

BRAILLE BOOTCAMP

Braille Bootcamp
Participant Manual

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Agenda

Time	Item
9:00 AM	Welcome and Introduction to Braille
9:15-10:00 AM	Rotation 1: Braille Alphabet
10:00-10:15 AM	Stretch and Quiz 1
10:15-11:00 AM	Rotation 2: Braille Numbers
11:00-11:15 AM	Stretch and Quiz 2
11:15-12:00 PM	Rotation 3: Grammar
12:00-1:00 PM	Lunch
1:00-1:45 PM	Rotation 4: Nemeth Numbers and Punctuation
1:45-2:00 PM	Break Stretch and Quiz 3
2:00-2:45 PM	Rotation 5: Nemeth Operations & Comparisons
2:45-3:00 PM	Stretch and Quiz 4
3:00-3:45 PM	Rotation 5: Alphabetic Word Signs and Contractions
3:45-4:00 PM	Awards and Wrap up.

Table 1: Braille Bootcamp Agenda

Chapter 1

Learning Braille

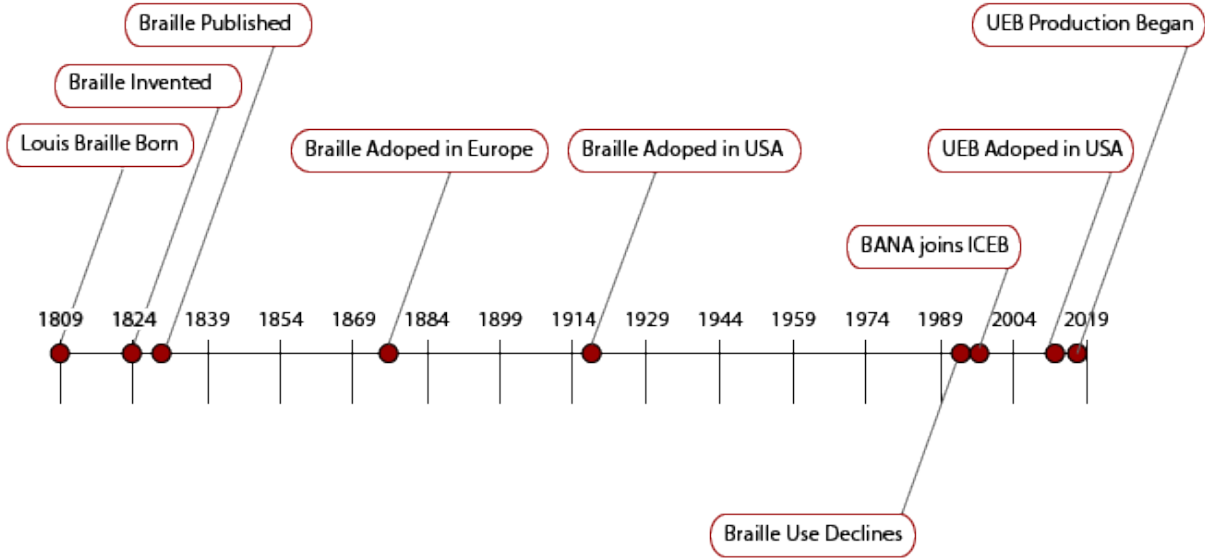


Figure 1.1: Brief timeline of key events in the history of Braille adoption

Braille is named after its creator, Louis Braille, born in 1809 in Coupvray, France, just southeast of Paris. Louis became blind as the result of a childhood accident, and as a young man he was bright, creative, and diligent. This led to his admission into one of the first schools for the blind, the *National Institute for Blind Youth* in Paris founded in 1784.

The school had very few books and the ones they did have were extremely expensive to make and difficult to read. They consisted of raised print characters and out of necessity contained very little information. Although the challenges of creating and using these books could have brought literacy for the blind to a halt, it actually paved the way for literacy by choosing touch as the primary means of communication.

While he was in Paris, Louis learned about a military code of communication called “night

writing” that was based on using raised dots and dashes to communicate silently and without light on the battlefield. The system had been devised by Captain Charles Barbier who gladly shared it with Louis. Unfortunately the system as it was originally designed was cumbersome. Louis, determined to find a way to bridge the communication gap for the blind, set about creating his own system of raised dots.

Louis completed the original code in 1824 at age 15. His passion for music led him to expand the code and create an extension of his system for reading and writing music. He published his system in 1829. Although he was much admired and respected for his work, his system of reading and writing was not adopted until after his death even at the National Institute for Blind Youth in Paris where he eventually became an instructor.

Braille spread throughout France but was slow to spread elsewhere. It was not until 1873, at the first conference for teachers of the blind, that the Braille system was pushed as a means of communication for the blind. After this, Braille use spread rapidly throughout Europe. The United States was slow to adopt Braille, but finally relented in 1916 and the first edition of the English Braille code was formalized in 1932.

In the United States the *Braille Authority of North America* (BANA) is responsible for maintaining the codes that govern braille transcription and BANA sometimes collaborates with the Canadian Braille Authority (CBA). BANA is comprised of representatives from the following organizations:

- American Council of the Blind, Inc. (ACB)
- American Foundation for the Blind (AFB)
- American Printing House for the Blind (APH)
- Associated Services for the Blind (ASB)
- Association for Education & Rehabilitation of the Blind & Visually Impaired (AER)
- Braille Institute of America (BIA)
- California Transcribers & Educators for the Blind and Visually Impaired (CTEBVI)
- CNIB (Canadian National Institute for the Blind)
- The Clovernook Center for the Blind (CCBVI)
- National Braille Association, Inc. (NBA)
- National Braille Press (NBP)
- National Federation of the Blind (NFB)
- National Library Service for the Blind and Physically Handicapped of the Library of Congress (NLS)

Although this list does not include every interested party, it is a nationally representative group of agencies that support Braille readers across the United States. The websites for these organizations often contain useful transcribing information and up-to-date information about how Braille is changing. For example, information about becoming a certified Braille transcriber can be found at the NFB (<http://www.nfb.org>).

Chapter 2

English Braille American Edition vs Unified English Braille

2.1 The adoption of Unified English Braille

In 1991 BANA received complaints about the steady decline in Braille usage among both children and adults. The most common reason cited was the complexity and organization of the Braille code, which resulted in the decision to completely overhaul the code. At that time, none of the English language Braille codes were the same and in 1993 BANA joined the international effort to develop a single Braille code for all English speaking countries. The *Unified English Braille Code* (UEB) was adopted by BANA as the official Braille code for the United States in 2012. No change is instantaneous, however. The first year that UEB was expected to be the de facto standard for Braille production was 2016.

In transitioning to UEB, much of the code base from *English Braille American Edition* (also referred to as contracted Braille) was retained. For example, the dot configurations for the letters of the alphabet have not changed and most of the whole word contractions remain the same. However, significant changes to the text formatting rules, the symbology, and the integration with *Nemeth Code Braille for Science and Mathematics* (Nemeth) have made many experienced Braille readers slow to adopt the newer code.

Adoption rates aside, there are several benefits to the move to UEB that are worth mentioning.

- Reduced complexity for Braille transcriptionists who are producing standard literary Braille
- Fewer complexities that cause transcription errors when using Braille transcription software
- Increased ability to share Braille transcriptions internationally

2.2 UEB highlights

In the tables that follow, you will find a selection of the UEB code changes for reference.

To Translate	Print Character	Contracted	UEB
Transcriber's Note	NA	⠠⠠⠠⠠⠠⠠⠠⠠	⠠⠠⠠⠠⠠⠠⠠⠠

Table 2.1: Transcriber's Note Symbol in UEB

To Translate	Print Character	Contracted	UEB
single end quote	'	⠠⠠⠠⠠	⠠⠠⠠⠠
dash	—	⠠⠠	⠠⠠⠠⠠
long dash	—	⠠⠠⠠⠠	⠠⠠⠠⠠⠠⠠
ellipse	...	⠠⠠⠠⠠⠠⠠	⠠⠠⠠⠠⠠⠠

Table 2.2: Grammatical Markings in UEB

To Translate	Print Character	Contracted	UEB
dollar	\$	⠠⠠	⠠⠠⠠⠠
percent	%	⠠⠠⠠⠠	⠠⠠⠠⠠
asterisk	*	⠠⠠⠠⠠	⠠⠠⠠⠠
Parentheses	()	⠠⠠⠠⠠	⠠⠠⠠⠠⠠⠠
square bracket	[]	⠠⠠⠠⠠⠠⠠	⠠⠠⠠⠠⠠⠠
curly bracket	{ }	⠠⠠⠠⠠⠠⠠	⠠⠠⠠⠠⠠⠠

Table 2.3: Symbol Changes in UEB

To Translate	Print Character	Contracted	UEB
italic word	single word	⠠⠠	⠠⠠⠠⠠
italic passage	two or more	⠠⠠⠠⠠⠠⠠	⠠⠠⠠⠠⠠⠠
bold word	single word	⠠⠠⠠⠠	⠠⠠⠠⠠
bold passage	two or more	⠠⠠⠠⠠⠠⠠	⠠⠠⠠⠠⠠⠠

Table 2.4: Formatting Changes in UEB

Chapter 3

Braille Alphabet and Numbers

All Braille characters are made up of six dots regardless of the reader's primary spoken language (this excludes computer Braille and Grade 3 Braille that use an 8-dot configuration, which we will not discuss here). The dots are organized into two columns and three rows. Each dot is given a number, to make communicating individual Braille characters easier and allow Braille characters to be referenced by their dot configurations. Each dot is referenced by number as shown in the figure 3.1. The top left dot is number 1, and from there the dots are numbered down each column in numerical order.

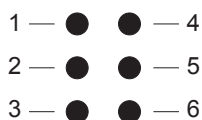


Figure 3.1: Each Braille character consists of six dots organized in three rows and two columns

Throughout this manual, Braille characters will be referenced by their numbered dot configuration.

3.1 General Formatting

The foundation of Braille is its consistency and even after nearly 200 years the code continues to maintain a firm structure. For example, Braille that is printed (*embossed*) is produced with a maximum 40 Braille characters per line and 25 lines per page. If front and back embossing is desired, then *interpoint* is selected from the embossing options.

During the course of the drills, you will be expected to follow those guidelines. In the early drills, writing drills will be preset to take exactly 40 characters per line. The reading drills have been preset to 20 Braille characters because of the smaller paper width.

3.2 Grade 1 (uncontracted)

Grade 1 Braille, also called uncontracted, is a letter by letter representation of print characters and the dot configurations are the same in both EBAE and UEB. It is tempting to think of Braille as another language, but it is actually more appropriate to think of it as another alphabet with a unique grammar. An excellent example of this is capital letters. In the English alphabet, there are 52 uniquely drawn characters when you consider both the uppercase and lowercase letters. In Braille there are only 26 alphabetic characters and a single capitalization indicator.

To begin with, the Braille alphabet follows a logical, progressive pattern. In the print edition we will use simulated Braille where the raised dots are bold and the un-raised dots are small. The first ten letters of the alphabet are:

Letter	Braille Representation	Dot configuration
a	⠁	dot 1
b	⠃	dots 1-2
c	⠉	dots 1-4
d	⠋	dots 1-4-5
e	⠑	dots 1-5
f	⠥	dots 1-2-4
g	⠎	dots 1-2-4-5
h	⠏	dots 1-2-5
i	⠗	dots 2-4
j	⠘	dots 2-4-5

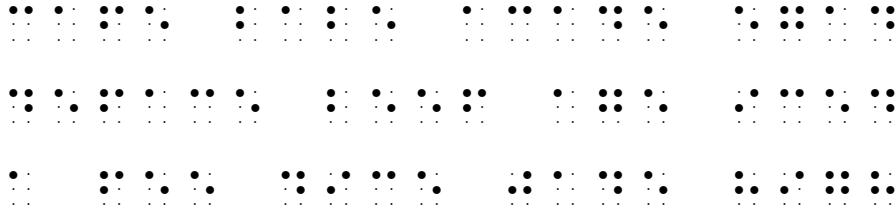
Drill 1. _____ **Write It** _____

Write the following words in Braille.

cab dab had jig gad fade fad egg high ad
fed big jibe bad hi ace dig cage if face

Drill 2. _____ **Read It** _____

Write the following words in Print.



The next ten letters of the alphabet are created by adding dot 3 to the first ten letters as shown here:



Letter	Braille Representation	Dot configuration
k	⠅	dots 1-3
l	⠇	dots 1-2-3
m	⠍	dots 1-3-4
n	⠝	dots 1-3-4-5
o	⠏	dots 1-3-5
p	⠕	dots 1-2-3-4
q	⠑	dots 1-2-3-4-5
r	⠗	dots 1-2-3-5
s	⠎	dots 2-3-4
t	⠞	dots 2-3-4-5

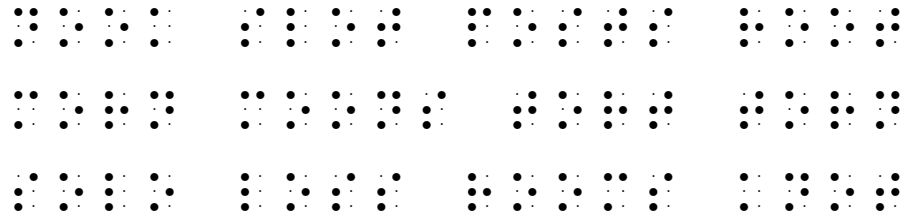
Drill 3. _____ **Write It** _____

Write the following words in Braille.

slots lost rook stop noon not knoll look
 most pomp loom knot moor storm torn room

Drill 4. _____ Read It _____

Write the following words in Print.



The logical pattern continues by adding dot 6 to the remaining letters of the alphabet. The one exception is the letter 'w'. When Louis Braille developed his literacy system for the blind the letter 'w' was not part of the French alphabet. Thus the braille dot configuration for 'w' was added at a later date.



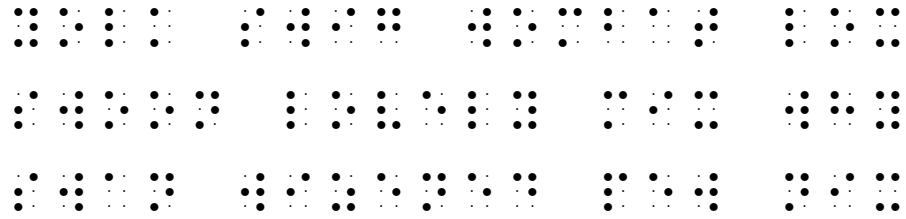
Letter	Braille Representation	Dot configuration
u		dots 1-3-6
v		dots 1-2-3-6
x		dots 1-3-4-6
y		dots 1-3-4-5-6
z		dots 1-3-5-6
w		dots 2-4-5-6

Drill 5. _____ Write It _____

vexed waxy zero bundt under woven lulled
 xebec exit vote zoo fixed blaze worn yak

Drill 6. _____ **Read It** _____

Write the following words in Print.



All together it looks like:

Line	Characters	Braille Representation
1	A to J	⠠ ⠡ ⠢ ⠣ ⠤ ⠥ ⠦ ⠧ ⠨ ⠩ ⠪
2	K to T	⠬ ⠭ ⠮ ⠯ ⠰ ⠱ ⠲ ⠳ ⠴ ⠵ ⠶
3	U to Z	⠷ ⠸ ⠹ ⠺ ⠻ ⠼ ⠽ ⠾ ⠿ ⠀ ⠁

Table 3.1: Complete Braille Alphabet

BONUS

If time permits you are encouraged to complete the bonus drills for extra points.

Drill 7. _____ **Write It – BONUS** _____

Write the following words in Braille.

bad beef bide cadge cab lice decide free
 deface die egg mole fife feet goes stone
 fig gab exit hide idea ice jade jigs joy
 badge decide beg dad dig when abide acid
 farce deface bad beef dance jib home bed

Drill 8. _____ Read It – BONUS _____

Write the following words in Print.

the first three words in the first row, and the first two words in the second, third, and fourth rows. Each word is represented by a 2x3 grid of dots.

3.3 Numbers

Louis Braille also included numbers as part of his original system. For efficiency the numbers are represented by the first ten letters of the alphabet preceded by a new Braille character **the number indicator**. The braille number character is dots 3-4-5-6. These are literary numbers and can be used for everything that is not mathematical or scientific. For math and science contexts, we will use Nemeth Code Braille, which is covered in Chapter 4.

As a quick recap, our Braille alphabet for a-j is:

Characters	Braille Representation
A to J	⠠ ⠡ ⠢ ⠣ ⠤ ⠥ ⠦ ⠧ ⠨ ⠩ ⠪

If we put the number indicator in front of each character we get:

Characters	Braille Representation	Number	Braille Representation
a	⠠	1	⠠⠠
b	⠡	2	⠠⠡
c	⠢	3	⠠⠢
d	⠣	4	⠠⠣
e	⠤	5	⠠⠤
f	⠥	6	⠠⠥
g	⠦	7	⠠⠦
h	⠧	8	⠠⠧
i	⠨	9	⠠⠨
j	⠩	0	⠠⠩

Drill 9. _____ **Write It** _____

Write the following in Braille.

56 pigs dug 73 holes in 9 garden beds
 he ate 150 pickled peppers in 26 meals
 1000 ridges on 48 mountains in 8 days

Chapter 4

Nemeth Code Braille

4.1 History

The most important code book for representing scientific information is the Nemeth Code book. Nemeth Code Braille was developed by Dr. Abraham Nemeth as a way to express more complicated mathematical and scientific concepts.

Dr. Nemeth was interested in studying mathematics during his undergraduate studies. However, his academic advisors discouraged him from studying mathematics because they believed it would be too difficult for him to understand the graphical components. It was also nearly impossible to obtain a math textbook in Braille at that time.

After completing a liberal arts degree, Dr. Nemeth went on to hold several jobs with organizations for the blind. Unfortunately he found these jobs dissatisfying and un-fulfilling. After a great deal of encouragement from his wife, he returned to graduate school to study mathematics.

It was during his graduate studies that he began to realize the great limitations of existing braille code when it came to representing more complex mathematical concepts. As a result he developed his own code of Braille for science and mathematics. The code was accepted in the United States in 1972 and several revisions have been made since then. Of particular note is that in the United States, the Braille Authority of North America has decided to maintain Nemeth Code Braille in conjunction with the adoption of UEB.

4.2 Nemeth Numbers

Like literary braille the numbers are represented by the braille number sign followed by the number. (As a reminder its dot configuration is 3-4-5-6.) Since there are only 64 unique characters possible using the six-cell system, characters are used and re-used to mean different things depending on the context. When Dr. Nemeth developed his code, one of the first

things he did was develop a set of math specific numbers to avoid conflict in higher levels of math that use numbers and letters side-by-side, think Algebra I on up. In Nemeth the numbers are the same dot configurations as literary braille, but they are moved one row down in the cell. This means that in literary braille the numbers 0-9 are represented as:

Print Character	Literary Braille	Nemeth Braille
1	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$
2	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$
3	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$
4	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$
5	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$
6	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$
7	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$
8	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$
9	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$
0	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$	$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$

Drill 1. _____ **Write It** _____

Write the following in Braille.

1 20 35 50 75 901 467 281 34 8
 7 101 24 65 7 873 26 85 1215 9
 83 205 14 4 91 30 100 57 107 8

Drill 2. _____ **Read It** _____

Write the following in Print.

$\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$ $\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$ $\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$ $\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$

$\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$ $\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$ $\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$ $\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$ $\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$

$\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$ $\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$ $\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$ $\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$ $\begin{matrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{matrix}$

Unlike operators which should be placed directly next to the numbers and variables being **operated on**, we use spaces around comparators to help a Braille reader to know that one side of an equation is being **compared** to another one.

Print Character	Nemeth Braille
=	⠠⠨⠠
<	⠠⠨⠠⠨⠠
>	⠠⠨⠠⠨⠠

Now that you know basic syntax it is possible to transcribe simple equations. Do the following drill to practice. HINT: the rules about the number indicator still apply!

Drill 7. _____ **Write It** _____

Write the following in Braille.

- 49 > 7 > 1
 - 14/7 = 2
 - 4 > 1
 - 27*2 = 54
 - 123-47 = 76
 - 30 < 31
 - 13+2-8 = 7
 - 100/50*4 = 8
 - 28-100+50 = -22
 - 1.5 < 2.55
-

Drill 8. _____ Read It _____

Write the following in Print.

the the the the the the the

the the the the the the the the the the the

the the the the the the the the the the the

the the the the the the the the the the the

the the the the the the the the the the the

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the the the the the the the the the the the

the the the the the the the the the the the

the the the the the the the the the the the

Alphabetic Whole Word Contractions

Punctuation	Braille Representation	Dot configuration
b	⠠	but
c	⠠	can
d	⠠	do
e	⠠	every
f	⠠	from
g	⠠	go
h	⠠	have
j	⠠	just
k	⠠	knowledge
l	⠠	like
m	⠠	more
n	⠠	not
p	⠠	people
q	⠠	quite
r	⠠	rather
s	⠠	so
t	⠠	that
u	⠠	us
v	⠠	very
w	⠠	will
x	⠠	it
y	⠠	you
z	⠠	as

Table 4.1: Whole word, single cell, alphabetic contractions.

Chapter 5

Contractions

Grade 2 Braille or Contracted Braille uses contractions to speed up the reading process. For example, in print it is common to see the words *have* and *not*. When contracted it becomes *haven't*. Contractions in Braille exist for common words and common letter combinations. A complete list of contractions and the rules that govern them can be found at *Braille Formats: Principles of Print-to-Braille Transcription, 2016*. It puts UEB and a few American only transcription rules all in one place.

We can organize the contractions into 2 large categories whole word contractions and part word contractions. Whole word contractions are 1, 2, or 3 cell Braille combinations that replace a whole word. For example, “every” becomes the single character ‘e’ and “receive” becomes the 3 character combination “rcv”. Part word contractions only simplify a group of commonly occurring letters, such as “ing” or “con”.

5.1 Alphabetic word signs

The first thing to know about the whole word or what we’ll call alphabetic word signs is that the letters ‘a’, ‘i’, and ‘o’ do not have whole word contractions because they are themselves a word.

Let’s practice.

Drill 1. _____ **Write It** _____

Write the following sentences in Braille.

you can eat more ravioloi, but you might not like it joey.
please pass the donuts; we just like sprinkles.
boy! he’s quite a party animal where he’s from.

Drill 4. _____ Read It – BONUS _____

Write the following sentences in Print.

••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• •••

••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• •••

••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• •••

Chapter 6

Braille Transcription Basics

Congratulations! You are ready to start transcribing your first text into uncontracted Braille. There are a few hard copy Braille transcription tips you need to know before you start.

- We're only covering the basics: there is a manual for print-to-Braille transcription <http://brailleauthority.org/formats/formats2016.html>
- This isn't a certification course: the Library of Congress certifies transcribers <https://nfb.org/braille-certification>

Here is what you do need to know about hard copy Braille for **today**. Firstly Braille paper is large. Let me repeat that **LARGE**. For every 1 page of print information it will take 3 to 5 pages of Braille to reproduce it. That's after using contractions!

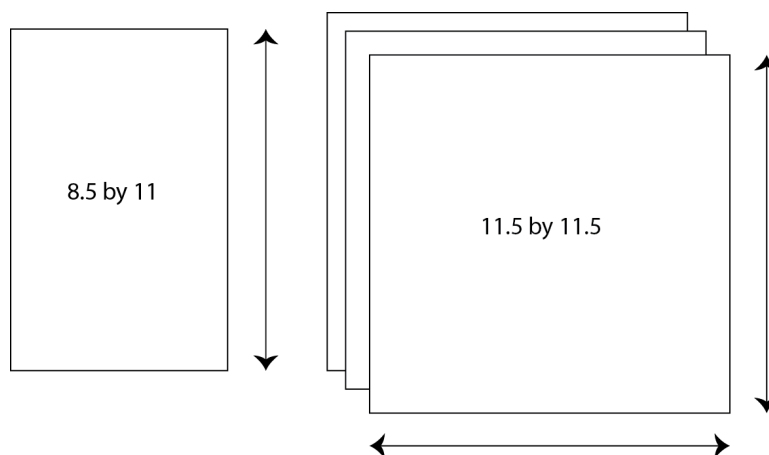


Figure 6.1: Visual comparison of print paper versus Braille paper

Why the 3-5 range? One reason is not all embossers are equal. The embossers (Braille printers) we will use today can emboss on both sides commonly called **interpoint**.

The last formatting tidbit you need is indentations. In Braille we do not use a blank line between paragraphs the way we do in print. Instead, we indent the beginning of each new paragraph by 2 Braille characters. For the books we will transcribe today, we will consider each page its own paragraph. Below is an example.

Print Text

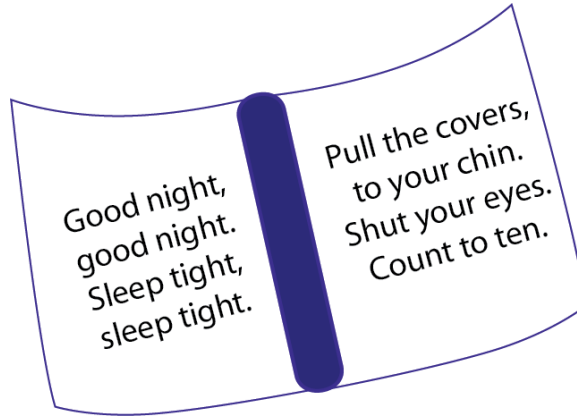


Figure 6.2: Pretend children's bedtime book

Braille Text

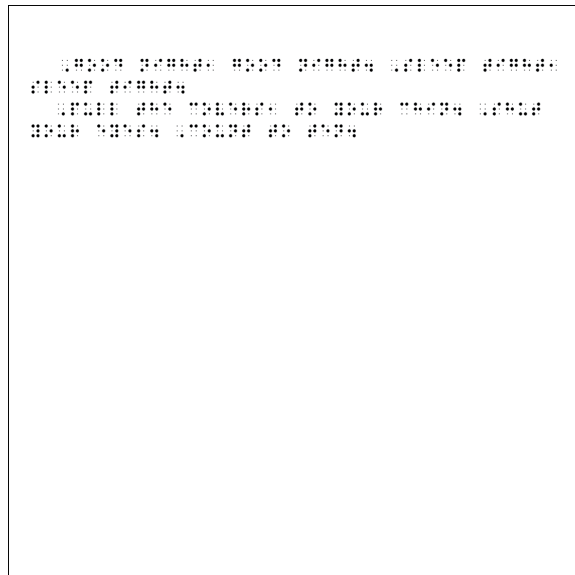


Figure 6.3: The children's bedtime book in Braille



Closing

Congratulations on completing the Braille Bootcamp! You should feel extremely proud of all you accomplished today. If you enjoyed it and want to continue learning on your own check out uebonline.org.