

PRELIMINARY LESSON

- INTRODUCTION TO NUMERALS AND THE NUMERIC INDICATOR
- THE MATHEMATICAL COMMA AND DECIMAL POINT
- INTRODUCTION TO SIGNS OF OPERATION
- INTRODUCTION TO SIGNS OF COMPARISON
- MONETARY, PERCENT, AND PRIME SIGNS
- EUROPEAN SYMBOLS

Format

- General Principles

Answers to Practice Material

LESSON PREVIEW

This lesson introduces the student to the design of the course as well as some basic Nemeth symbols. *Complete this lesson before studying Lesson 1.* Practice exercises are self scored, and a short reading exercise is offered in Appendix A.

P1 Philosophy

The Nemeth braille code is especially designed for the representation and transcription of mathematical notation encountered in educational materials on the subjects of mathematics and the sciences. Its purpose is to convey, as accurately as possible, a clear conception of the printed text to the braille reader. Using braille indicators in conjunction with the 63 braille characters, this code is capable of providing equivalent symbols for the hundreds of mathematical and scientific print signs now in use and yet to be devised. The one-to-one correspondence between braille and print symbols makes it possible to produce an accurate transference from print to braille or from braille to print.

P2 Literary vs. Technical Texts

P2.1 Literary Texts. Literary works which use only occasional mathematical notation are transcribed in accordance with the rules of Unified English Braille ("UEB"), using mathematical symbols and rules given in the most recent edition of *The Rules of Unified English Braille* and *Unified English Braille Guidelines for Technical Material*.

P2.2 Technical Texts. When mathematical notation is encountered in educational materials or in technical documents in the fields of mathematics, statistics, physics, or chemistry, the rules of the Nemeth Code are followed. Non mathematical narrative is transcribed using the symbols and

Example P-6

987 654 321



A particular book may show large numbers in this manner rather than using commas to delineate place value. Check for context clues to be sure this represents 987 million 654 thousand 321 and not three separate 3-digit numbers.

THE PRACTICE MATERIAL

By transcribing the practice material you will gain firsthand experience with the topics presented in each lesson and you will be better prepared to transcribe the exercise for grading. Many of the points discussed in the lesson are illustrated only in the practice material. The Study Tips on pages viii-ix offer more ways to get the most out of these activities.

Check your work by comparing your transcription to the simulated braille located at the end of each lesson.

PRACTICE A


Instructions: Transcribe the following numbers using the lower-cell digits of the Nemeth Code. Begin in cell 1. Leave one blank cell between each number. Begin a new line in cell 1 when you do not have room on a line to complete a number. None of these numbers are partitioned into segments—each is a new number. Check your accuracy by comparing your transcription to the practice answers at the end of this lesson.

123 456 7890 295 431 61 507 3196 15837 808 46 282 2802
61640 74 9559 404 75134 13579

THE MATHEMATICAL COMMA AND DECIMAL POINT

P5 Mathematical Comma

The mathematical comma is used for a comma occurring in a long numeral. It is also used for a comma which follows a numeral or other mathematical expression.

 Mathematical Comma ,
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Although numbers with commas can be transcribed in UEB, for illustrative purposes, please assume mathematical context in the isolated examples presented below.

Example P-7

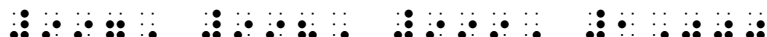
987,654,321



This represents the number 987 million, 654 thousand, 321.

Example P-8


997, 998, 999, 1,000



These are four individual numbers, separated by a comma and a space. The last number contains an internal comma.

Symbol Recognition: See Section P14 for a discussion of the European decimal point.

P6 Mathematical Decimal Point

 Mathematical Decimal Point .
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P6.1 **Spacing of the Decimal Point.** In a numeral, no space is left between the decimal point and the digits to which it applies.

Example P-9

3.14159



P6.2 **The Decimal Point and the Numeric Indicator.** The numeric indicator is required before a decimal point that precedes a numeral when the decimal point follows a space or begins a braille line.

INTRODUCTION TO SIGNS OF OPERATION

P8 Signs of Operation

The most common signs of operation are listed below.

⠠⠨	Plus	+
⠠⠤	Minus	-
⠠⠠⠨	Multiplication Asterisk	*
⠠⠠⠤	Multiplication Cross	×
⠠⠨	Multiplication Dot	·
⠠⠠⠤	Division (divided by)	÷

Since the minus sign and the hyphen are represented by the same symbol in braille, the reader determines the meaning of the symbols from context.

Symbol Recognition: See Section [P13](#) for a discussion of the European comma.

- P8.1 **Spacing with Signs of Operation.** Unless otherwise stated, a sign of operation is unspaced from its related mathematical terms regardless of the print spacing. A numeric indicator is generally not needed within an unspaced expression. However, because the asterisk symbol includes dots 3456, a numeric indicator is required for the numeral following the asterisk.

Example P-11

2 + 5 613 - 16 19 × 8 5 · 3 98 * 7 40 ÷ 5

⠠⠠⠨⠠⠨ ⠠⠠⠠⠠⠤⠠⠠⠤ ⠠⠠⠠⠠⠤⠠⠠⠠⠠⠤ ⠠⠠⠠⠠⠤⠠⠠⠠⠠⠤ ⠠⠠⠠⠠⠤⠠⠠⠠⠠⠤⠠⠠⠠⠠⠤ ⠠⠠⠠⠠⠤⠠⠠⠠⠠⠤⠠⠠⠠⠠⠤

- P8.2 **Positive and Negative Numbers.** Numerals preceded by a plus sign or a minus sign must be transcribed in Nemeth. A numeral preceded by a minus sign requires a numeric indicator when the minus sign follows a space or begins a braille line. A numeral preceded by a plus sign does not require a numeric indicator even when the plus sign follows a space or begins a braille line.

Example P-12

-3 -2 -1 0 +1 +2 +3

⠠⠠⠠⠠⠤⠠⠠⠠⠠⠤ ⠠⠠⠠⠠⠤⠠⠠⠠⠠⠤ ⠠⠠⠠⠠⠤⠠⠠⠠⠠⠤ ⠠⠠⠠⠠⠤ ⠠⠠⠠⠠⠤ ⠠⠠⠠⠠⠤ ⠠⠠⠠⠠⠤


Note: These are seven separate numerals.

- a. **Decimals.** The numeric indicator is required between a minus sign and a decimal point that precedes a numeral when the minus sign follows a space or begins a braille line. A numeral

EUROPEAN SYMBOLS

P13 The European Comma

The print symbol for the European comma is different from the comma used in the United States. The braille symbol follows print.

 European Mathematical Comma .

Example P-21


27,000 = 27.000 = 27 000



The symbol transcribed for each comma follows print. Dot 6 represents the American comma; dots 46 represent the European comma.

P14 The European Decimal Point

The print symbol for the European decimal point is different from the decimal used in the United States. The braille symbol follows print.

 European Decimal Point ,

Example P-22

\$19.99 < £19,99



The symbol transcribed for each decimal point follows print: Dots 46 represent the American decimal point; dot 6 represents the European decimal point.

<i>For further practice, see Appendix A—Reading Practice.</i>
