omission Symbols

Omissions are frequently shown in other ways besides a blank space, a question mark, a dash, or an ellipsis. A shape, such as a square or a circle, may indicate an omission. If the omission sign used in print has no braille equivalent in the code, the sign may be represented by a devised braille symbol or by a drawing. Shape symbols, devised symbols, and drawings will be discussed in Lesson 11.

Format

1.14 Paragraph Margins for Narrative Portions of Text (3-1)

The Nemeth Code states that each paragraph is to begin in cell 3, with runovers in cell 1. Nemeth formats are applied throughout a Nemeth transcription, including the UEB portions of text. If the print copy uses blocked paragraphing style, the transcriber must follow Nemeth format rules and begin each new paragraph in cell 3. There is no blank line inserted between paragraphs unless another situation requires a blank line according to *Braille Formats* or according to other Nemeth formats (yet to be studied).

Instructions: Treat the marginal heading as a cell-5 heading.

PRACTICE 1F

Numerical Prefixes

Here are some examples of numeral prefixes: "Tetra-" means 4; "hexa-" means 6; "hepta-" means 7; "deca-" means 10; "dodeca-" means 12.

If a *dodecagon* is a 12-sided figure, a *dodecahedron* is a __-faced solid. A 10-faced solid is called a _____.

INTRODUCTION TO IDENTIFIERS

1.15 Terminology

When material is identified sequentially by number or letter, as in exercise material, it is referred to as *itemized material*. The number or letter is referred to as the *identifier*. Itemized subentries are referred to as *subdivisions*.

Labeled steps such as "Step 1" are not considered to be itemized material.

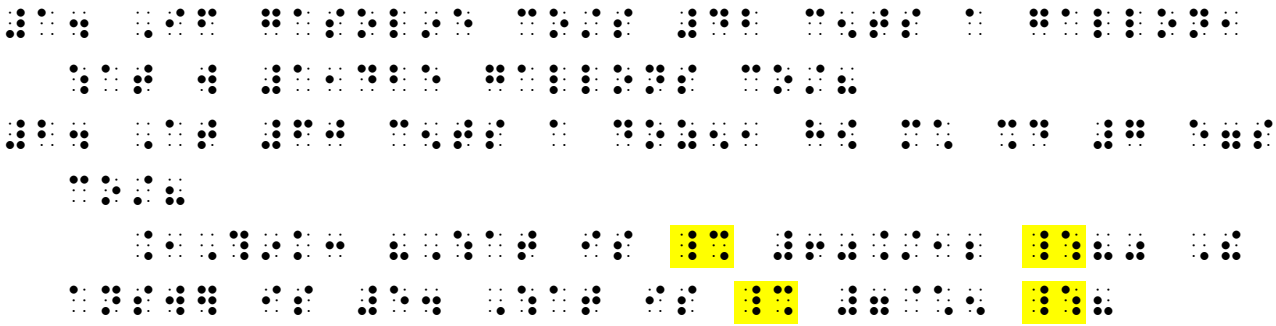
Format

1.16 Margins for Itemized Material with No Subdivisions (1-3)

The identifier begins in cell 1; runovers begin in cell 3. If the material contains more than one paragraph, each subparagraph begins in cell 5 with runovers in cell 3.

Example 1-45

1. If gasoline costs 42 cents a gallon, what will 1,425 gallons cost?
2. At 60 cents a dozen, how much should 7 eggs cost?
   Think: "What is 60 ÷ 12 ?" The answer is 5. What is 7 × 5 ?

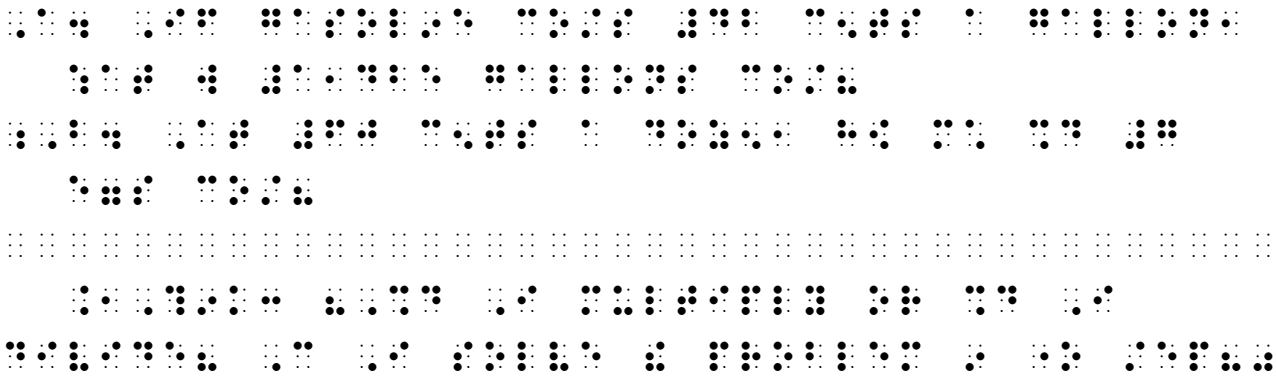


Use clues from the print layout as well as the information in the paragraph to determine if the new paragraph is indeed a continuation of the item or if it is separate material. Compare Example 1-45 above with the next example.

Example 1-46

A. If gasoline costs 42 cents a gallon, what will 1,425 gallons cost?
B. At 60 cents a dozen, how much should 7 eggs cost?

Think: "Should I multiply or should I divide? Can I solve the problem in one step?"



Notice that a blank line is left between itemized format and a 3-1 narrative paragraph.

Instructions: Format the first sentence as a narrative paragraph. Retain boldface for the paragraph heading. Insert a blank line between the narrative paragraph and the itemized material. Ignore typeface of the identifiers.

PRACTICE 1G

Refresher. These problems will test your skill with decimals.

1. First, addition: $42.6 + 37.23 + 3.215 =$

2. Now subtract: $87.6 - 51.35 =$

3. Try multiplication: $625.1 \times 2.7 =$

4. And now divide: $4.864 \div 3.2 =$

FORMAT SUMMARY #1

Here is a summary of the Nemeth formats encountered so far in this course.

General Principles When an item in a UEB transcription requires the use of Nemeth symbols, format rules of The Nemeth Braille Code for Mathematics and Science Notation are to be applied to the entire transcription including those portions transcribed in UEB. When a format is not specifically addressed in the Nemeth Code, the principles provided in *Braille Formats* should be followed.

Mathematical Expressions—Keep Together If a mathematical expression will fit on one braille line within the current margins, it must not be divided between lines. The entire expression is brought down to the next line.

Paragraph Margins for Narrative Portions of Text (3-1) In a document governed by Nemeth formatting, an unitemized paragraph in explanatory portions of text begins in cell 3 and all runovers begin in cell 1. Blocked paragraphing is not used in a Nemeth transcription. A blank line is inserted after a paragraph when itemized material follows.

Margins for Itemized Material with No Subdivisions (1-3) The identifier begins in cell 1; runovers begin in cell 3. If the material contains more than one paragraph, each subparagraph begins in cell 5 with runovers in cell 3. A blank line is inserted after itemized material when a (3-1) narrative paragraph follows.

Placement of Code Switch Indicators within Narrative Place the entire math expression and the two code switch indicators on the same braille line if they will fit within the current margins. If the entire string will not fit on one line, a switch indicator may stand alone on a line to allow the math expression to remain undivided. It is preferable to keep the switch indicators on the same braille page as the mathematical material to which they apply.

For further practice, see Appendix A—Reading Practice.

ANSWERS TO PRACTICE MATERIAL

PRACTICE 1A

⠠⠱⠁⠞ ⠙⠕⠑⠎ ⠸⠩ ⠼⠂⠖⠬⠲⠬⠂⠴⠴ ⠸⠱ ⠑⠟⠥⠁⠇⠦

⠠⠊⠋ ⠸⠩ ⠼⠂⠴⠈⠡⠂⠴⠈⠡⠂⠴ ⠨⠅ ⠼⠂⠠⠴⠴⠴ ⠸⠱ ⠱⠁⠞
⠙⠕⠑⠎ ⠸⠩ ⠼⠂⠴⠈⠡⠂⠴⠈⠡⠂⠴⠈⠡⠂⠴ ⠸⠱ ⠑⠟⠥⠁⠇⠦

⠠⠙⠕⠑⠎ ⠸⠩ ⠼⠢⠨⠌⠆ ⠸⠱ ⠐⠝ ⠁ ⠱⠕⠇⠑ ⠝⠥⠍⠃⠻⠦

⠸⠩ ⠈⠴ ⠸⠱ ⠐⠣⠦⠏⠻⠉⠢⠞⠴⠐⠜ ⠍⠂⠝⠎ ⠐⠏⠎ ⠏⠻
⠓⠥⠝⠙⠗⠫⠆ ⠸⠩ ⠈⠴⠴ ⠸⠱ ⠐⠣⠦⠏⠻ ⠍⠊⠇⠇⠑⠴⠐⠜ ⠍⠂⠝⠎
⠐⠏⠎ ⠏⠻ ⠹⠳⠎⠯⠲

PRACTICE 1B

⠠⠊⠋ ⠸⠩ ⠼⠲⠶⠤⠲⠂ ⠨⠂ ⠼⠂ ⠸⠱⠂ ⠙ ⠽ ⠎⠥⠏⠏⠕⠎⠑ ⠞
⠸⠩ ⠼⠲⠂⠤⠲⠶ ⠐⠅ ⠼⠂ ⠸⠱⠦ ⠠⠱⠽ ⠕⠗ ⠱⠽ ⠝⠦

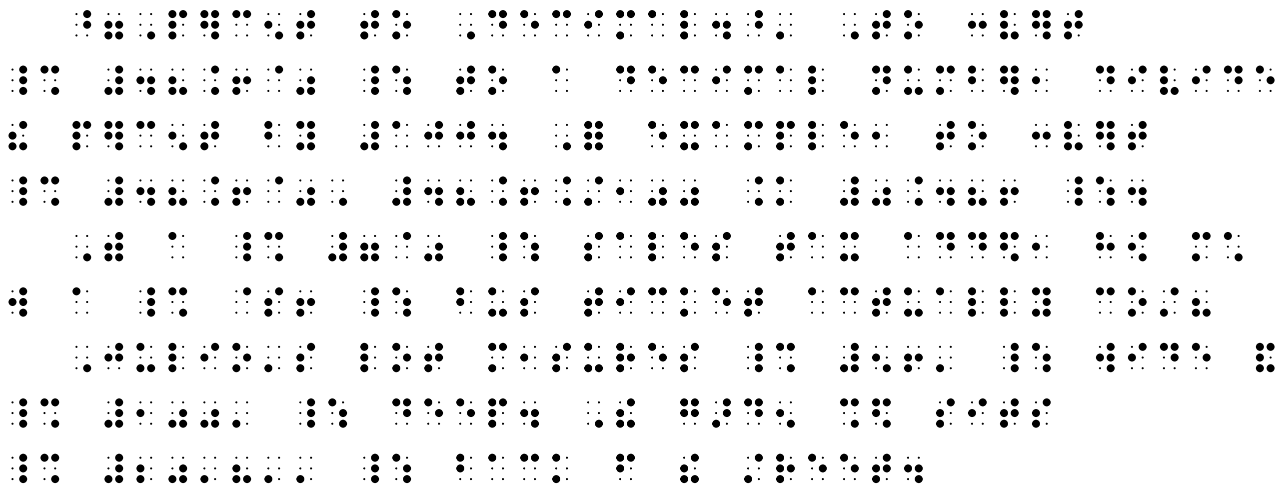
⠠⠊⠋ ⠸⠩ ⠼⠢⠬⠂⠴ ⠸⠱ ⠑⠟⠥⠁⠇⠎ ⠼⠁⠑⠂ ⠱⠁⠞ ⠙⠕⠑⠎
⠸⠩ ⠼⠂⠴⠬⠢ ⠸⠱ ⠑⠟⠥⠁⠇⠦ ⠠⠑⠭⠏⠇⠁⠔⠲

PRACTICE 1C

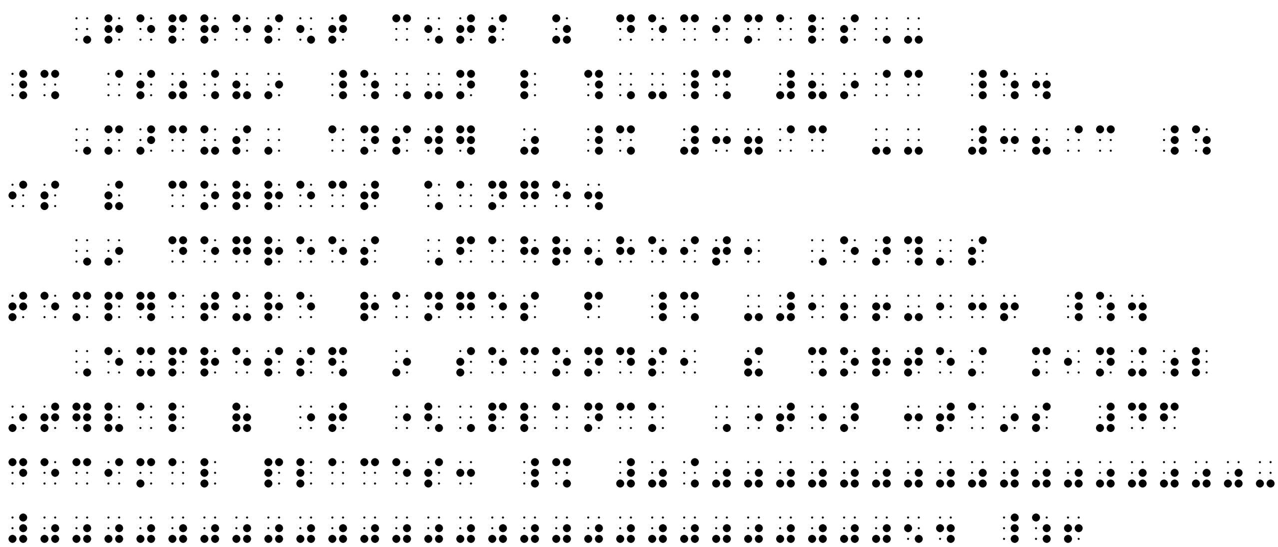
⠠⠓⠪ ⠸⠍ ⠎⠟⠥⠜⠑⠎ ⠉ ⠽ ⠋⠔⠙ ⠕⠝ ⠁⠝
⠸⠩ ⠼⠦⠈⠡⠦ ⠸⠱ ⠡⠑⠉⠅⠻⠃⠕⠜⠙⠦ ⠐⠣⠨⠂⠠⠓⠔⠞⠒ ⠠⠐⠮ ⠜⠑
⠍ ⠹⠁⠝ ⠼⠋⠑ ⠎⠟⠥⠜⠑⠎⠲⠐⠜ ⠠⠋⠌ ⠙⠑⠞⠻⠍⠔⠑ ⠓⠪ ⠸⠍
⠸⠩ ⠼⠂⠈⠡⠂ ⠸⠱ ⠎⠟⠥⠜⠑⠎⠂ ⠮⠝ ⠓⠪ ⠸⠍ ⠸⠩ ⠼⠆⠈⠡⠆ ⠸⠱
⠎⠟⠥⠜⠑⠎⠂ ⠯ ⠎ ⠕⠝⠂ ⠽ ⠉ ⠋⠔⠙⠲

⠸⠩ ⠼⠂⠆⠈⠡⠂⠂ ⠸⠱ ⠊⠎ ⠁⠇ ⠮ ⠎⠁⠍⠑ ⠵ ⠞⠺⠑⠇⠧⠑
⠑⠇⠑⠧⠢⠎⠂ ⠕⠗ ⠸⠩
⠼⠂⠂⠬⠂⠂⠬⠂⠂⠬⠂⠂⠬⠂⠂⠬⠂⠂⠬⠂⠂⠬⠂⠂⠬⠂⠂⠬⠂⠂⠬⠂⠂⠬⠂⠂ ⠸⠱⠲

PRACTICE 1D

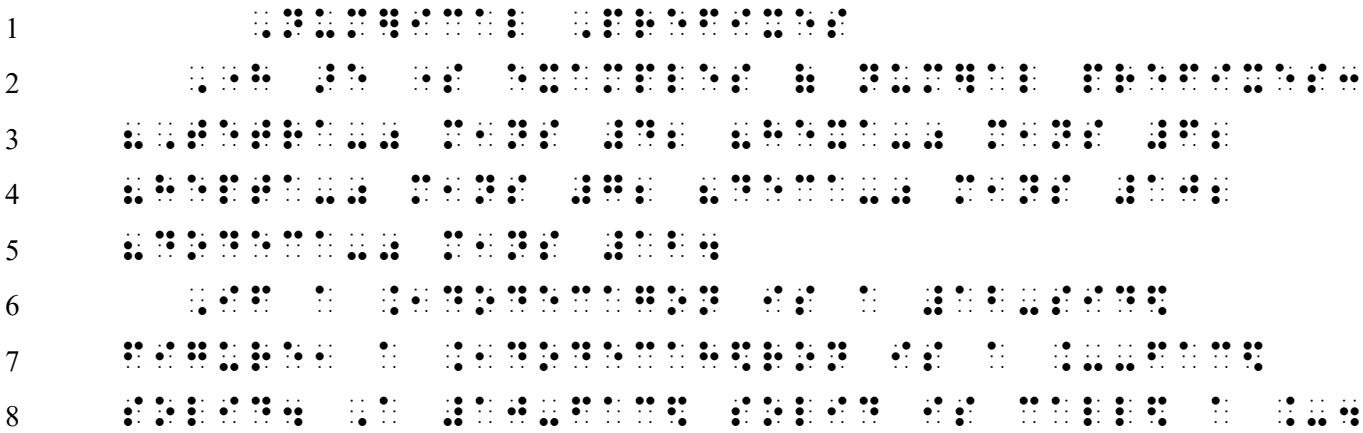


PRACTICE 1E



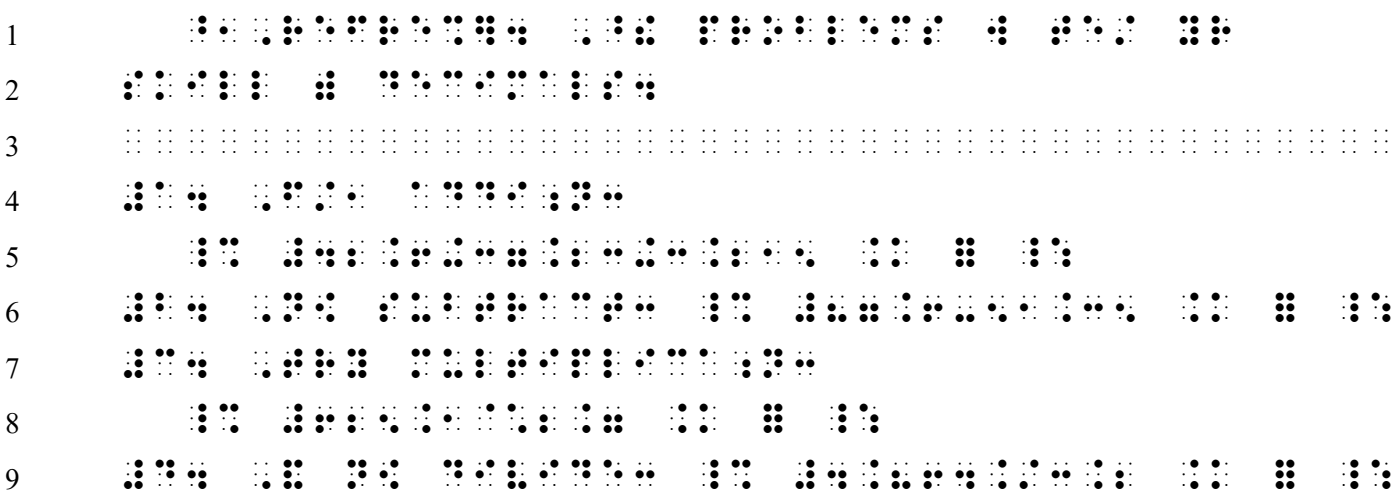
Line 2: Because the UEB dashes are unspaced (as in print), the code switch indicators may touch the dash.

PRACTICE 1F



PRACTICE 1F does not require any Nemeth switches. Rules of UEB are followed for the underscores.

PRACTICE 1G



HOW TO PREPARE THE EXERCISES

Each lesson ends with an exercise which will be turned in for grading. Prepare the exercise for each lesson in the following way:

(1) Use a 40-cell line and 25 lines per page.

(2) Include the print page number on <u>every</u> page. Use the page number shown at the bottom of each exercise page. Insert page change indicators as needed. The upper-cell numerals of UEB are used for page number designations.

(3) Include a braille page number on <u>every</u> page, starting each lesson exercise with braille page number 1. The upper-cell numerals of UEB are used for page number designations.

(4) Instructions for the transcriber may precede the exercise material itself. Do not transcribe those instructions.

(5) Transcribe the EXERCISE heading on line 1. Center that heading.

(6) Do not use a running head. Do not divide words.

(7) Follow general transcribing rules regarding use of the braille line—that is, use as much of the line as possible, unless a specific linage rule applies.

(8) Itemized problems may begin at the bottom of a braille page and continue on the next braille page. Do not force a numbered/lettered problem to begin on a new page unless other format rules apply. An identifier should not stand alone at the bottom of a braille page.

(9) Include your name after a blank line on the last page of the exercise.

(10) If you send electronic files, submit your first file as a brf file. Your grader will then let you know what file type is preferred. Include your name and date in the filename.

Example: LastnameInitials Ex# Date
HobartEW Ex1 3-25-22

The Study Tips on pages viii-ix (Front Matter) offer ways to get the most out of the lesson exercises.

Instructions: Prepare Exercise 1 according to the guidelines given on page 1-29. Note that this exercise includes symbols and rules from the Preliminary Lesson. *Formatting Guidance:* Center the heading EXERCISE 1 on line 1. Place the opening Nemeth Code indicator on line 3, in cell 1. Begin the list on line 4, following *simple vertical list* format guidelines found in *Braille Formats*. For the items arranged in columns, arrange them as printed, according to *lists in columns* guidelines found in *Braille Formats*. Place the Nemeth Code terminator in cell 1 on the line following the list. The blank line will follow. Treat HOMEWORK PROBLEMS as a centered heading.

EXERCISE 1

$5.3 \times 71 = 53 \times 7.1 = 376.3$

$14 \times .5 = 14 \div 2$

$.3 > .2 > -.2 > -.3$

$957 \div 3 - 14 = 319 - 14 = 305$

$46.0 < 460 > 4.6$

$18 - 6 - 6 < 18 + 6 - 6$

$94 \cdot 3 = 90 \cdot 3 + 4 \cdot 3 = 270 + 12 = 282$

$+5, +3, +1, 0, -1, -3, -5$

$\$19{,}343{,}541{,}768{,}824$

$9 - 26 =$	$-4 - 15 =$
$50 \div 10 =$	$6 \div 3 =$
$1.8 \div 2 =$	$-30 \div 6 =$
$\$7.98 \cdot 4.3\% =$	$\$99 - 40\% =$

£530 + £218 = £748, £1 = $1.31

£35 × 1.435 = $50.225 = $50.23

49¢ + 49¢ < $1.00

$6 : 4.5 :: 4 : 3$

$13'11'' < 180''$

$12'10'' \div 2 = 6'5''$

$? + 64 + 58 + 97 = 265$

$-45 \div 9 = -5$

$7.25'' + 3.5'' + 1.5'' = 12.25'' > 1'$

$4:3 = 4 * 2:3 * 2 = 8:6$

$36{,}000{,}000 = 3.6 \times$ -?-

$1435 \times 6 = 86??$

$\$9.86 - \$.07 + \$468.57 = \$478.36$

$41¢ - 32¢ = 9¢ = \$\ldots$

$.01 - .25 < -.25 - .01$

$55\% + 62\% =$ ___%

$1.141222 \ldots 2 \ldots$

$35' + 49' > 80'$

$8 : 15 :: 24 :$ _?_

$51{,}858 \div ? = 402$

.769	−.246	79,086
99.9%	2’11’’	83¢
548,712	365÷12	68.94
−6.87	0	$-4 > -5$
97.6’’	+.54	$0.84
72‰	+33.8	−45.67

HOMEWORK PROBLEMS

1. A box measures 2'4'' in height. Express the height in inches only.
2. **Rounding:** Round 79¢ to the nearest dollar. Round 5.16 to the nearest hundredth. Round 3,794 to the nearest ten.
3. The 2nd decimal place represents 100ths. Does .014 indicate 14 hundredths or 1.4 hundredths?
4. The ratio $12 : 15$ is the same as $12 \div 3 : 15 \div 3 = 4 : 5$ or "4 out of 5".
   Similarly, $4 : 5$ is equivalent to $4 \times 20 : 5 \times 20 = 80 : 100$ or "80 out of 100" which—expressed as a percent—is ___%.
5. An *integer* is a positive or negative whole number, or zero. Is −3 an integer? Is 0?
6. As of August 2016, the world population estimate was 7.4 billion humans. The "worldometer" estimated 7 454 043 645 at noon on September 30th.

Mental Multiplication: To solve the problem 67×46, think of 67 as $60 + 7$ and think of 46 as $40 + 6$. Now simply multiply each number by the other, $60 \cdot 40$, $60 \cdot 6$, $7 \cdot 40$, $7 \cdot 6$, and then add the products: $2400 + 360 + 280 + 42 = 3082$.

A. There <u>must</u> be a better way to write the number 0.00111122223333444455556666777788889999!

B. One DVD costs 10.52 euro. How much will five DVDs cost? €$10.52 \times 5 =$ €52.60

C. In Exercise 9.7, each expression in your answer must include <u>at least</u> three of the four basic operations: $+ \; - \; \times \; \div$

D. The sample size, 2.0791812460, rounds to 2.

E. On a number line, show that -4 is the opposite of $+4$.

F. Never divide 0 by 0.

G. List the numbers from .01-.25 on the whiteboard.

H. Is $6 \cdot 7 \cdot 8$ the same as $8 \cdot 7 \cdot 6$? What rule supports your answer?

I. Todd just celebrated his 18th birthday. In what year was he born? $2022 - 18 = ?$

J. **True/False** $14 - 2 < 1$, $15 > 9$, $6 + 3 < 7$, $-5 > 3$