

Errata and Addenda to  
AN INTRODUCTION TO BRAILLE MATHEMATICS

November 10, 2014

References to the *Code of Braille Textbook Formats and Techniques* should be changed throughout to "the most recent revision of *Braille Formats: Principles of Print to Braille Transcription*".

**LESSON 1**

p. 1, **§2.b. Partially Technical Texts:** Delete the last two sentences (starting with the word "However") and replace them with the following:

However, when the replacement of symbols by words is not practical or possible, or when the mathematical display is used for solving equations or performing computations, the symbols and rules of the Nemeth code must be used and identified according to the provisions of the most recent revision of *Braille Formats: Principles of Print to Braille Transcription*.

p. 1, §2.c: Replace this section with the following:

**§2.c. Technical Texts:** A technical text is a work in the field of mathematics, statistics, physics, or chemistry. Such texts must be transcribed entirely according to the rules of the Nemeth code. (Chemistry texts must follow the rules of the *Braille Code for Chemical Notation*, 1997.) The symbols and rules of the Nemeth code must also be used in works in other fields which make substantial use of mathematical or scientific notation. Since several revisions of the Nemeth are in use, a transcriber's note stating that the text is transcribed in Nemeth code and giving the year the code was adopted must be included in the transcriber-generated pages of each volume according to the provisions of the most recent revision of *Braille Formats: Principles of Print to Braille Transcription*. The codebook title, year of revision, and any further updates should be included in the note.

p. 8, §12: Change "41" to "40."

p. 9, HOMEWORK directions:

step (2): Change "41" to "40."

Add this directive:

(6) Do not divide words at the end of braille lines.

## LESSON 2

p. 15, §19: Add the euro symbol to the list of monetary signs:

Euro € ⠠⠠⠠

p. 16, §20: The prime sign ' should be added in the space between the section heading and the simbraille symbol.

p. 17, §22: In the second sentence, delete the words "a minimum of."

p. 17, §23.a, Example 3: In the braille, add dot 3 to "and". ⠠⠠

p. 21, §28: Delete the second sentence and replace it with the following:

One line must be left blank above such instructions unless they follow a cell-5 heading. Follow the provisions of the most recent revision of <i>Braille Formats: Principles of Print to Braille Transcription</i> for spacing following a page-change line.
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### EXERCISE 2 (pp.23+)

#45: In the print, the dot between the word "or" and the numeral "9" should be moved closer to the "9." It is a decimal point.





p. 59, §47.a, i: Replace the text with the following:

A line must be left blank before the beginning and after the end of the entire labeled statement or formal proof.

p. 59, §47.a, iii: Delete the present text and substitute the following:

**iii.** If the labeled statement or formal proof contains auxiliary captions such as Given, Prove, or Conclusion, etc., such captions must begin in cell 3 and their runovers must begin in cell 1. A line must not be skipped above a caption. A caption should be capitalized or italicized in accordance with the print text. If the caption is in boldface type, it should be entirely capitalized in braille.

**EXERCISE 4** (pp.62+)

#s 1, 2, 3, 4, 5, 6, 7 and 10: There should be no space between the last two letters in each of these examples.

#s 17, 18, 19 and 20: There is insufficient contrast between regular type digits and boldface type digits. In the examples below the boldface type digits are clear.

17. 893,**741**

18. **999,999**

19. 522,**489**

20. **300+300 = 600**

**LESSON 5**

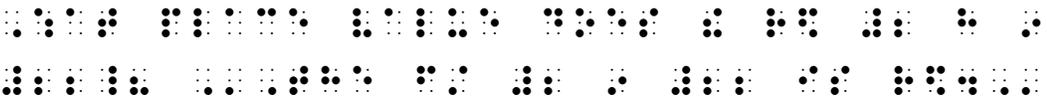
*SIMULATED BRAILLE EXAMPLES USE A SHORTENED LINE*

p. 70, §51, Example 10: Add the following note:

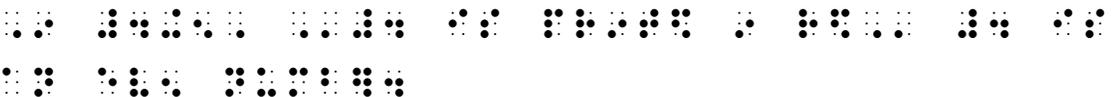
*Note: The numerals are in bold type.*

p. 77, §57.c

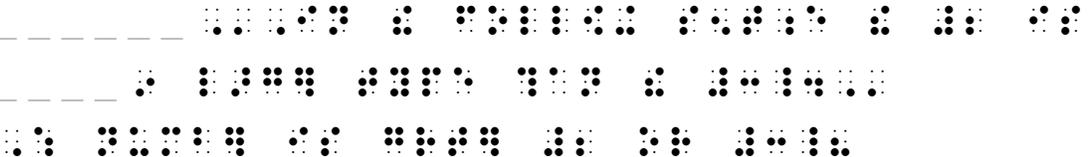
Example 1: In print, the digit "2" following the word "red" should be in black type. The first "2" in the numeral "22" should be in red type. The braille should be replaced with the following:

(1) 

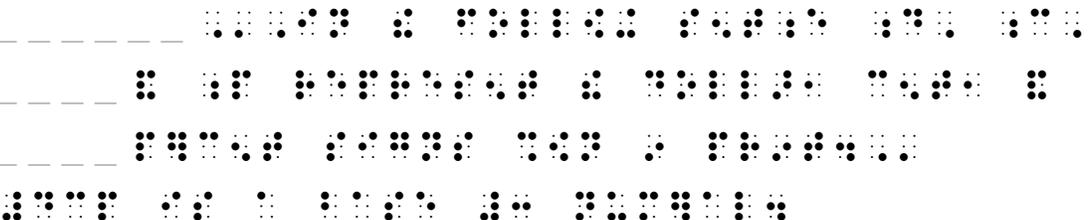
Example 2: Replace the braille with the following:

(2) 

Example 4: Replace the braille with the following.

(4) 

p. 79, §58.b, Example 2: There should be no space between the print characters \$¢%. This transcriber's note is best placed *before* the material it describes. Replace the braille with the following:

(2) 

## LESSON 6

p. 84, §60.b: Change the second and third sentences in the first paragraph to read as follows:

The numeric subscript may contain a segmenting comma or a decimal point. The letter may carry one or more primes or a superscript, may be taken from any alphabet in any type form, and may be part of a two-letter chemical abbreviation.

p. 88, §62.b, Example 3: The *apostrophe-s* applies to the entire expression. In the print example, each apostrophe should be moved up to a level equivalent to the apostrophes shown in Example 4.

p. 88, §62.c, Example 3: In the simbraille the two commas should be mathematical commas (dot 6).

*(NOTE: The print is enlarged to show detail in the remaining examples for this lesson. All characters are meant to be in regular type, and all letter xs are lower-case.)*

p. 92, §63.d, Example 2: Change the print to:  $10^{-23} \circ F$  *Simbraille is correct.*

p. 96, §68.b

Example 4: Change the print to:  $A_{1_{k+1}}^{r_{k+1}}$  *Simbraille is correct.*

Example 5: Change the print to:  ${}^n a X$  *Simbraille is correct.*

Example 6: Change the print to:  $a^n X$  *Simbraille is correct.*

p. 96, §68.c, Example 1: Change the print to:  $X^{n r_j}$  *Simbraille is correct.*

p. 96, §68.d, Example 1: Change the print to:  $X^{y r^n}$  *Simbraille is correct.*

p. 96, §68.e, Example 1: Change the print to:  $X^{y z^n}$  *Simbraille is correct.*

p. 97, §68.g, Example 1: Change the print to:  $X_{y r^n}$  *Simbraille is correct.*

p. 97, §68.h, Example 1: Change the print to:  $X_{y r^n}$  *Simbraille is correct.*

p. 97, §68.i, Example 1: Change the print to:  $X_{y r^n}$  *Simbraille is correct.*

### **EXERCISE 6** (pp.101+)

#16: Close up the spacing in the superscript. The superscript should be printed as follows:

$$25x^2-10x-1$$

#17: Close up the spacing between the  $e^2$  and the opening parenthesis.

#40: The subscript "t = 1" to the right bracket is not meant to be boldface.

#41: Replace the expression with the following:  $x^{2+4+6+ \dots +n}$

#43: Replace the expression with the following:  $R_{s_1, s_2, \dots}$

#61: Replace the print with the following: 61.  $a'_1, a'_2, \dots, a'_n$  are inverses of  $\underline{?}$ .

#62: There should be no space between the prime sign and the opening parenthesis in the left side of the equation.

#66: Replace the expression with the following:  $e^{x_1+x_2+x_3+ \dots +x_n}$ .

#67: The zero should be in regular type instead of boldface type.

**LESSON 7**

p. 105, §72.a, Example 8: The braille example is incorrect and should be replaced with the following:

(8) 
$$\frac{2}{3} \cdot \frac{4}{5} = \frac{8}{15}$$

p. 106, §72.a, Example 20: Move the double primes to the right in three places (primes are to the complete fractions, not the numerator). *Simbraille is correct.*

p. 109, §75, Example 10: In the print the double primes should be moved to right in both places. *Simbraille is correct.*

p. 115, §82: In the first print line and in the listing, delete the tiny vinculum from the radical sign. Change the third sentence to read as follows:

The expression following the radical sign is called the *radicand*.

p. 117, §83.b, Example 13: Delete the vinculum from each of the two print radical signs.

p. 120, §88, Example 3: Delete the vinculum from the print radical sign.

p. 121, §89.b, Example 3: Replace the simbraille with the following:

(3) 
$$\sqrt{\frac{2}{3}} \cdot \sqrt{\frac{4}{5}} = \sqrt{\frac{8}{15}}$$

$$\frac{\sqrt{2}}{\sqrt{3}} \cdot \frac{\sqrt{4}}{\sqrt{5}} = \frac{\sqrt{8}}{\sqrt{15}}$$

$$\frac{\sqrt{2}}{\sqrt{3}} \cdot \frac{2}{\sqrt{5}} = \frac{2\sqrt{2}}{\sqrt{15}}$$

p. 122, §89.c: Replace the text paragraph with the following:

**c.** In itemized text without subdivisions, a displayed expression must begin in cell 5 and its runovers must begin in cell 7.





## LESSON 9

p. 156, §106: The second print arrow in the list (pointing right, contracted form) should have straight barbs, not curved barbs.

p. 159, §107.m: Add the word "given" to the title as follows: **Vertical Bar (such that, given):**

p. 160, §108.b: Change the label "Oblique Stroke" to "Oblique Bar." Change the narrative to read as follows:

As shown in **c** through **k** below, a single bar (horizontal or oblique) or an equals sign may appear as part of a sign of comparison compounded vertically. The horizontal or oblique bar is often substituted for the equals sign in compounded signs of comparison.

*Simbraille is correct.*

p. 163, §108.g, Example 2: Replace the print with the following: {A}  $\bar{\wedge}$  K *Simbraille is correct.*

## LESSON 10

p. 169, §113: The second paragraph should begin as follows:

Except for the symbol representing an equilateral triangle, when the shape is a *regular polygon* ...

p. 170, §113: Add the keystroke indicator to the list of shapes.

**Keystroke Indicator**      ⠠⠠⠠  
(Limited to use with calculator and computer related text.)

p. 179, §121.a, Example 4: The print shows a rhombus but it should be a parallelogram. Change the drawing to a parallelogram. *Simbraille is correct.*

p. 179, §121.b, Example 3: The triangles shown are isosceles triangles but should be right triangles. *Simbraille is correct.*

p. 181, §122.a, Example 3: Change the print to read: ⠠⠠⠠ O denotes "circle O." *Simbraille is correct.*

p. 181, §122.b, Example 1: Change the description to read as follows:

*(the symbol for the "square" is used as a sign of omission representing a comparison sign.)*

### EXERCISE 10 (pp.182+)

#7 and #8 (a): The 4-sided drawings are of rhombuses. Change both drawings to parallelograms.

#16: There should be no space between the superscript circle and the opening parenthesis.

#25: The drawn 4-sided shapes should be changed to parallelograms.

#28: Change the drawn subscript rhombus to a parallelogram. The letters identifying the shapes should be on the same level (subscript) as the shapes themselves.

#32: Move the second line of print to follow the first sentence on the same line. This is not a new paragraph.

## LESSON 11

p. 188: Remove examples (20)-(25).

p. 189, §125.b, Example 30: The subscript  $\alpha$  to the capital A should be moved upward to a position where it straddles the base of the print line.  $A_\alpha$

p. 190, §125.c, Example 12: Add the following note:

*The prime sign is printed to apply to x-bar, not just the x.*

p. 191: **§125.c. Contracted Form of Modified Expressions:** now has two subsections i. and ii. The first subsection, i., is what is currently printed. Insert the new subsection ii. and six examples as follows:

**ii.** When a single digit or a single letter (in any type form or any alphabet) is modified only by a single horizontal bar directly under it, the directly-under indicator followed by the symbol for the bar must be placed immediately after the digit or letter modified, and the five-step rule must not be used. In all other cases, the five-step rule in *a* above must be applied.

- (1)  $\underline{x}$       ⠠⠨⠠⠭
- (2)  $\underline{3}$       ⠠⠨⠠⠼
- (3)  $\underline{x+y}$       ⠠⠨⠠⠭⠠⠨⠠⠸⠠⠨⠠⠽
- (4)  $A(\underline{sn})$       ⠠⠠⠨⠠⠸⠠⠨⠠⠸⠠⠨⠠⠸⠠⠨⠠⠸
- (5)  $5\underline{7}9$       ⠠⠠⠨⠠⠼⠠⠨⠠⠼⠠⠨⠠⠽
- (6)  $\underline{R}^+$       ⠠⠨⠠⠷⠠⠨⠠⠸

p. 192, §126.b, Example 1: In the print example, the upper horizontal bar should be extended at both ends to cover the opening and the closing parentheses. *Simbraille is correct.*

p. 193, §127, Example 10: In the print example, the "a" of the modifier should be shown in regular type, not in italic type. It should be made to look like the "a" shown in Example 12 of this section. *Simbraille is correct.*

p. 194, §128.a, Examples 13 and 14: The contracted form of the directly-under horizontal bar should be applied to these two examples. Replace the simbraille with the following.

- (13) ⠠⠨⠠⠸⠠⠨⠠⠸⠠⠨⠠⠸
- (14) ⠠⠨⠠⠸⠠⠨⠠⠸



**EXERCISE 11** (pp.204+)

#9: The two arcs should be centered and extended to completely cover "AB" and "CD."

#14: Shorten the bars under the "C" and "R" so they do not include the asterisks.

#23: Shorten the bar over the "6" so that it does not include the apostrophe.

#27: Replace the second expression with the following:

$$\sum_{\substack{i \ j \\ i \neq j}} \sum$$

#28: The bar is over only the "r" in  $r_{ij}$ . The last "**θ**" is in boldface type but the caret above it and the subscript "i" should be in regular type.

#33: The two carets should be moved downward closer to the two Greek letters they modify.

#39: The half-barb arrow should be extended so that it covers  $P_1P_2$  entirely.

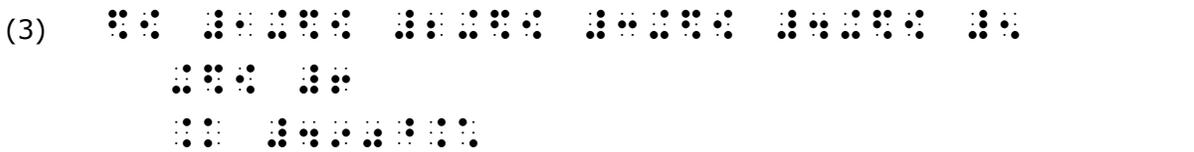
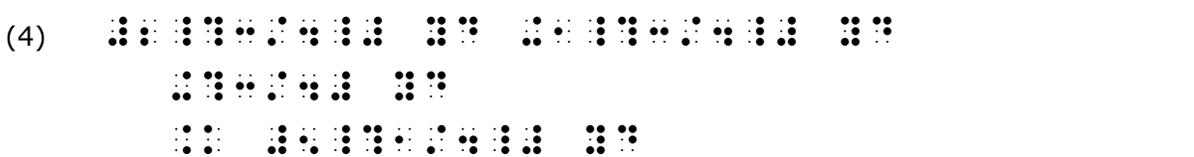
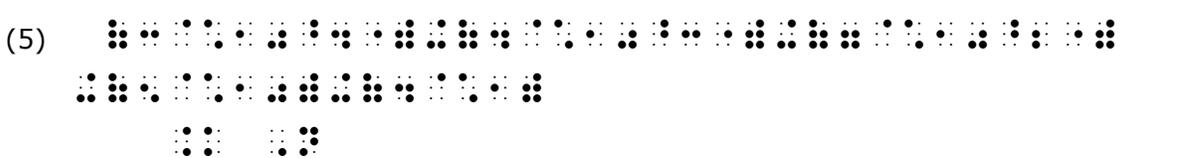
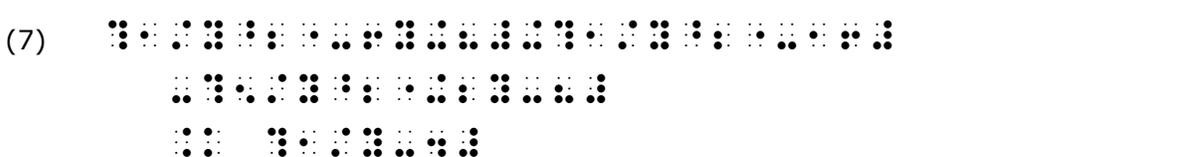
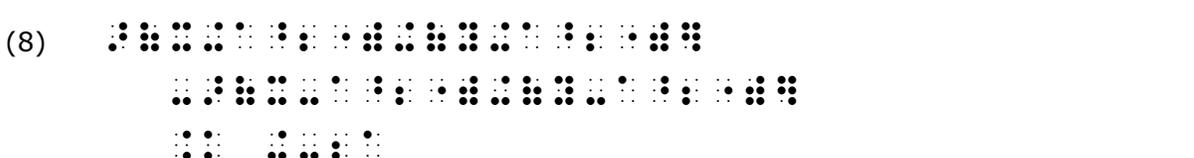
#40: The half barb arrow should be extended so that it covers  $OP_3$  entirely.





pp. 236-240: Many of the runover sites are in need of correction in these examples, shown below.

pp. 236-237, §152.a.iii: The braille must show an additional runover immediately preceding the equals symbol in several examples. Replace the simbraille with the following:

- (3) 
- (4) 
- (5) 
- (7) 
- (8) 

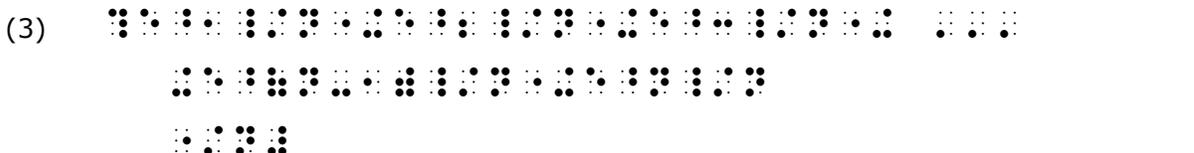
Example 9: In the print the alpha should be subscript to the integral; beta should be superscript to the integral. *Simbraille is correct.*

p. 237, §152.a.iv:

Add a second and third sentence:

Avoid division within a numerator or within a denominator. If the numerator or denominator requires a division, division at the fraction line must also be applied.

Example 3: The braille must show an additional runover immediately preceding the baseline indicator followed by the fraction line symbol. Replace the braille with the following:

- (3) 

p. 238, §152.a.v: The braille must show an additional runover in several of these examples:

Example 1: In addition to the runover shown, divide the expression immediately preceding the division symbol. Replace the braille with the following:

(1) 
$$\frac{2x^2 + 3x + 1}{x^2 + 2x + 1} \div \frac{2x + 1}{x + 1} = \frac{2x^2 + 3x + 1}{x^2 + 2x + 1} \cdot \frac{x + 1}{2x + 1}$$

Example 2: In addition to the runover shown, divide the expression immediately preceding the second opening parenthesis and also immediately preceding the equals symbol. Replace the braille with the following:

(2) 
$$\frac{2x^2 + 3x + 1}{x^2 + 2x + 1} \div \left( \frac{2x + 1}{x + 1} \right) = \frac{2x^2 + 3x + 1}{x^2 + 2x + 1} \cdot \frac{x + 1}{2x + 1}$$

Example 3: In addition to the runover shown, divide the expression immediately preceding the equals symbol. Replace the braille with the following:

(3) 
$$\frac{2x^2 + 3x + 1}{x^2 + 2x + 1} \div \frac{2x + 1}{x + 1} = \frac{2x^2 + 3x + 1}{x^2 + 2x + 1} \cdot \frac{x + 1}{2x + 1}$$

Example 5: In addition to the runover shown, divide the expression immediately preceding the baseline indicator followed by the fraction line symbol. Replace the braille with the following:

(5) 
$$\frac{2x^2 + 3x + 1}{x^2 + 2x + 1} \div \frac{2x + 1}{x + 1} = \frac{2x^2 + 3x + 1}{x^2 + 2x + 1} \cdot \frac{x + 1}{2x + 1}$$

Example 7: Delete example (7).

p. 239, §152.a.vi, Example 3: The braille must not be runover in the place shown. The logical unit priority places brackets higher than the bracketed expression's superscript and subscript. Keep the bracketed expression together. Replace the braille with the following:

(3) 
$$\frac{2x^2 + 3x + 1}{x^2 + 2x + 1} \div \left( \frac{2x + 1}{x + 1} \right) = \frac{2x^2 + 3x + 1}{x^2 + 2x + 1} \cdot \frac{x + 1}{2x + 1}$$

p. 239, §152.a.vii:

Replace the narrative with the following:

**vii.** When multiple factors of a math statement are each enclosed within grouping signs, division should be made between factors and not within a factor.

Example 1: The math is incorrect.  $81x^4y^4$  should be  $81x^8y^4$

In addition to the runover shown, divide the expression immediately preceding the equals symbol. Replace the braille with the following:

(1) 
$$\frac{81x^4y^4}{81x^8y^4} = \frac{81x^4y^4}{81x^8y^4}$$

p. 239, §152.a.viii, Example 1: Replace the braille with the following:

(1) 
$$\frac{81x^4y^4}{81x^8y^4} = \frac{81x^4y^4}{81x^8y^4}$$

**EXERCISE 13** (pp.241+)

#28 and #29: Each arrow infinity modifying "lim" should be centered on the "n" as follows:

$$n \rightarrow \infty$$

#40: The mathematical expression (second print line) should be indented more to the right to indicate it is displayed to the itemized material.

#47: The mathematical expression (second print line) should be moved up to follow immediately after the first line of print (on the same line). This is not a displayed expression; it is a continuation of the sentence; the sentence ends with a question mark.











## **LESSON 16**

LESSON 16 has been reproduced incorporating all errata/addenda posted since the date of this packet. However, DO NOT DISCARD YOUR ORIGINAL COPY OF LESSON 16 for the following reasons:

- The print examples may be clearer in your original book.
- The HOMEWORK exercise is not reprinted. Use the original but note the changes listed in the new document.

If you have not received the updated copy of LESSON 16 please contact your teacher or:

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