Braille
Authority of
North
America

Graphing Calculator Guidelines

Developed by the Braille Authority of North America *Using Guidance for Transcription Using the Nemeth Code within UEB Contexts*

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GRAPHING CALCULATOR GUIDELINES

Graphing calculator guidelines are based on the *Nemeth Braille Code for Mathematics and Science Notation, 1972 Revision, 2007-2015 Updates* and the *Guidance for Transcription Using the Nemeth Code within UEB Contexts*.

1 Graphing Calculator Labels

TI-81, TI-82, TI-84 Plus, TI-92 Plus, etc.

In braille:

⠠⠠⠞⠊⠤⠼⠓⠁⠂ ⠠⠠⠞⠊⠤⠼⠓⠃⠂ ⠠⠠⠞⠊⠤⠼⠓⠙ ⠠⠏⠇⠥⠎⠂
⠠⠠⠞⠊⠤⠼⠊⠃ ⠠⠏⠇⠥⠎⠂ ⠑⠞⠉⠲

2 Calculator Keystroke

2.1 The keystroke may be shown in print text with brackets, a clear or shaded rectangular box, a clear rectangular box with rounded corners, etc. Follow Nemeth Code, Section 111d for transcribing key labels.

2.2 Keystrokes must be transcribed within the Nemeth switches (opening Nemeth Code indicator and Nemeth Code terminator)

2.3 Keystroke symbols: calculator keystroke indicator to open ⠻⠱; termination indicator to close ⠻.

2.3.1 The keystroke symbols, as part of the Nemeth Code, are not listed on the Special Symbols page.

2.4 If keystroke commands are shown as fully capitalized words in print, retain full capitalization in braille.

2.5 No contractions are used in words within keystroke indicators.

2.6 No spaces are inserted between keystrokes or between items within keystrokes unless they are separated by commas in print.

2.6.1 Spaces are inserted between keystrokes and explanatory bracketed or parenthesized items.

2.6.2 It is preferable to keep keystroke constructions on one line if possible.

2.6.3 A division may be made between keystrokes but not within a keystroke construction.

2.7 Where print shows a box and brackets for different reasons, retain both.

3 Text Surrounding a Screen

Emphasized words or expressions in the surrounding text that replicate words/expressions in the screen should be transcribed uncontracted as in the screen and emphasized as in print.

4 Graphing Calculator Screens

Everything in the screen is treated as technical material. The opening Nemeth Code indicator followed by a space always precedes the screen indicator in the top screen line; the Nemeth Code terminator is always at the end of the bottom screen line preceded by a space.

4.1

⠸⠩	Opening Nemeth indicator
⠸⠱	Nemeth terminator
⠫⠛⠉⠎	Screen indicator
⠶⠶	Opening screen line
⠛⠛	Closing screen line

For the box in print that shows a calculator screen with data in it, use the shape symbol and “gcs” for “graphing calculator screen” followed after a space on the same line by an opening screen line across the width of the page. On the line following the end (bottom) of the screen, insert a closing screen line.

⠸⠩ ⠫⠛⠉⠎ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶
⠞⠑⠭⠞
⠞⠑⠭⠞
⠞⠑⠭⠞
⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱

4.2 The graphing calculator screen uses the full width of the braille page.

4.3 A screen requires a blank line before and after it except following an accompanying heading or caption or preceding a source citation.

4.4 Keep the data shown on a screen together on the same braille page if possible.

4.5 If a screen is numbered, insert the number transcribed in Nemeth Code after the screen indicator with a blank cell on either side of the number.

5 Material within the Screen

5.1 Use no contractions within a screen.

5.2 Start and stop text lines as they are shown in print.

5.2.1 Lines that are indented on the screen are indented two cells to the right of the beginning of the previous print line.

5.2.2 Lines that are right-justified on the screen are transcribed four cells to the right of the beginning of the previous line. Right-justified expressions are answers to calculator commands. A long expression on a small screen may appear to be both left- and right-justified. The transcriber must decide from accompanying text if it is an answer to be transcribed as right-justified.

5.2.3 Where two or more consecutive lines are right-justified, each line will begin in the same cell.

5.2.4 Where word(s) or equation(s) are left- and right-justified on the same line, they are transcribed on the same line with three blank cells before the right-justified material.

5.2.5 Runovers are transcribed on the line below, indented one cell to the right of the beginning of the previous line.

5.3 Indicate highlighted areas with dots 456. The effect of the highlight indicator is terminated by a space. If more than one term is highlighted, repeat the highlight indicator.

5.4 Omit font indicators other than highlighting on text within a screen but retain print capitalization.

5.5 Symbols are not inserted to replace blank spaces in print.

5.6 When items in a horizontal list consist of two or more words, two spaces are inserted between each item.

5.7 Hyphens across columns are replaced with dot 5s in braille. A note on the Transcriber's Notes page explains the change to print. The note is placed at the site if this situation occurs only once in the document.

5.8 Horizontal lines separating sections of the screen run the width of the page.

5.9 Matrices are transcribed and aligned according to Nemeth Code, Section 183.

5.9.1 If enlarged grouping signs are not used on the screen in print, use regular parentheses, brackets, etc. A blank line is not inserted preceding and following the matrix because it is not a spatial arrangement.

5.9.2 If enlarged grouping signs are used on the screen in print, enlarged grouping signs are used in braille; a blank line is required preceding and following the matrix (a spatial arrangement), except immediately following an open screen line or preceding a closing screen line.

5.10 Arrows, arrowheads, and comparison signs in screens are spaced away from surrounding text as in Nemeth Code. A space is inserted following a colon except when the colon applies to the following letter or word.

5.11 Necessary transcriber's notes are placed either before or after the screen, not within the screen.

5.12 Function tabs shown on the menu bar in the screen are not included in the braille unless they are highlighted for a particular reason.

5.13 A number following a solid cursor (represented in braille by a shape indicator followed by a full cell) requires a numeric indicator.

5.14 All symbols specific to the graphing calculator must be listed on the Special Symbols page.

6 Exceptions to Nemeth Code Rules

In some situations exceptions to the Nemeth Code rules will be applied. These exceptions should be noted on the Transcriber's Notes page as outlined below. The note is placed at the site if this situation occurs only once in the document. (Sample transcriber’s notes are shown in italics.)

6.1 The numbers in items like Y1 …, L1 …, Plot1 …, etc. are all identifiers. The limitations of the graphing calculator cause variations in type size and placement; (e.g., subscripts are not always shown as subscripts). In braille all these identifier numbers are shown as subscripts, whether following a letter or a word.

This variation should be qualified in a transcriber's note on the Transcriber’s Notes page, stating the limitations and variations that appear in the various screens.

Suggested TN: *In the presentation of Graphing Calculator material, print type size variations and subscripts may not be shown. In braille all identifier numbers in items like L1, L2, …, Y1, Y2, …, Plot1, Plot2, …, etc., are shown as subscripts.*

6.2 For the keystroke that shows Y=, no space is left before or after the equal sign.

Suggested TN: *In the presentation of Graphing Calculator material, no space is left before or after the equal sign in the Y= keystroke.*

6.3 Blank lines are not inserted unless a blank line is shown on the calculator screen. This includes blank lines before and after a matrix not shown in enlarged grouping symbols. Exceptions: Blank lines are inserted when a matrix is shown in enlarged grouping symbols. When another screen is shown within a calculator screen, a blank line separates the screens.

7 Graphs

7.1 Calculator screens in print showing the graph lines can be done as a tactile drawing. If the calculator screen representation is a copy of an original print graph already shown previously in the text, the calculator screen representation may be omitted in braille. Indicate the omission with a transcriber's note at the point of omission.

7.2 When doing the tactile drawing of the graphing calculator screens:

7.2.1 Make the outline of the box that indicates the screen very faint

7.2.2 Be accurate with the intersection of graph lines and the axes and with the points on the lines

7.2.3 Be consistent and even with scale marks on the axes

7.2.4 Do not insert grid lines that are not shown in print

7.2.5 Refer to the latest edition of *Guidelines and Standards for Tactile Graphics*.

SYMBOLS FOR GRAPHING CALCULATORS

The following symbols appear in the text and within graphing calculator screens. The first group of symbols (section 8) should be listed on the Special Symbols page. The symbols of the second group (section 9) do not need to be listed because they are part of the Nemeth Code.

8 Symbols Listed on the Special Symbols Page:

8.1. General Symbols

⠫⠛⠉⠎ Graphing calculator screen indicator

⠫⠺ Graphing calculator results window

0.44 $\boxed{\times}$ 300 $\boxed{+}$ 14 $\boxed{=}$ 146

⠸⠩ ⠼⠴⠨⠲⠲⠫⠅⠈⠡⠻⠒⠴⠴⠫⠅⠬⠻⠂⠲⠫⠅⠨⠅⠻ ⠫⠺⠂⠲⠖⠻ ⠸⠱

⠸ (456) Highlight indicator placed before a word(s), numeral(s) or group of symbols highlighted on the screen. The effect of the highlight indicator is terminated by a space.

8.2 Calculator keystroke symbols (cursor indicators found in narrative) (See Sample 1.)

▲ (up)	⠫⠸⠣⠕	(shape indicator, filled-in indicator, directly-over indicator, arrowhead)
▼ (down)	⠫⠸⠩⠕	(shape indicator, filled-in indicator, directly-under indicator, arrowhead)
► (right)	⠫⠸⠕	(shape indicator, filled-in indicator, right-pointing arrowhead)
◄ (left)	⠫⠸⠪	(shape indicator, filled-in indicator, left-pointing arrowhead)

8.3 Symbols found within calculator screens:

►	⠫⠕	Right-pointing arrowhead. This is different from the keystroke cursor symbol.
◄	⠫⠪	Left-pointing arrowhead
▲	⠫⠣⠕	Upward-pointing arrowhead
▼	⠫⠩⠕	Downward-pointing arrowhead
▌▄	⠫⠿	Solid cursor, either vertical bar, rectangle, or underline cursor (shape indicator, full cell)
?	⠿	Question mark

8.4 Graph line styles (these symbols must be followed by a space):

⋱	⠫⠸⠡	dotted line
\	⠫⠸⠡⠡	thin line
╲	⠫⠸⠡⠡⠡	thick line
◥	⠫⠘⠸⠕	line with shading above
◣	⠫⠰⠸⠪	line with shading below
-○	⠫⠒⠨⠡	circle with small horizontal line adjacent and to the left: path, line of graph
○	⠫⠨⠡	circle without small horizontal line in front; animate, animates or traces the edge of a graph without drawing a path or line

8.5 Graph Types

Plot Type

- Scatter
- xyLine
- Histogram
- ModBoxplot
- Boxplot
- NormProbPlot

When symbols for the graph types above appear in a screen, the name of the graph type used is enclosed in braces. Do not try to develop new symbols; do not draw them as tactile diagrams. (See Sample 11.)

Suggested TN: *When symbols for the graph types appear in a screen, the name of the graph type used is enclosed in braces.*

9 Nemeth Code Symbols Not Listed on the Special Symbols Page

Symbols that are included in the Nemeth Code are not listed on the Special Symbols page. The symbols below are examples from this document that are included in the Nemeth Code and would not need to be listed on the Special Symbols page.

	⠫⠅	Keystroke indicator
	⠻	Termination sign
Δ	⠨⠠⠙	Greek capital delta
θ	⠨⠹	Greek lower-case theta
Σ	⠨⠠⠎	Greek capital sigma
σ	⠨⠎	Greek lower-case sigma
←	⠫⠪⠒⠒	Left-pointing arrow with shaft
→	⠫⠒⠒⠕	Right-pointing arrow with shaft (do not use a contracted right-pointing arrow)
↑	⠫⠣⠒⠒⠕	Up-pointing arrow with shaft
↓	⠫⠩⠒⠒⠕	Down-pointing arrow with shaft
□	⠫⠲	Hollow box
■	⠫⠸⠲	Solid box
♦	⠫⠸⠙	Solid diamond
*	⠈⠼	Means multiplication; use Nemeth asterisk multiplication symbol
.	⠨ (46)	Decimal point, period
•	⠡	Dot multiplication sign
∫	⠮	Integral
!	⠯	Factorial
✓	⠈⠜	Check mark
^	⠸⠣	Math caret

SAMPLES

Sample 1

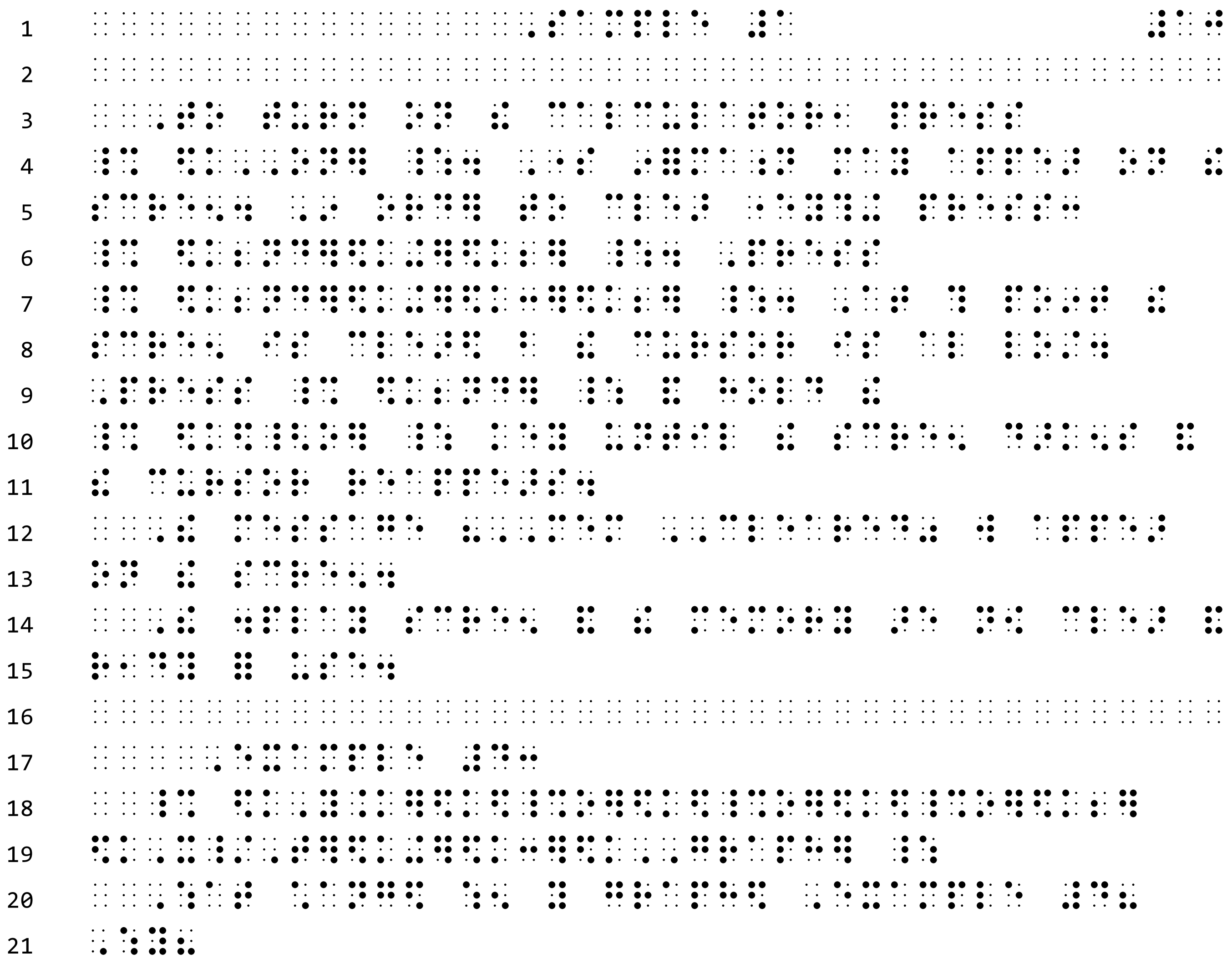
To turn on the calculator, press ON. Some information may appear on the screen. In order to clear everything press: 2nd + 2. Press 2nd + 3 2. At this point the screen is cleared but the cursor is also lost. Press 2nd and hold the ▲ key until the screen darkens and the cursor reappears.

The message "MEM CLEARED" will appear on the screen.

The display screen and the memory are now clear and ready for use.

Example 4: Y= ▼ ▼ ▼ 2 X/T + 3 GRAPH

What changed when you graphed Example 4? Why?



Line 4: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth Code switches (Graphing Calculator Guidelines [GC] 2.1, GC 2.2 and GC 2.3).

Lines 6-7 and 18-19: No spaces are inserted between keystrokes (GC 2.6).

Line 10: Up arrowhead within a keystroke (GC 8.2)

Line 12: Retain quotes and full capitalization. The words MEM CLEARED will be replicated in a screen and should be transcribed in surrounding text as in the screen (GC 3).

Lines 18-19: A division may be made between keystrokes but not within a keystroke construction (GC 2.6.3).

Line 18: For the keystroke that shows Y=, there is no space before or after the equal sign (GC 6.2)

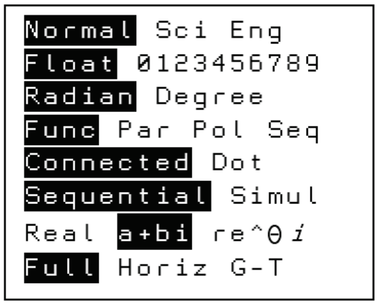
Line 19: Retain fully capitalized words in keystroke commands (GC 2.4).

Sample 2

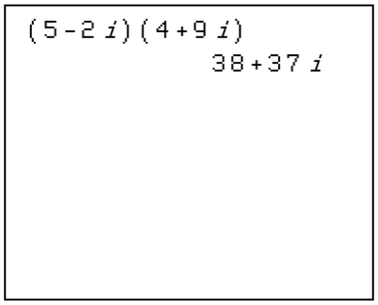
11. **Calculator Notes**

Some calculators, like the TI-83, handle operations with complex numbers. Press MODE and set the calculator as shown below left. Get to the home screen and enter the operation you wish to perform. Note that *i* is accessed by pressing 2nd . . Press ENTER to obtain your answer. The screen, below center shows the result of $(5-2i)(4+9i)$. Remember that you can convert decimal values to fractional values by pressing MATH, ENTER ENTER. You would want to do this when simplifying a question like $\frac{3+i}{4-5i}$.

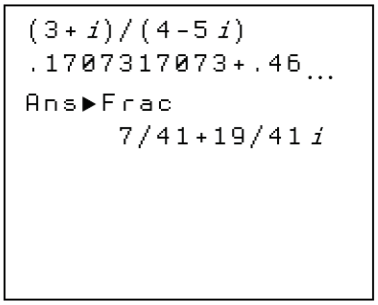
See the screen below right.



```
Normal Sci Eng
Float 0123456789
Radian Degree
Func Par Pol Seq
Connected Dot
Sequential Simul
Real a+bi re^θi
Full Horiz G-T
```



```
(5-2i)(4+9i)
          38+37i
```



```
(3+i)/(4-5i)
.1707317073+.46…
Ans▶Frac
     7/41+19/41i
```

```
1    ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠠⠎⠁⠍⠏⠇⠑ ⠼⠃            ⠼⠁⠃
2    ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
3    ⠀⠀⠀⠀⠼⠁⠁⠲ ⠠⠉⠁⠇⠉⠥⠇⠁⠞⠕⠗ ⠠⠝⠕⠞⠑⠎
4    ⠀⠀⠠⠐⠎ ⠉⠁⠇⠉⠥⠇⠁⠞⠕⠗⠎⠂ ⠇ ⠮ ⠠⠠⠞⠊⠤⠼⠓⠉⠂ ⠓⠯⠇⠑
5    ⠕⠏⠻⠁⠰⠝⠎ ⠾ ⠉⠕⠍⠏⠇⠑⠭ ⠝⠥⠍⠃⠻⠎⠲ ⠠⠏⠗⠑⠎⠎
6    ⠸⠩ ⠫⠅⠠⠠⠍⠕⠙⠑⠻ ⠸⠱ ⠯ ⠎⠑⠞ ⠮ ⠉⠁⠇⠉⠥⠇⠁⠞⠕⠗ ⠵ ⠩⠪⠝
7    ⠆⠇ ⠇⠑⠋⠞⠲ ⠈⠨⠣⠋⠌ ⠎⠉⠗⠑⠢⠈⠨⠜ ⠠⠛⠑⠞ ⠞⠕ ⠮ ⠓⠕⠍⠑
8    ⠎⠉⠗⠑⠢ ⠯ ⠢⠞⠻ ⠮ ⠕⠏⠻⠁⠰⠝ ⠽ ⠺⠊⠩ ⠞⠕ ⠏⠻⠿⠍⠲
9    ⠠⠝⠕⠞⠑ ⠞ ⠊ ⠊⠎ ⠁⠒⠑⠎⠎⠫ ⠃⠽ ⠏⠗⠑⠎⠎⠬
10   ⠸⠩ ⠫⠅⠆⠝⠙⠻⠫⠅⠨⠻⠸⠲ ⠠⠄⠠⠏⠗⠑⠎⠎ ⠫⠅⠠⠠⠑⠝⠞⠑⠗⠻ ⠸⠱
11   ⠞⠕ ⠕⠃⠞⠁⠔ ⠽⠗ ⠁⠝⠎⠺⠻⠲ ⠠⠮ ⠎⠉⠗⠑⠢⠂ ⠆⠇ ⠉⠢⠞⠻⠂
12   ⠈⠨⠣⠎⠑⠉⠕⠝⠙ ⠎⠉⠗⠑⠢⠈⠨⠜ ⠩⠪⠎ ⠮ ⠗⠑⠎⠥⠇⠞ ⠷
13   ⠸⠩ ⠷⠢⠤⠆⠊⠾⠷⠲⠬⠔⠊⠾ ⠸⠱⠲ ⠠⠗⠑⠍⠑⠍⠃⠻ ⠞ ⠽ ⠉ ⠒⠧⠻⠞
14   ⠙⠑⠉⠊⠍⠁⠇ ⠧⠁⠇⠥⠑⠎ ⠞⠕ ⠋⠗⠁⠉⠰⠝⠁⠇ ⠧⠁⠇⠥⠑⠎ ⠃⠽
15   ⠏⠗⠑⠎⠎⠬
16   ⠸⠩ ⠫⠅⠠⠠⠍⠁⠞⠓⠻⠠ ⠫⠅⠠⠠⠑⠝⠞⠑⠗⠻⠫⠅⠠⠠⠑⠝⠞⠑⠗⠻ ⠸⠱⠲
17   ⠠⠽ ⠺⠙ ⠺⠁⠝⠞ ⠞⠕ ⠙ ⠹ ⠱⠢ ⠎⠊⠍⠏⠇⠊⠋⠽⠬ ⠁ ⠐⠟ ⠇
18   ⠸⠩ ⠹⠒⠬⠊⠌⠲⠤⠢⠊⠼ ⠸⠱⠲ ⠠⠎⠑⠑ ⠮ ⠎⠉⠗⠑⠢ ⠆⠇ ⠐⠗⠲
19   ⠈⠨⠣⠹⠊⠗⠙ ⠎⠉⠗⠑⠢⠈⠨⠜
```

Line 6: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth Code switches (GC 2.1, GC 2.2 and GC 2.3). Retain fully capitalized words in keystroke commands (GC 2.4).

Lines 7, 12, and 19: Embedded transcriber's note clarifying the location of the three screens.

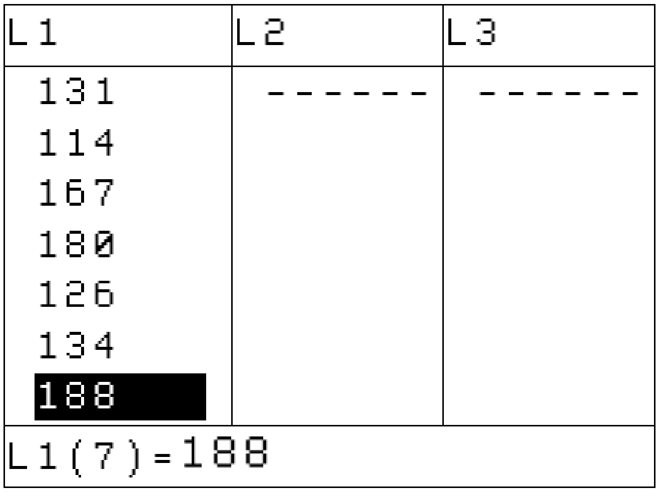
Line 10: The single-word switch indicator was used before Press to avoid switches. No contractions are used in words within keystroke commands (GC 2.5).

Line 16: No spaces are inserted between keystrokes or between items within keystrokes, unless they are separated by commas in print (GC 2.6). It is preferable to keep keystrokes on one line if possible (GC 2.6.2). Retain full capitalization on words in keystroke commands (GC 2.4). No contractions are used in words within keystroke commands (GC 2.5).

```
1   ⠸⠩ ⠫⠛⠉⠎ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶   ⠁⠼⠁⠃
2   ⠸⠠⠝⠕⠗⠍⠁⠇ ⠠⠎⠉⠊ ⠠⠑⠝⠛
3   ⠸⠠⠋⠇⠕⠁⠞ ⠼⠴ ⠼⠂ ⠼⠆ ⠼⠒ ⠼⠲ ⠼⠢ ⠼⠖ ⠼⠶ ⠼⠦ ⠼⠔
4   ⠸⠠⠗⠁⠙⠊⠁⠝ ⠠⠙⠑⠛⠗⠑⠑
5   ⠸⠠⠋⠥⠝⠉ ⠠⠏⠁⠗ ⠠⠏⠕⠇ ⠠⠎⠑⠟
6   ⠸⠠⠉⠕⠝⠝⠑⠉⠞⠑⠙ ⠠⠙⠕⠞
7   ⠸⠠⠎⠑⠟⠥⠑⠝⠞⠊⠁⠇ ⠠⠎⠊⠍⠥⠇
8   ⠠⠗⠑⠁⠇ ⠸⠁⠬⠃⠊ ⠗⠑⠸⠣⠨⠹⠊
9   ⠸⠠⠋⠥⠇⠇ ⠠⠓⠕⠗⠊⠵ ⠰⠠⠛⠤⠰⠠⠞
10  ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
11  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
12  ⠸⠩ ⠫⠛⠉⠎ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶
13  ⠷⠢⠤⠆⠊⠾⠷⠲⠬⠔⠊⠾
14  ⠀⠀⠀⠀⠼⠒⠦⠬⠒⠶⠊
15  ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
16  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
17  ⠸⠩ ⠫⠛⠉⠎ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶
18  ⠷⠒⠬⠊⠾⠸⠌⠷⠲⠤⠢⠊⠾
19  ⠀⠀⠀⠀⠼⠨⠂⠶⠴⠶⠒⠂⠶⠴⠶⠒⠬⠨⠲⠖ ⠄⠄⠄
20  ⠠⠁⠝⠎ ⠫⠕ ⠠⠋⠗⠁⠉
21  ⠀⠀⠀⠀⠼⠶⠸⠌⠲⠂⠬⠂⠔⠸⠌⠲⠂⠊
22  ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
```

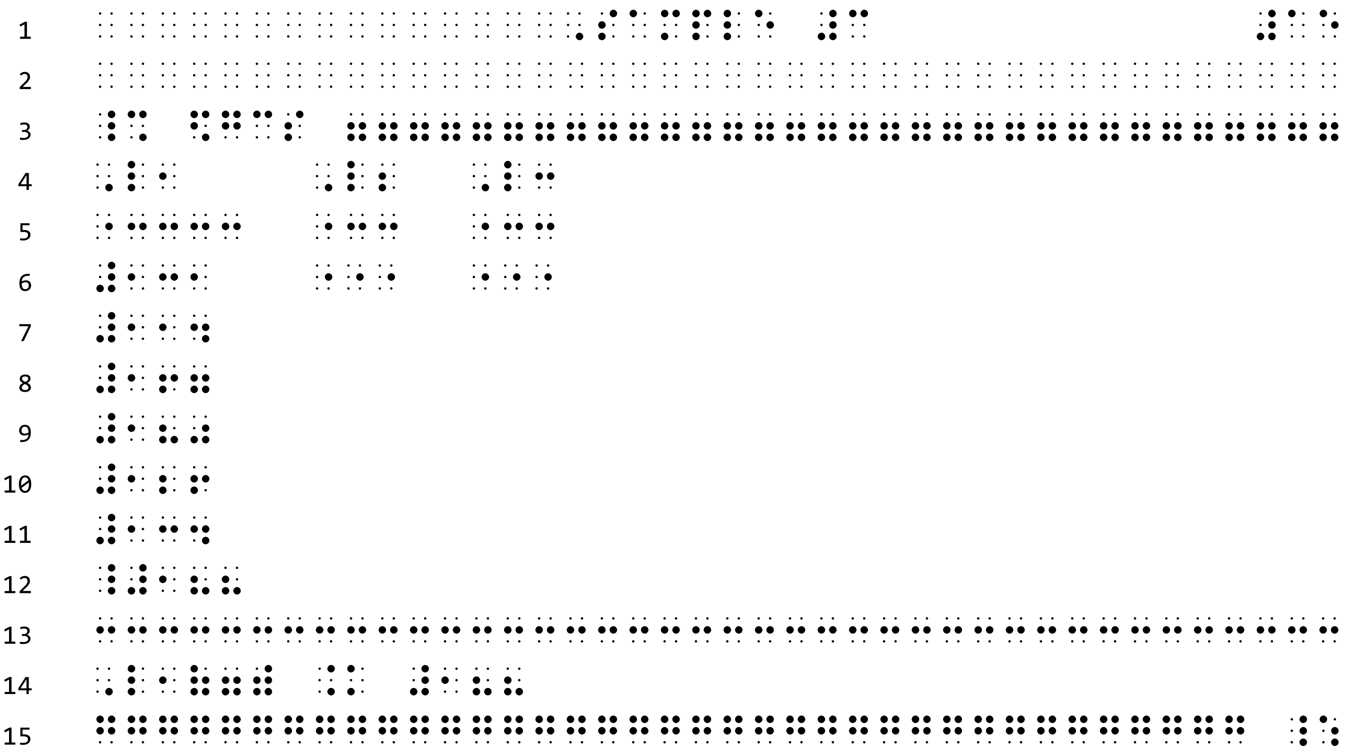
Line 1: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).
Lines 2-9: Highlighting is indicated with dots 456 and highlighting is terminated by a space (GC 5.3)
Line 3: The digits 0, 1, 2, etc., are spaced from each other because each can be highlighted separately as a choice by the user.
Lines 5, 6, 7, 8: No contractions are used in words within a calculator screen (GC 5.1)
Line 8: Math caret and Greek lower-case theta.
Line 9: Letter indicators are needed on the letters G-T on either side of the hyphen as required by the Nemeth Code with regard to single letters.
Lines 10, 15, 22: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).
Lines 14, 19, 21: Right-justified lines are transcribed four cells to the right of the beginning of the previous line (GC 5.2.2)
Line 20: Right-pointing arrowhead within a calculator screen (GC 8.3)

Sample 3



L1	L2	L3
131	------	------
114		
167		
180		
126		
134		
188		

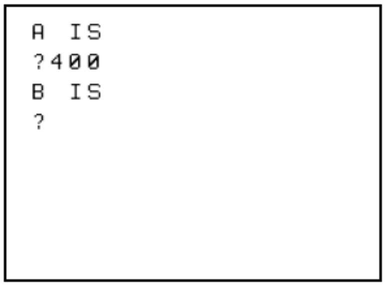
L1(7)=188



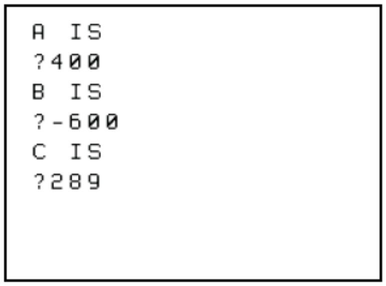
Line 3: Opening Nemeth Code indicator and opening screen line. (GC 4 and GC 4.1)
Line 4: Identifiers are transcribed as subscripts. (GC 6.1)
Line 6-12: Hyphens across a column are replaced with guide dots. (GC 5.7)
Line 12: The number 188 is highlighted in the screen in print.
Line 13: A separation line is inserted between the table and the final expression, as shown in print. The separation line is the width of the braille page. (GC 5.8)
Line 14: A space is inserted on either side of a comparison sign. (GC 5.10)
Line 15: Closing screen line and Nemeth Code terminator. (GC 4 and GC 4.1)

Sample 4

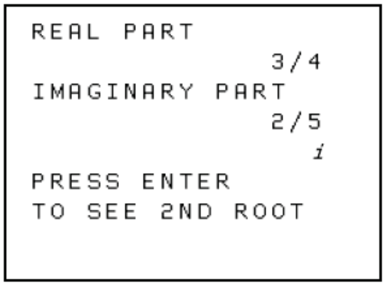
Follow the same procedure to enter the value of “*b*” and the value of “*c*”. When the values for “*a*”, “*b*”, and “*c*” have been entered, the first screen in the second row below appears. This screen tells us that one root is $\frac{3}{4}+\frac{2}{5}i$, and asks us to press `ENTER` to view the other root. Doing so results in the second screen in the second row below. This screen tells us that the other root is $\frac{3}{4}-\frac{2}{5}i$.



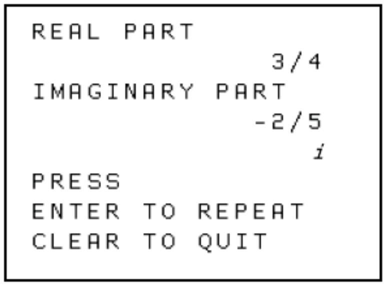
```
A IS
?400
B IS
?
```



```
A IS
?400
B IS
?-600
C IS
?289
```



```
REAL PART
              3/4
IMAGINARY PART
              2/5
                i
PRESS ENTER
TO SEE 2ND ROOT
```

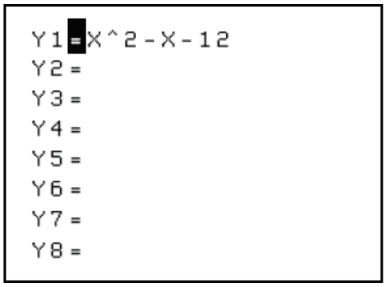


```
REAL PART
              3/4
IMAGINARY PART
             -2/5
                i
PRESS
ENTER TO REPEAT
CLEAR TO QUIT
```

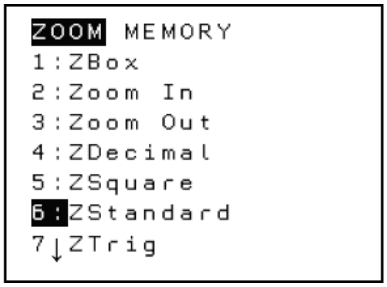
3. **Solving Graphically With A Graphing Calculator**

Provided the quadratic equation has real roots, the equation can be solved graphically. Shown below is the graph of the quadratic function $y = x^2 - x - 12$. If we are trying to solve the equation $x^2 - x - 12 = 0$, then we merely need to examine the graph of $y = x^2 - x - 12$, and determine the *x*-intercepts--the *x*-coordinates of the points on the graph where y is 0. Clearly if we can find the *x* values for which y is 0, then we have found the x values for which $x^2 - x - 12 = 0$.

The graph of $y = x^2 - x - 12$ is drawn using the window created by pressing `ZOOM` `6` as shown below.



```
Y1=X^2-X-12
Y2=
Y3=
Y4=
Y5=
Y6=
Y7=
Y8=
```



```
ZOOM MEMORY
1:ZBox
2:Zoom In
3:Zoom Out
4:ZDecimal
5:ZSquare
6:ZStandard
7↓ZTrig
```

```
1   ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠠⠎⠁⠍⠏⠇⠑ ⠼⠙            ⠼⠁⠋
2   ⠲⠲⠲ ⠠⠹ ⠎⠉⠗⠑⠢ ⠞⠑⠇⠇⠎ ⠥ ⠞ ⠐⠕ ⠗⠕⠕⠞ ⠊⠎
3   ⠸⠩ ⠹⠒⠌⠲⠼⠬⠹⠆⠌⠢⠼⠊ ⠸⠱⠂ ⠯ ⠁⠎⠅⠎ ⠥ ⠞⠕ ⠏⠗⠑⠎⠎
4   ⠸⠩ ⠫⠅⠠⠠⠑⠝⠞⠑⠗⠻ ⠸⠱ ⠞⠕ ⠧⠊⠑⠺ ⠮ ⠕⠮⠗ ⠗⠕⠕⠞⠲
5   ⠠⠙⠕⠬ ⠎ ⠗⠑⠎⠥⠇⠞⠎ ⠔ ⠮ ⠎⠑⠉⠕⠝⠙ ⠎⠉⠗⠑⠢ ⠔ ⠮
6   ⠎⠑⠉⠕⠝⠙ ⠗⠪ ⠆⠇⠲ ⠈⠨⠣⠋⠳⠗⠹ ⠎⠉⠗⠑⠢ ⠆⠇⠈⠨⠜ ⠠⠹
7   ⠎⠉⠗⠑⠢ ⠞⠑⠇⠇⠎ ⠥ ⠞ ⠮ ⠕⠮⠗ ⠗⠕⠕⠞ ⠊⠎
8   ⠸⠩ ⠹⠒⠌⠲⠼⠤⠹⠆⠌⠢⠼⠊ ⠸⠱⠲
9   ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
10  ⠸⠩ ⠫⠛⠉⠎ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶
11  ⠰⠠⠁ ⠠⠠⠊⠎
12  ⠿⠼⠲⠴⠴
13  ⠰⠠⠃ ⠠⠠⠊⠎
14  ⠿
15  ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
16  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
17  ⠸⠩ ⠫⠛⠉⠎ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶
18  ⠰⠠⠁ ⠠⠠⠊⠎
19  ⠿⠼⠲⠴⠴
20  ⠰⠠⠃ ⠠⠠⠊⠎
21  ⠿⠤⠼⠖⠴⠴
22  ⠰⠠⠉ ⠠⠠⠊⠎
23  ⠿⠼⠆⠦⠔
24  ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
25  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠼⠁
```

Line 4: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth Code switches (GC 2.1, GC 2.2 and GC 2.3). Retain fully capitalized words in keystroke commands (GC 2.4). No contractions are used in words within a keystroke indicator (GC 2.5)

Line 6: Embedded transcriber's note explaining the location of screen

Lines 10, 17: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).

Lines 11, 13, 18, 20, 22: Retain fully capitalized words within screens (GC 5.4).

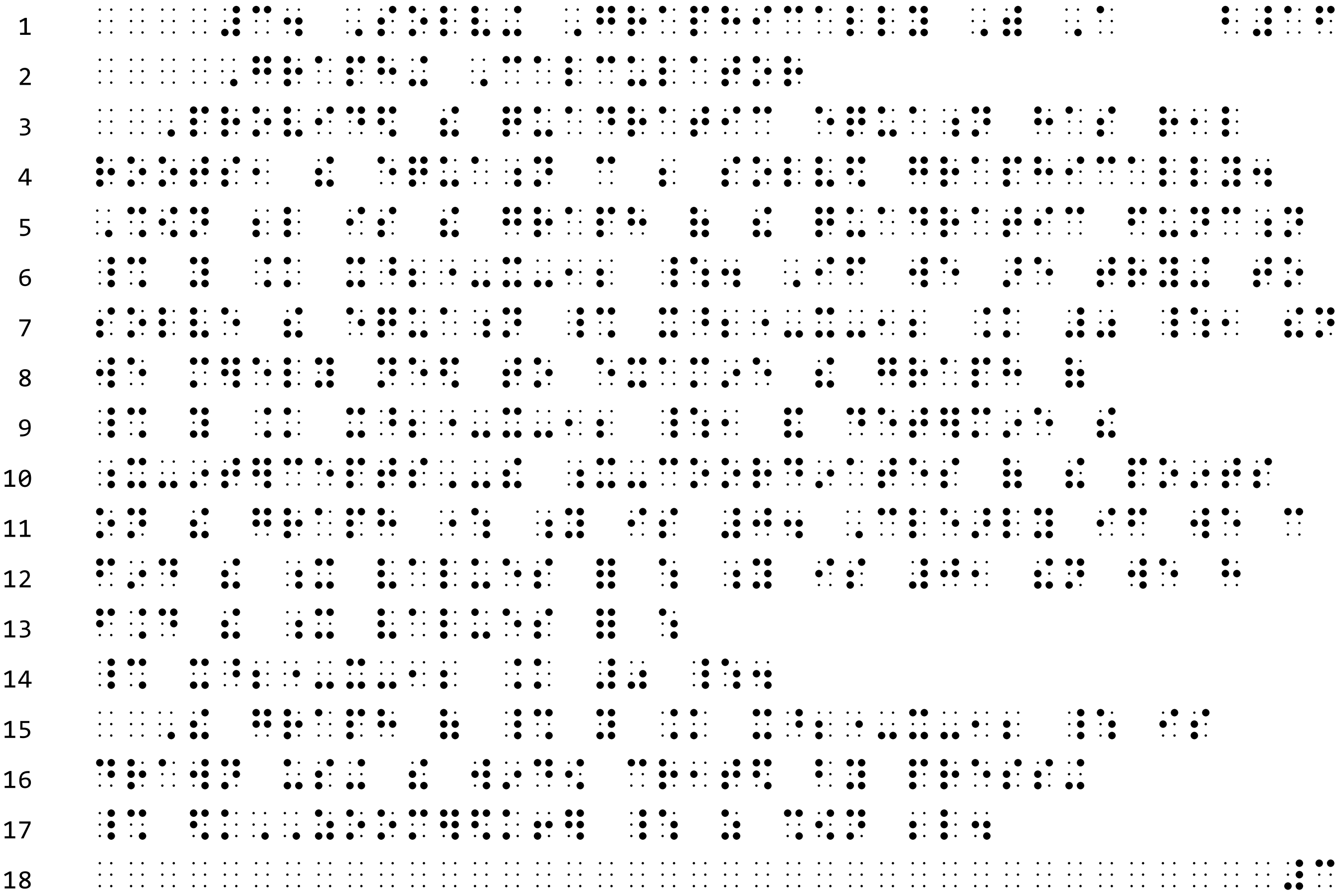
Lines 12, 14, 19, 21, 23: Question mark is full cell (GC 8.3). Numeric indicator is required on a number following a full cell. (GC 5.14)

Lines 9, 16, 25: Blank lines are required by GC 4.3.

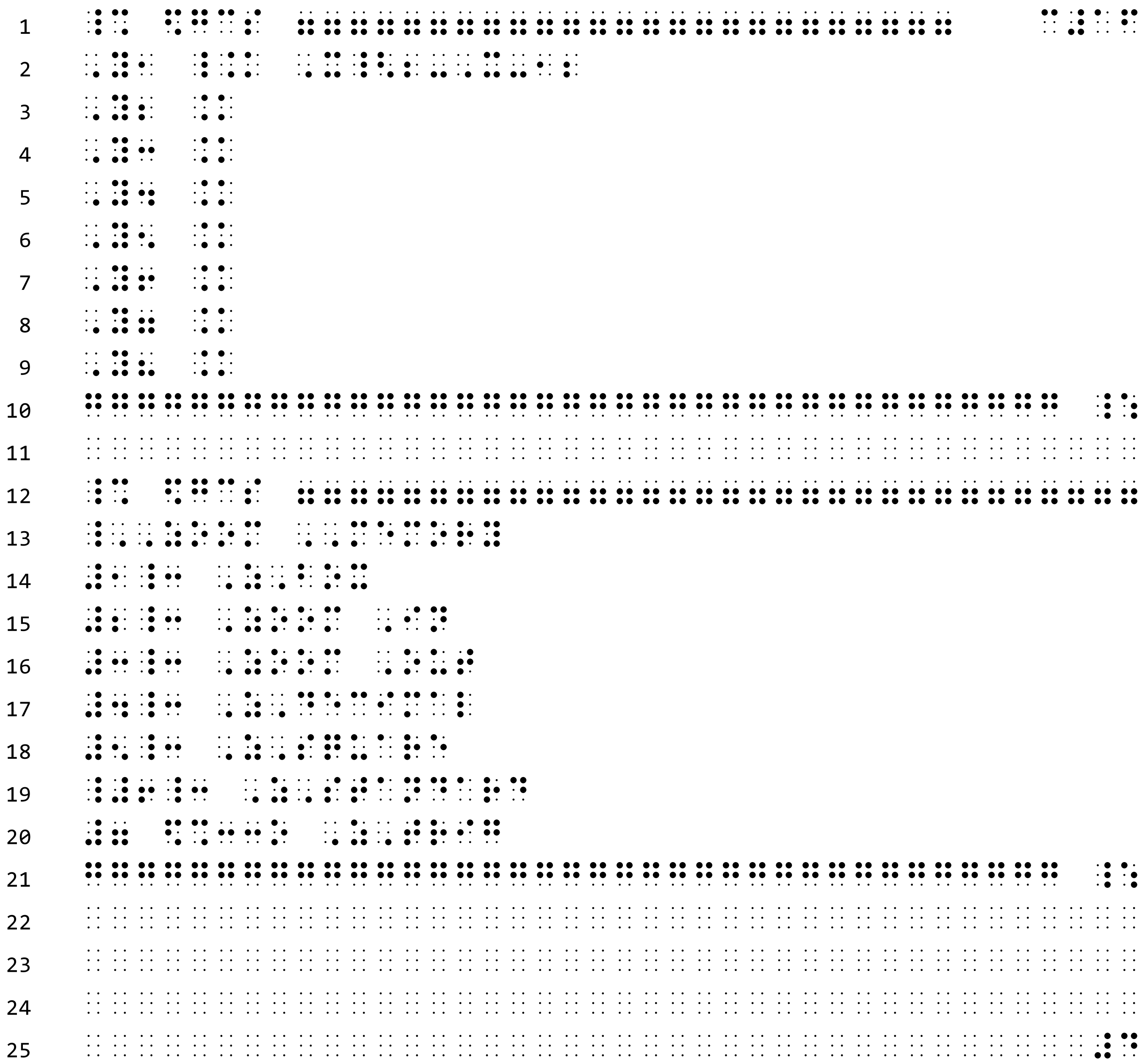
Line 15, 24: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

```
1   ⠸⠩ ⠫⠛⠉⠎ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶   ⠁⠼⠁⠋
2   ⠠⠠⠗⠑⠁⠇ ⠠⠠⠏⠁⠗⠞
3   ⠀⠀⠀⠀⠼⠒⠸⠌⠲
4   ⠠⠠⠊⠍⠁⠛⠊⠝⠁⠗⠽ ⠠⠠⠏⠁⠗⠞
5   ⠀⠀⠀⠀⠼⠆⠸⠌⠢
6   ⠀⠀⠀⠀⠰⠊
7   ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
8   ⠠⠠⠏⠗⠑⠎⠎ ⠠⠠⠑⠝⠞⠑⠗
9   ⠠⠠⠞⠕ ⠠⠠⠎⠑⠑ ⠼⠆⠝⠙ ⠠⠠⠗⠕⠕⠞
10  ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
11  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
12  ⠸⠩ ⠫⠛⠉⠎ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶
13  ⠠⠠⠗⠑⠁⠇ ⠠⠠⠏⠁⠗⠞
14  ⠀⠀⠀⠀⠼⠒⠸⠌⠲
15  ⠠⠠⠊⠍⠁⠛⠊⠝⠁⠗⠽ ⠠⠠⠏⠁⠗⠞
16  ⠀⠀⠀⠀⠤⠼⠆⠸⠌⠢
17  ⠀⠀⠀⠀⠰⠊
18  ⠠⠠⠏⠗⠑⠎⠎
19  ⠠⠠⠑⠝⠞⠑⠗ ⠠⠠⠞⠕ ⠠⠠⠗⠑⠏⠑⠁⠞
20  ⠠⠠⠉⠇⠑⠁⠗ ⠠⠠⠞⠕ ⠠⠠⠟⠥⠊⠞
21  ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
22  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
23  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
24  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
25  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠼⠃
```

Lines 1 and 12: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).
Line 2: Retain fully capitalized words (GC 5.4) and use no contractions within a screen (GC 5.1).
Line 3: Right-justified in print. Begins four cells to the right of the line above (GC 5.2.2).
Lines 5-6: Right-justified in print. Begins four cells to the right of the line above (GC 5.2.2). Two consecutive right-justified lines are transcribed beginning in the same cell. (GC 5.2.3)
Line 7: Blank line inserted to follow print. (GC 6.3)
Line 8-9: Start and stop text lines as they are shown in print (GC 5.2). Retain fully capitalized words (GC 5.4) and use no contractions within a screen (GC 5.1).
Lines 10 and 21: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).
Lines 11 and 22: Blank line is required by GC 4.3.
Lines 18-20: Start and stop text lines as they are shown in print (GC 5.2). Retain fully capitalized words (GC 5.4) and use no contractions within a screen (GC 5.1).


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

Line 17: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth Code switches (GC 2.1, GC 2.2 and GC 2.3). No spaces are inserted between keystrokes (GC 2.6).



Lines 1 and 12: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).

Line 1: A top box line can appear on line 1 when a running head is not used. (*Braille Formats: Principles of Print to Braille Transcription, 2016* [BF]).

Line 2: The equal sign is highlighted in the calculator screen in print. Highlighting is terminated by a space (GC 5.3)

Lines 2-9: Identifiers are transcribed as subscripts (GC 6.1)

Lines 3-9: Symbols are not inserted to replace blank spaces in print (GC 5.5).

Lines 10 and 21: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

Line 11: A blank line is required by GC 4.3.

Line 13: "ZOOM" is highlighted in print (GC 5.3). Retain full capitalization (GC 5.4).

Lines 14-19: Per Nemeth Code, a punctuation indicator is required between a number and punctuation that follows.

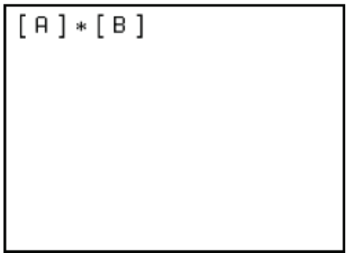
Lines 14-20: Retain print capitalization (GC 5.4) and use no contractions within a screen (GC 5.1).

Line 19: "6:" is highlighted in print (GC 5.3).

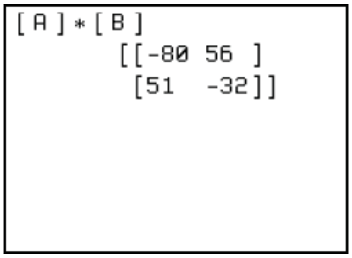
Line 20: Down-pointing arrow with shaft -- a Nemeth symbol (GC 9).

Sample 5

To find the matrix product *AB*, press [MATRIX], [1], [×], [MATRIX], [2], [ENTER]. The following screens result.

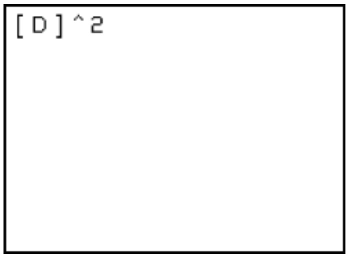


```
[A]*[B]
```

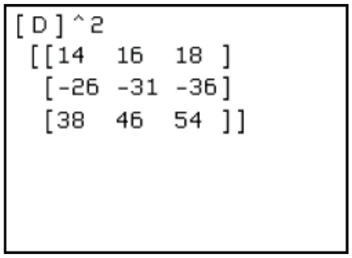


```
[A]*[B]
       [[-80 56 ]
        [51  -32]]
```

To square matrix *D*, press [MATRIX], [4], [^], [2], [ENTER]. The following screens result.



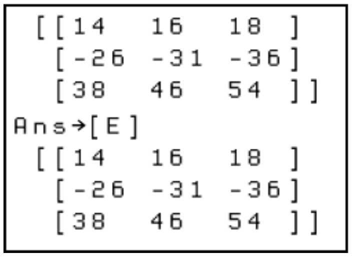
```
[D]^2
```



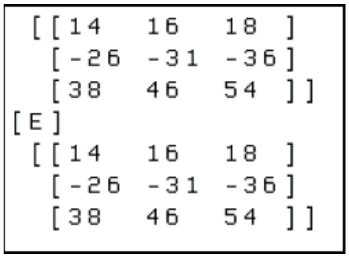
```
[D]^2
 [[14  16  18 ]
  [-26 -31 -36]
  [38  46  54 ]]
```

3. To Store A Result

If we wish to store the result of D^2, and we already have the answer to D^2, as in the screen below left, simply press [STO▸], [MATRIX], [5], [ENTER] which results in the screen below left. Of course we chose matrix *E* as the place to store the answer to D^2, because *E* was not currently being used for any other purpose. To see if matrix *E* really does contain the result of D^2, press [MATRIX], [5], [ENTER]. This results in the screen below right and confirms that *E* now does hold the answer to D^2.



```
 [[14   16   18 ]
  [-26  -31  -36]
  [38   46   54 ]]
Ans→[E]
 [[14   16   18 ]
  [-26  -31  -36]
  [38   46   54 ]]
```

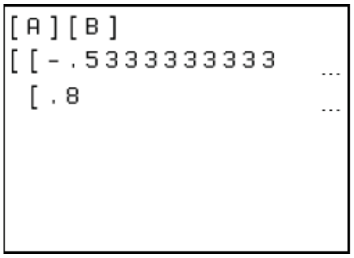


```
 [[14   16   18 ]
  [-26  -31  -36]
  [38   46   54 ]]
[E]
 [[14   16   18 ]
  [-26  -31  -36]
  [38   46   54 ]]
```

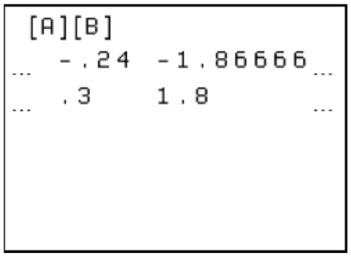
6. Converting From Decimal To Fractional Form

When we ask the calculator to determine the value of $\begin{bmatrix} 3/4 & -2/5 \\ -7/10 & 1/2 \end{bmatrix}\begin{bmatrix} 1 & 0 & -4 \\ 3 & 3/5 & -2 \end{bmatrix}$, it gives the result with decimal values (below left).

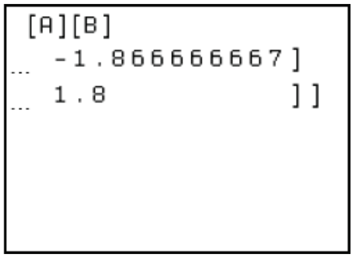
The three dots indicate that part of the answer matrix cannot be seen on the screen. By using the right arrow key we can see the other entries (below center and right).



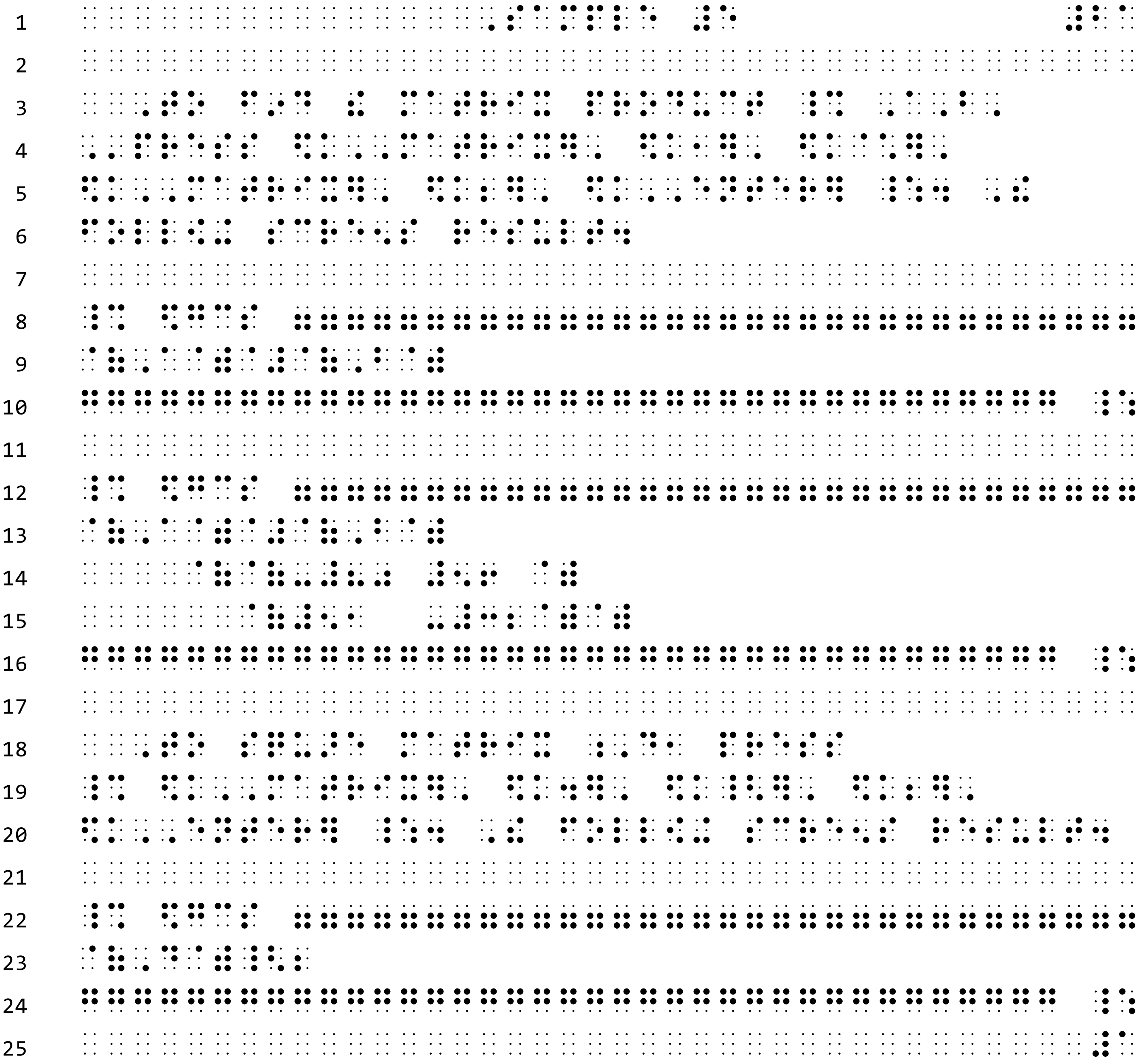
```
[A][B]
[[-.5333333333   …
  [.8            …
```



```
  [A][B]
…   -.24  -1.86666 …
…   .3    1.8      …
```



```
 [A][B]
…  -1.866666667]
…  1.8          ]]
```



Lines 4-5 and 19-20: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth Code switches (GC 2.1, GC 2.2 and GC 2.3). In this example, brackets indicate keystrokes. Keystrokes are spaced because they are separated by commas (GC 2.6). Retain fully capitalized words in keystroke commands (GC 2.4). Use no contractions in words within a keystroke indicator (GC 2.5).

Line 4: The single-word switch indicator was used before *press* to avoid switches.

Lines 7, 11, 17, 21 and 25: Blank lines are required by GC 4.3

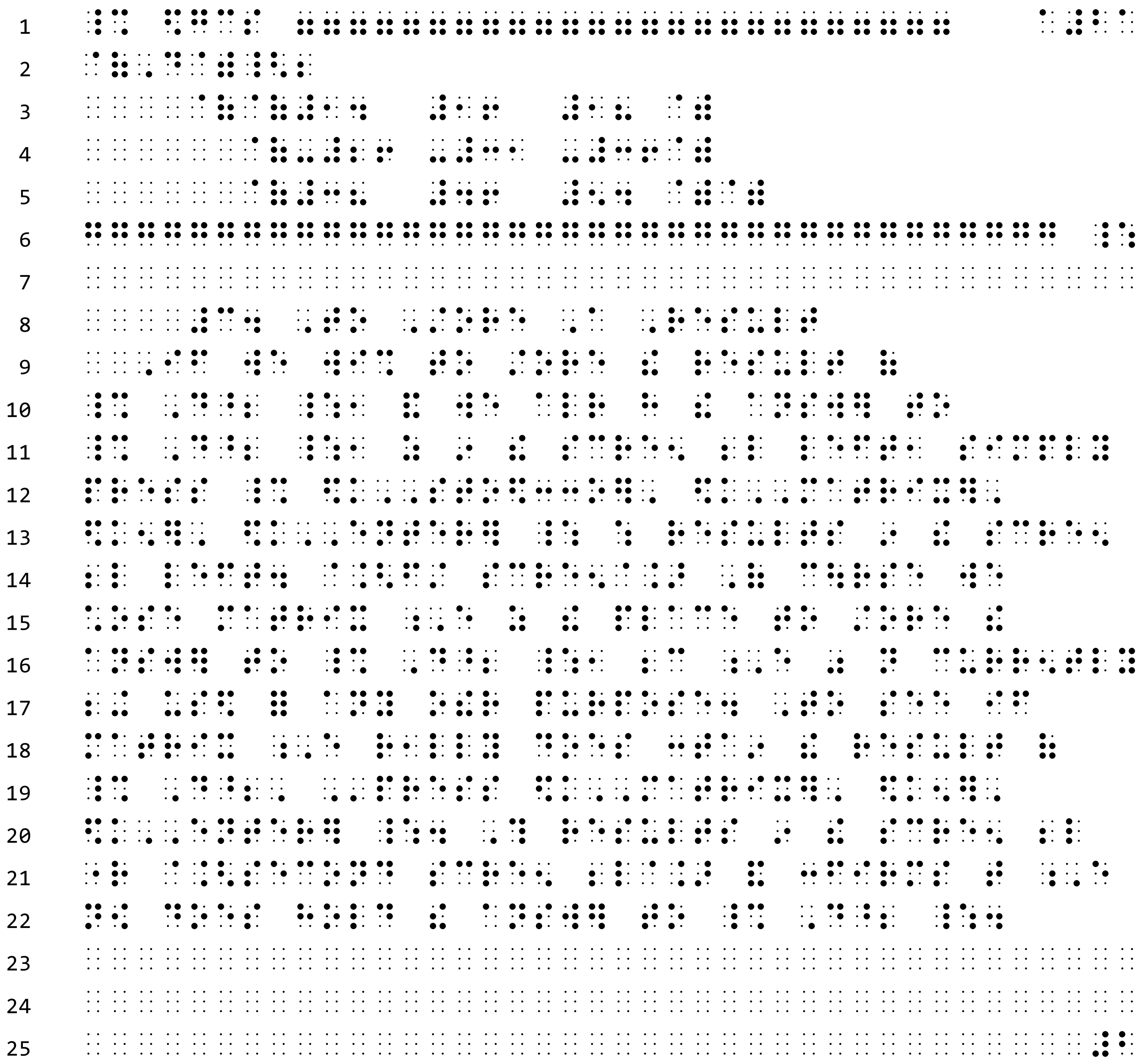
Lines 8, 12, and 22: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).

Line 9: The asterisk is a multiplication sign. (Nemeth Code)

Lines 10, 16, and 24: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

Lines 14 and 15: This is a right-justified matrix in print and is indented four cells. Alignment is according to Nemeth Code. Enlarged grouping signs are *not* used in print so each line of "text" is transcribed as a separate line and *no* blank lines before and after are required (arrangement is *not* spatial) (GC 5.9.1).

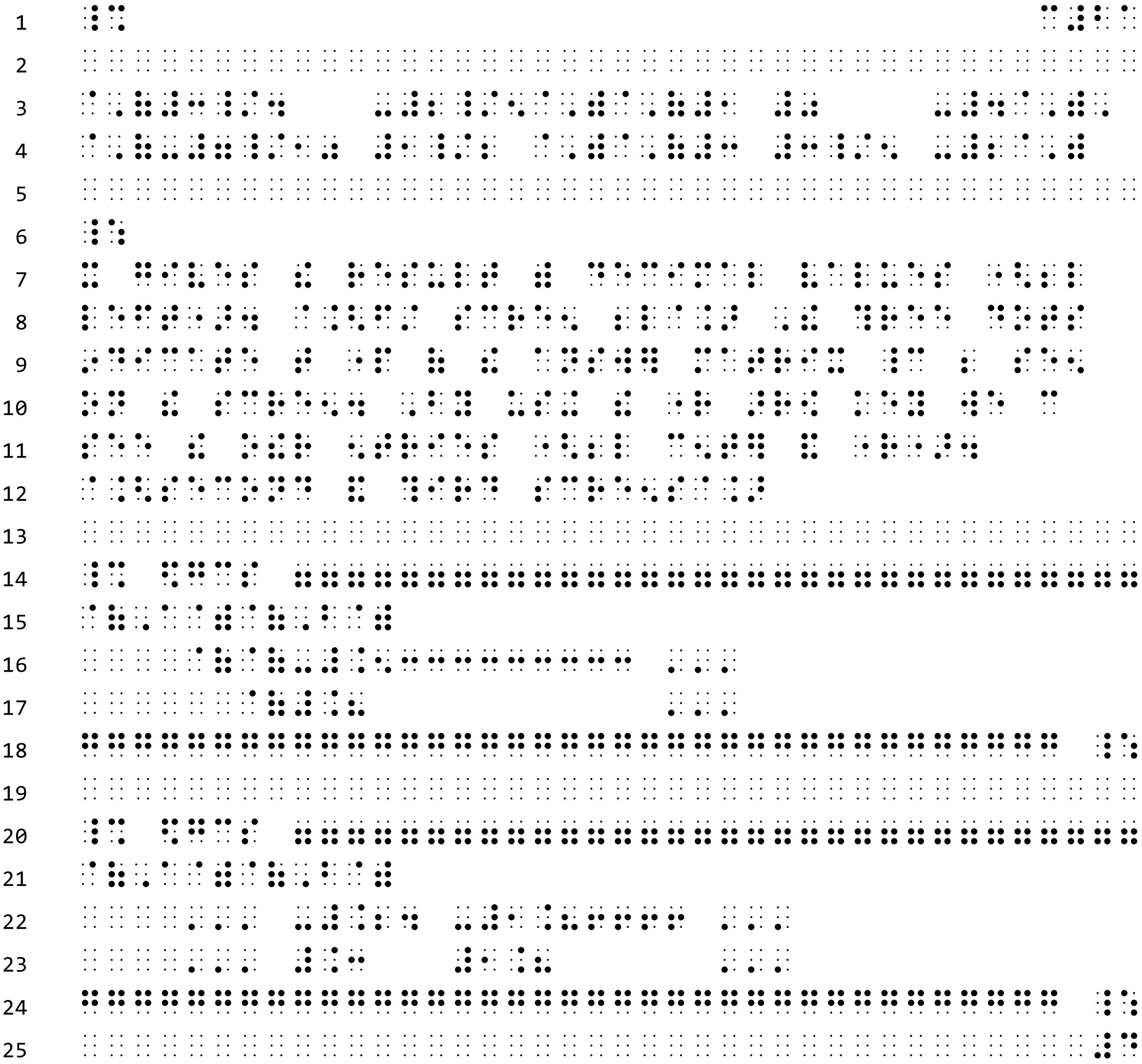
Lines 19 and 23: Math caret (Nemeth Code)



Line 1: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).
Line 2: Math caret (Nemeth Code)
Lines 3-5: This is a right-justified matrix in print and is indented four cells. Alignment is according to Nemeth Code. Enlarged grouping signs are *not* used in print so each line of "text" is transcribed as a separate line and *no* blank lines before and after are required (arrangement is *not* spatial) (GC 5.9.1).
Line 6: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).
Line 7: A blank line is required by GC 4.3.
Lines 12 and 13: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth switches. In this example, brackets indicate keystrokes (GC 2.1, GC 2.2 and GC 2.3). Keystrokes are spaced because they are separated by commas (GC 2.6). Retain fully capitalized words in keystroke commands (GC 2.4). Use no contractions in words within a keystroke indicator (GC 2.5).
Line 12: Right-pointing arrow with shaft (GC 9)
Line 14: Embedded transcriber's note explaining location of screen.
Line 19: The single-word switch indicator was used before *Press* to avoid switching out of and back into Nemeth Code.
Line 21: Embedded transcriber's note explaining location of screen.

```
1  ⠸⠩ ⠫⠛⠉⠎ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶   ⠃⠼⠃⠁
2  ⠀⠀⠀⠀⠈⠷⠈⠷⠼⠂⠲ ⠼⠂⠖ ⠼⠂⠦ ⠈⠾
3  ⠀⠀⠀⠀⠀⠀⠈⠷⠤⠼⠆⠖ ⠤⠼⠒⠂ ⠤⠼⠒⠖⠈⠾
4  ⠀⠀⠀⠀⠀⠀⠈⠷⠼⠒⠦ ⠼⠲⠖ ⠼⠢⠲ ⠈⠾⠈⠾
5  ⠠⠁⠝⠎ ⠫⠒⠒⠕ ⠈⠷⠠⠑⠈⠾
6  ⠀⠀⠀⠀⠈⠷⠈⠷⠼⠂⠲ ⠼⠂⠖ ⠼⠂⠦ ⠈⠾
7  ⠀⠀⠀⠀⠀⠀⠈⠷⠤⠼⠆⠖ ⠤⠼⠒⠂ ⠤⠼⠒⠖⠈⠾
8  ⠀⠀⠀⠀⠀⠀⠈⠷⠼⠒⠦ ⠼⠲⠖ ⠼⠢⠲ ⠈⠾⠈⠾
9  ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
10 ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
11 ⠸⠩ ⠫⠛⠉⠎ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶
12 ⠀⠀⠀⠀⠈⠷⠈⠷⠼⠂⠲ ⠼⠂⠖ ⠼⠂⠦ ⠈⠾
13 ⠀⠀⠀⠀⠀⠀⠈⠷⠤⠼⠆⠖ ⠤⠼⠒⠂ ⠤⠼⠒⠖⠈⠾
14 ⠀⠀⠀⠀⠀⠀⠈⠷⠼⠒⠦ ⠼⠲⠖ ⠼⠢⠲ ⠈⠾⠈⠾
15 ⠈⠷⠠⠑⠈⠾
16 ⠀⠀⠀⠀⠈⠷⠈⠷⠼⠂⠲ ⠼⠂⠖ ⠼⠂⠦ ⠈⠾
17 ⠀⠀⠀⠀⠀⠀⠈⠷⠤⠼⠆⠖ ⠤⠼⠒⠂ ⠤⠼⠒⠖⠈⠾
18 ⠀⠀⠀⠀⠀⠀⠈⠷⠼⠒⠦ ⠼⠲⠖ ⠼⠢⠲ ⠈⠾⠈⠾
19 ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
20 ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
21 ⠀⠀⠀⠀⠼⠋⠲ ⠠⠒⠧⠻⠞⠬ ⠠⠋ ⠠⠙⠑⠉⠊⠍⠁⠇ ⠠⠞⠕ ⠠⠋⠗⠁⠉⠰⠝⠁⠇
22 ⠀⠀⠀⠀⠠⠿⠍
23 ⠀⠀⠠⠱⠢ ⠺⠑ ⠁⠎⠅ ⠮ ⠉⠁⠇⠉⠥⠇⠁⠞⠕⠗ ⠞⠕ ⠙⠑⠞⠻⠍⠔⠑ ⠮
24 ⠧⠁⠇⠥⠑ ⠷
25 ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠼⠉
```

Lines 1 and 11: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).
Line 1: A top screen line can appear on line 1 when a running head is not used (BF).
Lines 2-4, 6-8, 12-14, and 16-18: These are right-justified matrices in print and are indented four cells. Alignment is according to Nemeth Code. Enlarged grouping signs are not used in print so each line of "text" is transcribed as a separate line and no blank lines before and after are required (arrangement is not spatial) (GC 5.9.1).
Line 5: Right-pointing arrow with shaft (GC 9)
Lines 9 and 19: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).



Lines 3 and 4: This is a matrix within text and enlarged grouping signs are used. This spatial arrangement requires a blank line before and after (GC 5.9.2) and Nemeth Code §183.

Line 8: Embedded transcriber's note explaining location of screen.

Line 12: Embedded transcriber's note explaining location of screens.

Lines 14 and 20: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).

Lines 16 and 17: This matrix is more of the answer to the multiplication of [A][B] and is right-justified in print. It begins four cells to the right of the beginning of the line above (GC 5.2.2). The matrix is not terminated with closing brackets on this screen; the information continues on the following screen. Enlarged grouping signs are not used in print (GC 5.9.1)

Lines 18 and 24: Closing screen lines and Nemeth Code terminators (GC 4 and GC 4.1).

Lines 22 and 23: These two lines are the continuation of the previous screen.

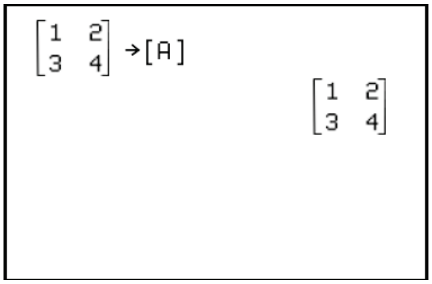
```
1 ⠸⠩⠀⠫⠛⠉⠎⠀⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠀⠀⠀⠙⠼⠃⠁
2 ⠈⠯⠠⠁⠈⠾⠈⠯⠠⠃⠈⠾
3 ⠀⠀⠀⠀⠄⠄⠄⠀⠤⠼⠂⠨⠦⠖⠖⠖⠖⠖⠖⠖⠶⠈⠾
4 ⠀⠀⠀⠀⠄⠄⠄⠀⠼⠂⠨⠦⠀⠀⠀⠀⠀⠀⠀⠀⠀⠈⠾⠈⠾
5 ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠀⠸⠱
```

Line 1: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1). A top screen line can appear on line 1 when a running head is not used (BF).

Lines 3 and 4: This matrix is the rest of the answer to the multiplication of [A][B] and is right-justified in print. It begins four cells to the right of the beginning of the line above (GC 5.2.2). The matrix is terminated with closing brackets on this screen aligned according to Nemeth Code. Enlarged grouping signs are not used in print (GC 5.9.1).

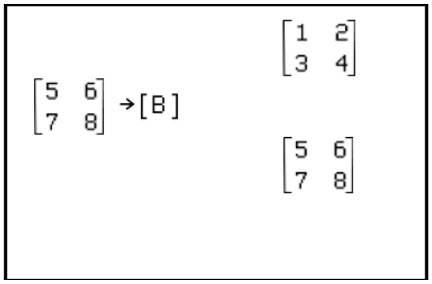
Line 5: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

Sample 6



$\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}\rightarrow[A]$

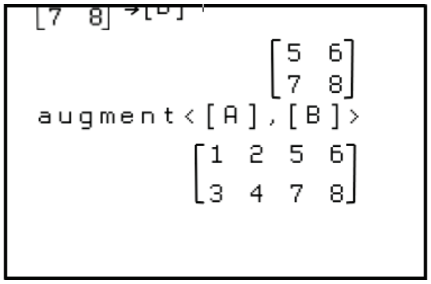
$\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}$



$\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}$

$\begin{bmatrix}5 & 6\\ 7 & 8\end{bmatrix}\rightarrow[B]$

$\begin{bmatrix}5 & 6\\ 7 & 8\end{bmatrix}$

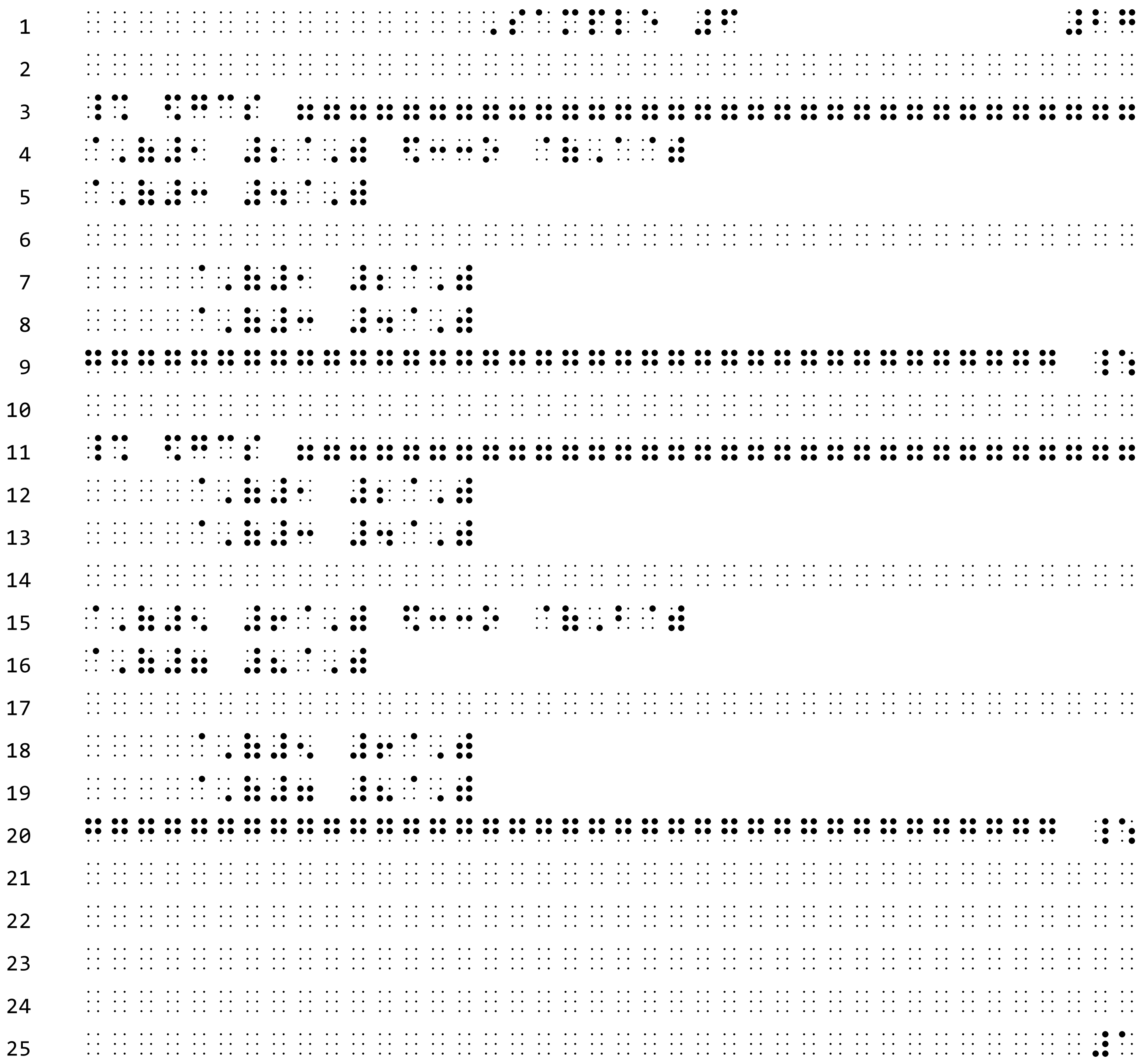


$[7 \quad 8]\rightarrow$

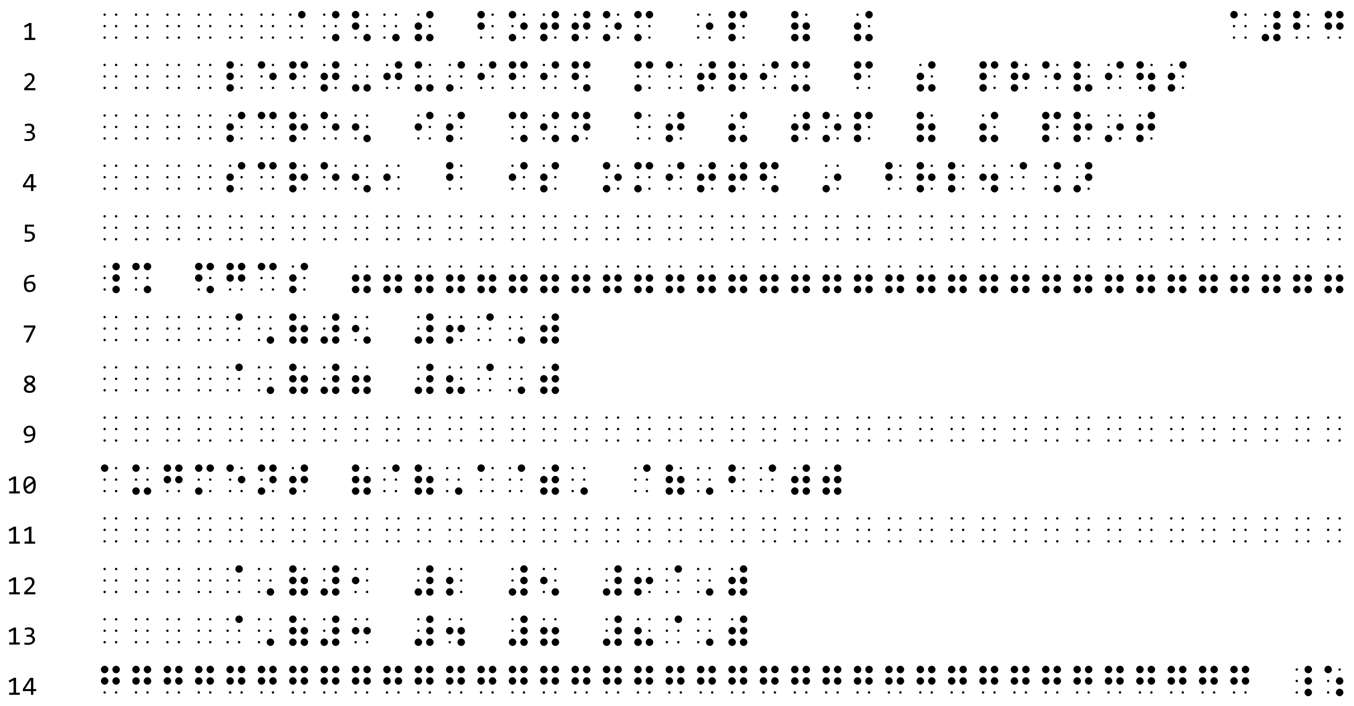
$\begin{bmatrix}5 & 6\\ 7 & 8\end{bmatrix}$

augment<[A],[B]>

$\begin{bmatrix}1 & 2 & 5 & 6\\ 3 & 4 & 7 & 8\end{bmatrix}$



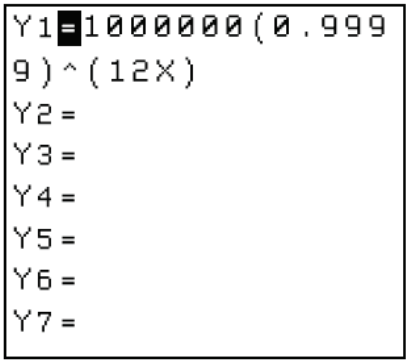
Lines 2, 10, and 21: A blank line is required by GC 4.3.
Lines 3 and 11: Opening Nemeth Code indicators and opening screen lines (GC 4 and GC 4.1).
Lines 4-5 and 15-16: Matrices are transcribed and aligned according to Nemeth Code (GC 5.9) Enlarged grouping signs are used. This spatial arrangement requires a blank line before and after (GC 5.9.2).
Lines 4 and 15: Right-pointing arrow with shaft (GC 9).
Line 6: The matrices are spatial and require blank lines before and after except immediately following an open screen line or preceding a closing screen line (GC 5.9.2).
Lines 7-8: This matrix is the answer [A] and is right-justified in print. It begins four cells to the right of the beginning of the line above (GC 5.1.1). Enlarged grouping signs are used (GC 5.7.2).
Lines 9 and 20: Closing screen lines and Nemeth Code terminators (GC 4 and GC 4.1).
Lines 12 and 13: This matrix is the answer [A] (repeated from the previous screen).
Lines 14 and 17: Blank lines are required by GC 5.9.2.
Line 15: Right-pointing arrow with shaft (GC 9).
Lines 18 and 19: This matrix is the answer [B] and is right-justified in print. It begins four cells to the right of the beginning of the line above (GC 5.2.2). Enlarged grouping signs are used (GC 5.9.2)
Line 20: Closing screen line and Nemeth terminator (GC 4.1).



Lines 1-4: This is a transcriber's note explaining the omission of the partial matrix at the top of the screen.
Line 5: A blank line is required by GC 4.3
Line 6: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).
Lines 7 and 8: This matrix is the answer [B] (repeated from the previous screen) and is right-justified in print. It begins four cells to the right of the beginning of the line above (GC 5.2.2). Enlarged grouping signs are used (GC 5.9.2).
Lines 9 and 11: The matrices are spatial and require blank lines before and after except immediately following an open screen line or preceding a closing screen line (GC 5.9.2).
Line 10: Retain print capitalization (GC 5.4) and use no contractions within a screen (GC 5.1). “augment” is a command (similar to a function) and requires a space following it.
Lines 12 and 13: This matrix is the answer to “augment ([A], [B])”, is right-justified in print and begins four cells to the right of the beginning of the line above (GC 5.2.2).
Line 14: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

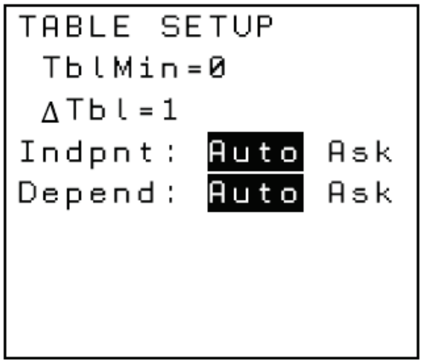
Sample 7

1.



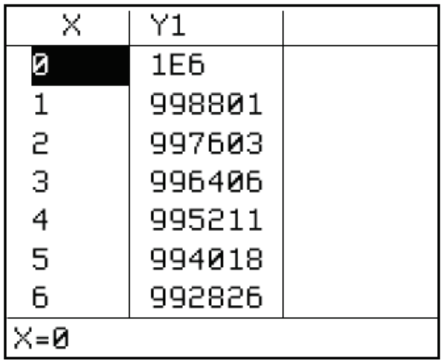
```
Y1=1000000(0.999
9)^(12X)
Y2=
Y3=
Y4=
Y5=
Y6=
Y7=
```

2.

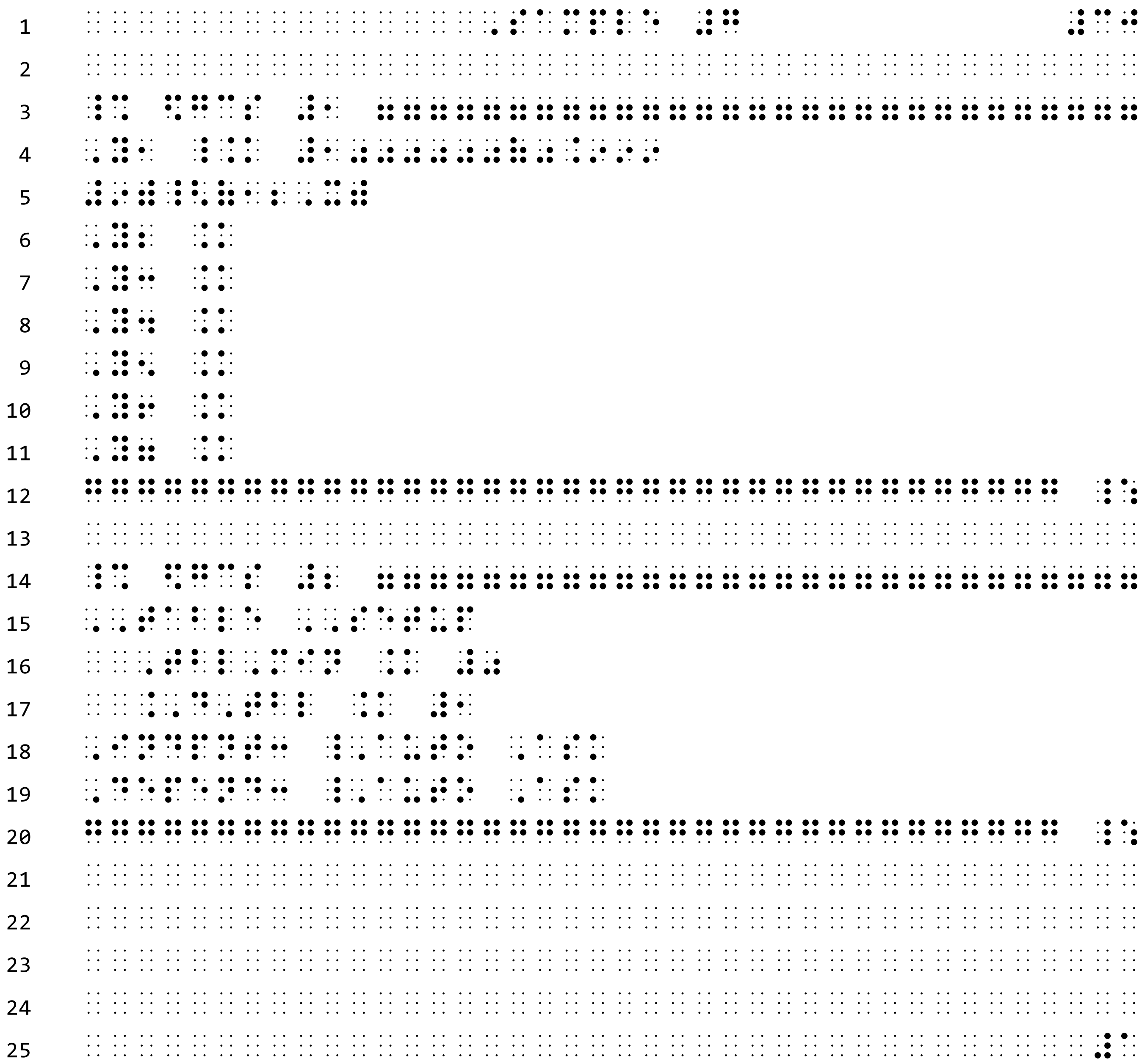


```
TABLE SETUP
 TblMin=0
 ΔTbl=1
Indpnt: Auto Ask
Depend: Auto Ask
```

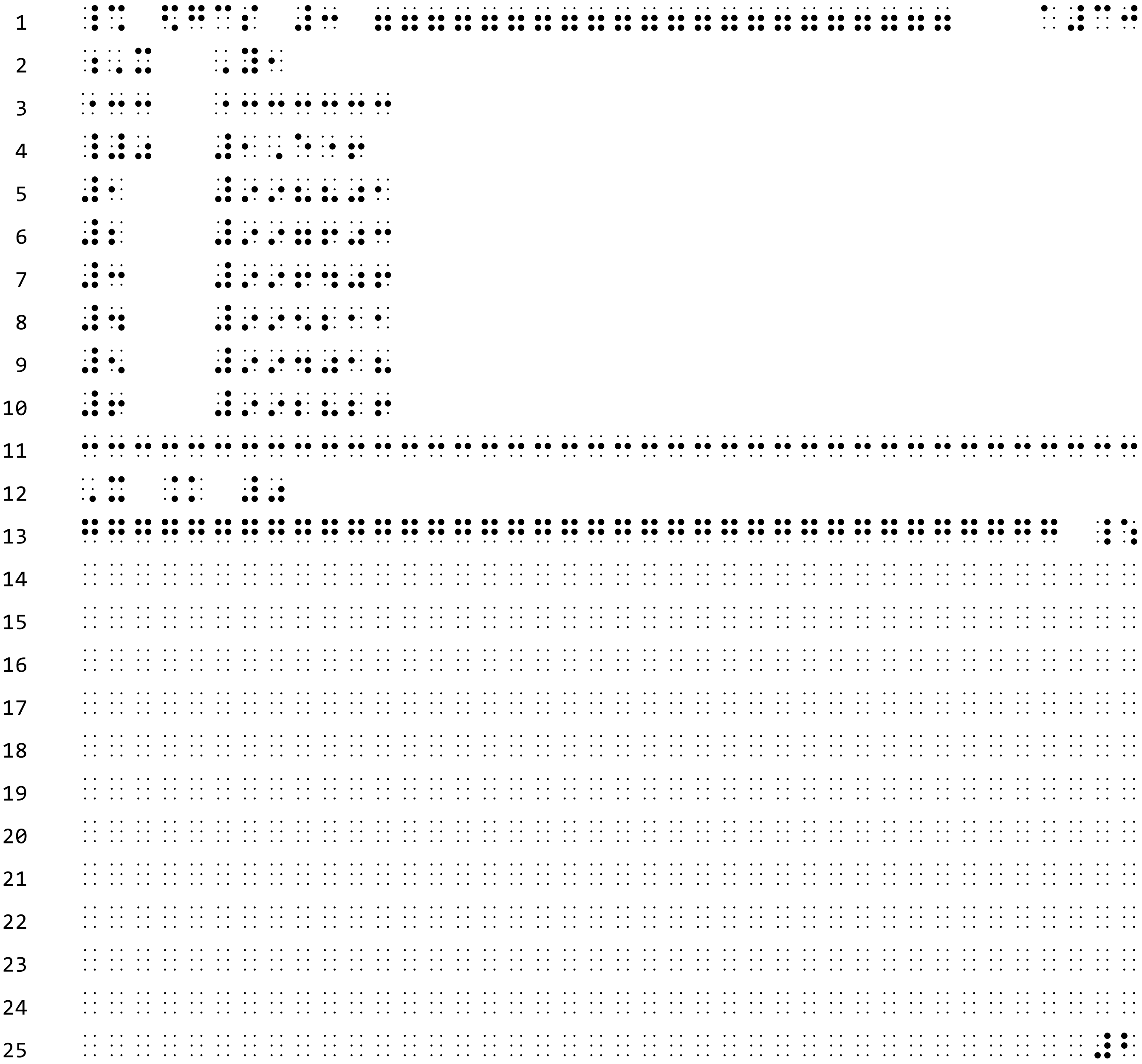
3.



```
  X    Y1
 0     1E6
 1     998801
 2     997603
 3     996406
 4     995211
 5     994018
 6     992826
X=0
```



Lines 3 and 14: Opening Nemeth Code indicators and opening screen lines (GC 4 and GC 4.1). Screen number is inserted into the opening screen line.
Line 4: The equal sign is highlighted in the calculator screen in print. Highlighting is terminated by a space (GC 5.3)
Lines 4 and 6-11: Identifiers are transcribed as subscripts (GC 6.1).
Lines 4 and 5: Start and stop text lines as they are shown in print (GC 5.2)
Line 5: The numeric indicator is required at the beginning of a braille line (NC). Math caret (GC 9)
Lines 6-11: The full cell omission symbol is not used to replace a blank space shown in print (GC 5.4).
Lines 12 and 20: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).
Line 13: A blank line is required by GC 4.3
Line 15: Retain print capitalization (GC 5.4) and use no contractions within a screen (GC 5.1).
Line 17: Uppercase Greek delta
Lines 18 and 19: The word “Auto” is highlighted on both lines (GC 5.3)

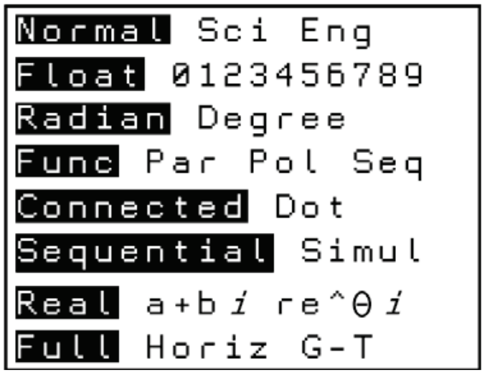


Line 1: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1). A top box line can appear on line 1 when a running head is not used (BF). Screen number is inserted into the opening screen line.
Line 2: Identifiers are transcribed as subscripts (GC 6.1)
Line 4: The number 0 is highlighted in the calculator screen in print. Highlighting is terminated by a space (GC 5.3)
Lines 2-12: The table is formatted according to braille formats guidelines.
Lines 4-10: The numbers in the second column are left-justified as in print.
Line 11: A separation line is inserted between the table and the final expression, as shown in print. The separation line is the width of the braille page (GC 5.8)
Line 12: An empty cell is inserted before and after the comparison sign. (GC 5.10)
Line 13: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

Sample 8

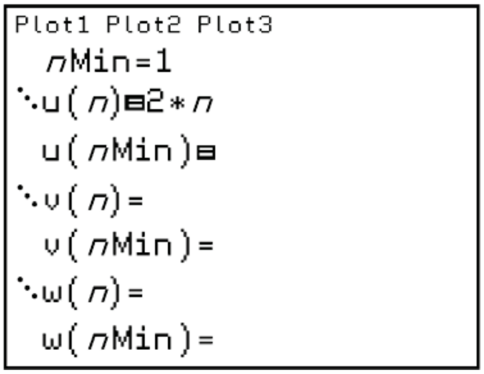
If you are using a TI-83 calculator, the steps are similar. The screen by screen displays are shown below. Access *n* using the $\boxed{X,T,\Theta,n}$ key.

1.

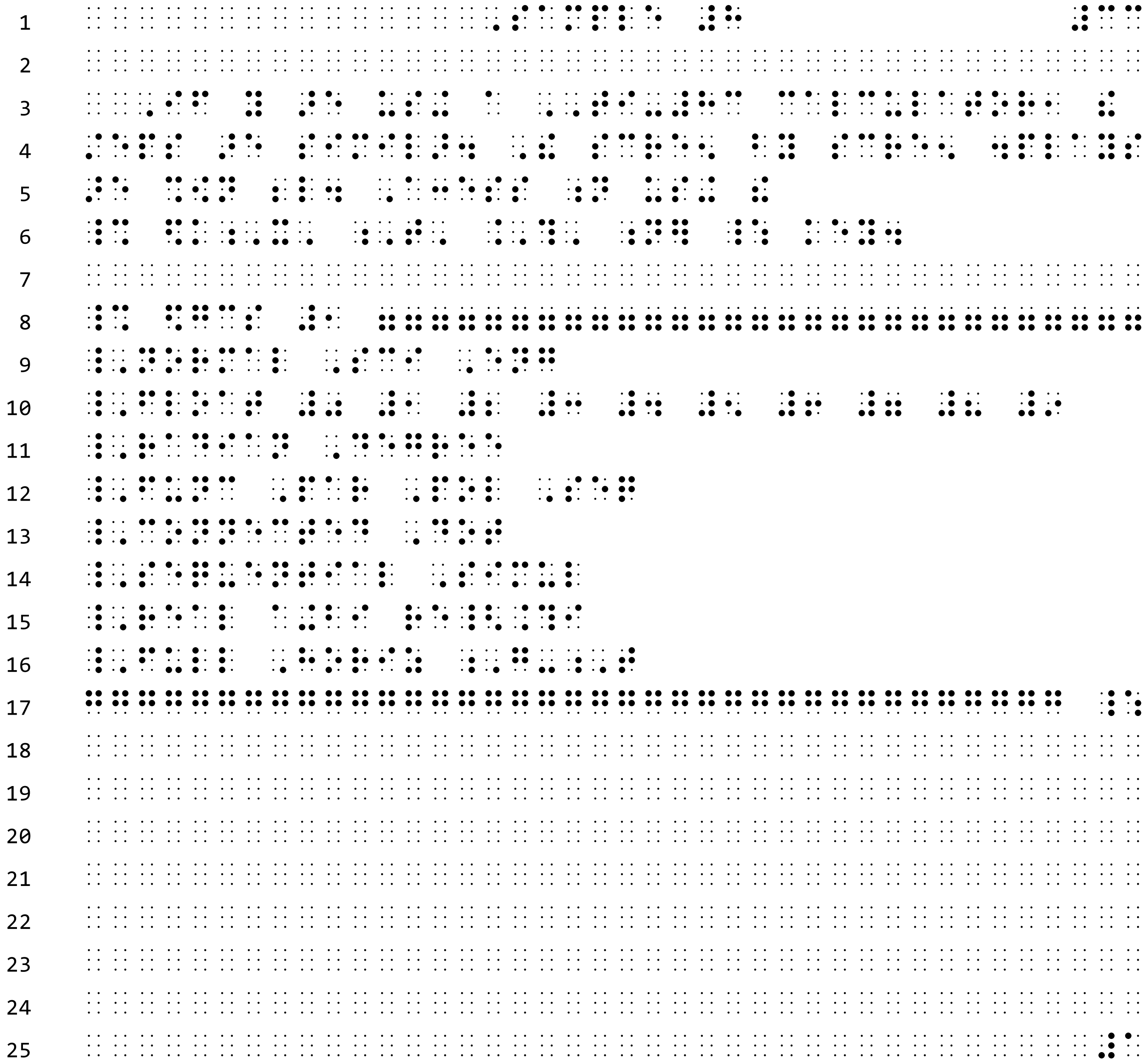


```
Normal Sci Eng
Float 0123456789
Radian Degree
Func Par Pol Seq
Connected Dot
Sequential Simul
Real a+bi re^θi
Full Horiz G-T
```

2.



```
Plot1 Plot2 Plot3
 nMin=1
⋱u(n)=2*n
 u(nMin)=
⋱v(n)=
 v(nMin)=
⋱w(n)=
 w(nMin)=
```



Line 6: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth switches (GC 2.1, 2.2 and 2.3).

Line 7: A blank line is required by GC 4.3.

Line 8: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1). Screen number in Nemeth Code is inserted in the opening screen line following the screen indicator.

Lines 9-16: Highlighted terms or numbers on the screen are indicated by dots 456. (GC 5.2)

Line 10: The digits 0, 1, 2, etc. are spaced from each other because each can be highlighted separately as a choice by the user.

Lines 9 and 12-15: No contractions are used in words within a calculator screen (GC 5.1)

Line 15: Math caret and Greek lower-case theta.

Line 16: Letter indicators are needed on the letters G-T on either side of the hyphen as required by the Nemeth Code with regard to single letters.

Line 17: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

1 ⠸⠩ ⠫⠛⠉⠎ ⠼⠆ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶ ⠁⠼⠉⠉
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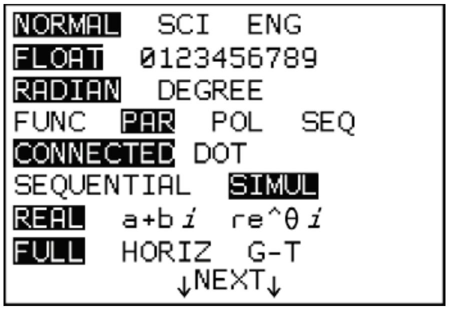
3 ⠀⠀⠝⠠⠍⠊⠝ ⠨⠅ ⠼⠂
4 ⠫⠸⠡ ⠥⠷⠝⠾ ⠸⠨⠅ ⠼⠆⠈⠼⠝
5 ⠀⠀⠥⠷⠝⠠⠍⠊⠝⠾ ⠸⠨⠅
6 ⠫⠸⠡ ⠧⠷⠝⠾ ⠨⠅
7 ⠀⠀⠧⠷⠝⠠⠍⠊⠝⠾ ⠨⠅
8 ⠫⠸⠡ ⠺⠷⠝⠾ ⠨⠅
9 ⠀⠀⠺⠷⠝⠠⠍⠊⠝⠾ ⠨⠅
10 ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱

Line 1: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1). Screen number in Nemeth Code is inserted in the opening screen line following the screen indicator.
Line 2: The identifying numbers on *Plot* in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1)
Lines 2, 3, 5, 7 and 9: Lines that are indented on the screen are indented two cells to the right of the beginning of the previous print line (GC 5.2.1)
Line 4: The equal sign is highlighted (GC 5.3)
Lines 4, 6 and 8: Lines begin in cell 1 with the dotted line graph style symbol. This symbol must be followed by a space (GC 8.4)
Line 5: The equal sign is highlighted (GC 5.2).
Lines 5-9: The full cell omission symbol is not used to replace a blank space shown in print (GC 5.5).
Line 10: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

Sample 9

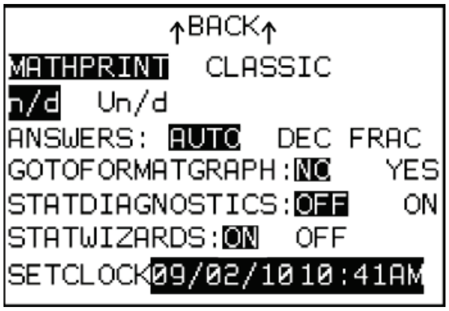
(Sample from TI-84 Manual)

1. Press [MODE]. Press [▼][▼][▼][▶][ENTER] to select **Par** mode. Press [▼][▼][▶][ENTER] to select **Simul** for simultaneous graphing of all three parametric equations in this example.

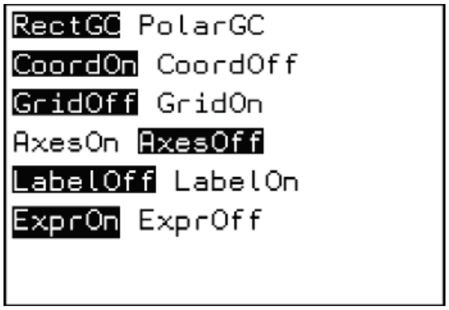


```
NORMAL  SCI  ENG
FLOAT  0123456789
RADIAN  DEGREE
FUNC  PAR  POL  SEQ
CONNECTED  DOT
SEQUENTIAL  SIMUL
REAL  a+bi  re^θi
FULL  HORIZ  G-T
       ↓NEXT↓
```

2. Press [▼][▼][▼][▼][▼][▼][▶][ENTER] to go to the Format Graph screen. Press [▼][▼][▼][▶][ENTER] to select **AxesOff**, which turns off the axes.

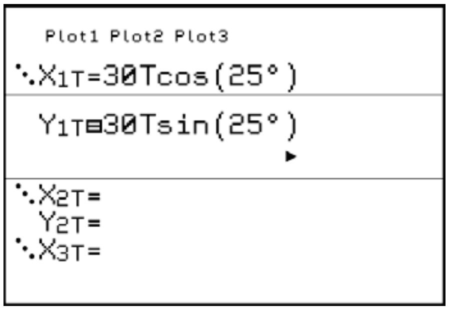


```
        ↑BACK↑
MATHPRINT  CLASSIC
n/d  Un/d
ANSWERS: AUTO  DEC FRAC
GOTOFORMATGRAPH:NO  YES
STATDIAGNOSTICS:OFF  ON
STATWIZARDS:ON  OFF
SETCLOCK09/02/1010:41AM
```



```
RectGC PolarGC
CoordOn CoordOff
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
ExprOn ExprOff
```

3. Press [Y=]. Press **30** [X,T,Θ,*n*] [COS] **25** [2nd][ANGLE] **1** (to select °) [)] [ENTER] to define **X1T** in terms of **T**.
4. Press **30** [X,T,Θ,*n*] [SIN] **25** [2nd][ANGLE] **1** [)] [–] [ALPHA] [F1] **1** (to select **n/d**) **9.8** [▶] **2** [▶] [X,T,Θ,*n*] [x^2] [ENTER] to define **Y1T**.



```
  Plot1 Plot2 Plot3
\X1T=30Tcos(25°)
 Y1T=30Tsin(25°)
                ▸
\X2T=
 Y2T=
\X3T=
```

⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠠⠎⠁⠍⠏⠇⠑⠀⠼⠊⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠼⠉⠋
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Line 3: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth switches (GC 2.1, GC 2.2 and GC 2.3). The single-word switch indicator was used before *Press* to avoid switches.

Line 4: No spaces are left between keystrokes or between items within keystrokes, unless they are separated by commas in print (GC 2.6). Down-pointing arrowheads and right-pointing arrowheads in keystrokes (GC 8.2).

Lines 5 and 8: **Par** and **Simul** are emphasized and replicate a word appearing in a screen. No contractions are used and the emphasis is retained (GC 3).

Line 7: Even though some keystrokes would have fit on Line 6, they were all placed together on line 7 (GC 2.6.2). Down-pointing arrowheads and right-pointing arrowheads in keystrokes (GC 8.2).

Lines 11 and 23: A blank is required by GC 4.3

Line 12: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).

Lines 13-20: Highlighted terms or numbers on the screen are indicated by dots 456. (GC 5.2)

Line 14: The digits 0, 1, 2, etc., are spaced from each other because each can be highlighted separately as a choice by the user.

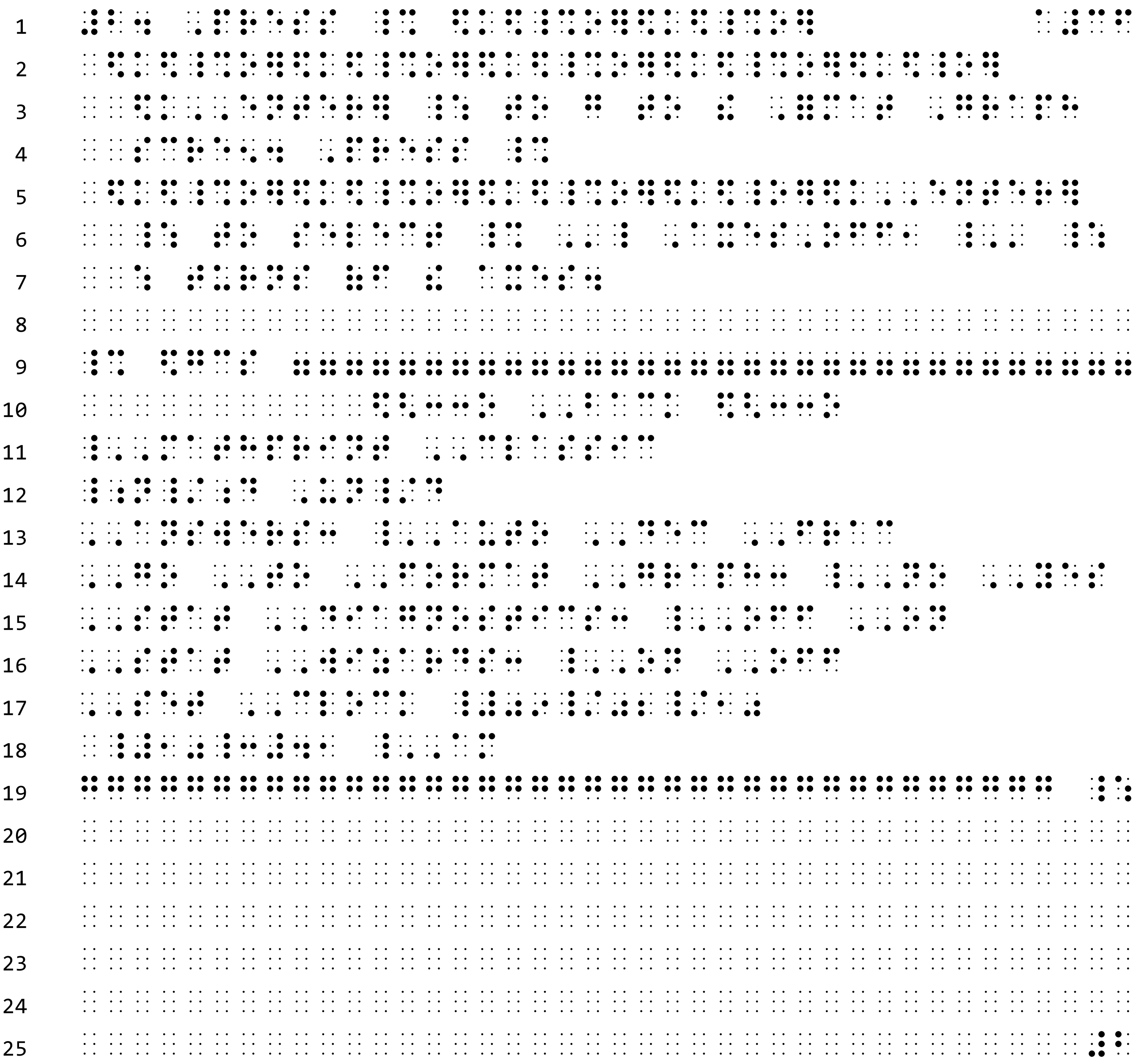
Lines 13 and 16-19: No contractions are used in words within a calculator screen (GC 5.1)

Line 19: Math caret and Greek lower-case theta.

Line 20: Letter indicators are needed on the letters G-T on either side of the hyphen as required by the Nemeth Code with regard to single letters.

Line 21: The word "NEXT" and the down-pointing arrows with shafts (NC) are centered as in print.

Line 22: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).



Lines 1-3: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth switches (GC 2.1, GC 2.2 and GC 2.3). Down-pointing arrowheads and right-pointing arrowheads in keystrokes (GC 8.2). Use no contractions in words within keystroke indicators (GC 2.5).

Line 6: Retain the emphasis on **AxesOff** and use no contractions. The word is replicated in a later screen (GC 3)

Line 8: A blank line is required by GC 4.3.

Line 9: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).

Line 10: The word "BACK" and the up-arrows with shafts retain their centered position.

Lines 11-18: Highlighted terms or numbers on the screen are indicated by dots 456. (GC 5.2) Retain print capitalization (GC 5.4) and use no contractions within a screen (GC 5.1).

Line 18: This line is the runover of Line 17. Runovers are indented one cell to the right of the beginning of the previous line (GC 5.1.4).

Line 19: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

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⠀⠀⠸⠱⠀⠞⠕⠀⠙⠑⠋⠔⠑⠀⠸⠩⠀⠠⠄⠸⠀⠠⠽⠐⠂⠠⠞⠀⠸⠠⠄⠀⠸⠱⠲
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Line 1: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1). A top box line can appear on line 1 when a running head is not used (BF).

Lines 2-7: Highlighted terms or numbers on the screen are indicated by dots 456. (GC 5.3) Retain print capitalization (GC 5.4) and use no contractions within a screen (GC 5.1).

Line 8: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

Line 9: A blank line is required by GC 4.3.

Line 10: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth switches (GC 2.1, GC 2.2 and GC 2.3). For the keystroke that shows Y=, no space is left before or after the equal sign (GC 6.2) The single-word switch indicator was used before Press to avoid switches.

Line 11: No spaces are left between keystrokes or between items within keystrokes unless they are separated by commas (GC 2.6).

Line 12: The word ANGLE in brackets is a keystroke so it is unspaced from the keystroke before it and the number 1.

Lines 12-13: The explanatory phrase in parentheses is transcribed in UEB but the degree sign (°) is mathematical and must be within Nemeth switches.

Lines 14-15: **X1T** and **T** are emphasized in print and are replicated in a screen (GC 3). **1T** is a subscript of **X**.

Line 18-19: The explanatory phrase in parentheses is transcribed in UEB but n/d is mathematical and must be within Nemeth switches.

Line 21: **Y1T** is emphasized in print and is replicated in a screen (GC 3). **1T** is a subscript of **Y**.

```
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2   ⠀⠀⠠⠏⠇⠕⠞⠰⠂ ⠠⠏⠇⠕⠞⠰⠆ ⠠⠏⠇⠕⠞⠰⠒
3   ⠫⠸⠡⠡ ⠠⠭⠰⠂⠠⠞ ⠨⠅ ⠼⠒⠴⠠⠞⠉⠕⠎ ⠷⠆⠢⠘⠨⠡⠐⠾
4   ⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒
5   ⠀⠀⠠⠽⠰⠂⠠⠞ ⠸⠨⠅ ⠼⠒⠴⠠⠞⠎⠊⠝ ⠷⠆⠢⠘⠨⠡⠐⠾
6   ⠀⠀⠀⠀⠀⠀⠫⠕
7   ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
8   ⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒
9   ⠫⠸⠡⠡ ⠠⠭⠰⠆⠠⠞ ⠨⠅
10  ⠀⠀⠠⠽⠰⠆⠠⠞ ⠨⠅
11  ⠫⠸⠡⠡ ⠠⠭⠰⠒⠠⠞ ⠨⠅
12  ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
```
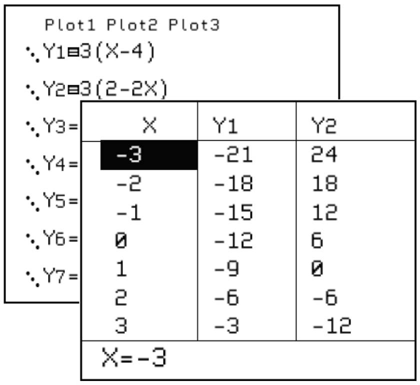

Line 1: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1). A top box line can appear on line 1 when a running head is not used (BF).
Line 2: The identifying numbers on *Plot* in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1)
Lines 2, 5 and 10: Lines indented on the screen are two cells to the right of the beginning of the previous line (GC 5.2.1)
Lines 3, 9 and 11: Line styles are at the left margin and are spaced from the expressions that follow (GC 8.4)
Lines 4 and 8: Horizontal lines separating sections of the screen run the width of the page (GC 5.8).
Line 6: Right-pointing arrowhead is left-justified in the print screen. Transcription begins four cells to the right of the beginning of the line above (GC 5.2.2).
Line 7: Blank line shown in print (GC 6.3).
Lines 9-11: Symbols are not inserted to replace blank spaces in print (GC 5.5).
Line 12: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

Sample 10

In Exercise 51–54, use the Y= *screen to write the equation being solved. Then use the table to solve the equation.*

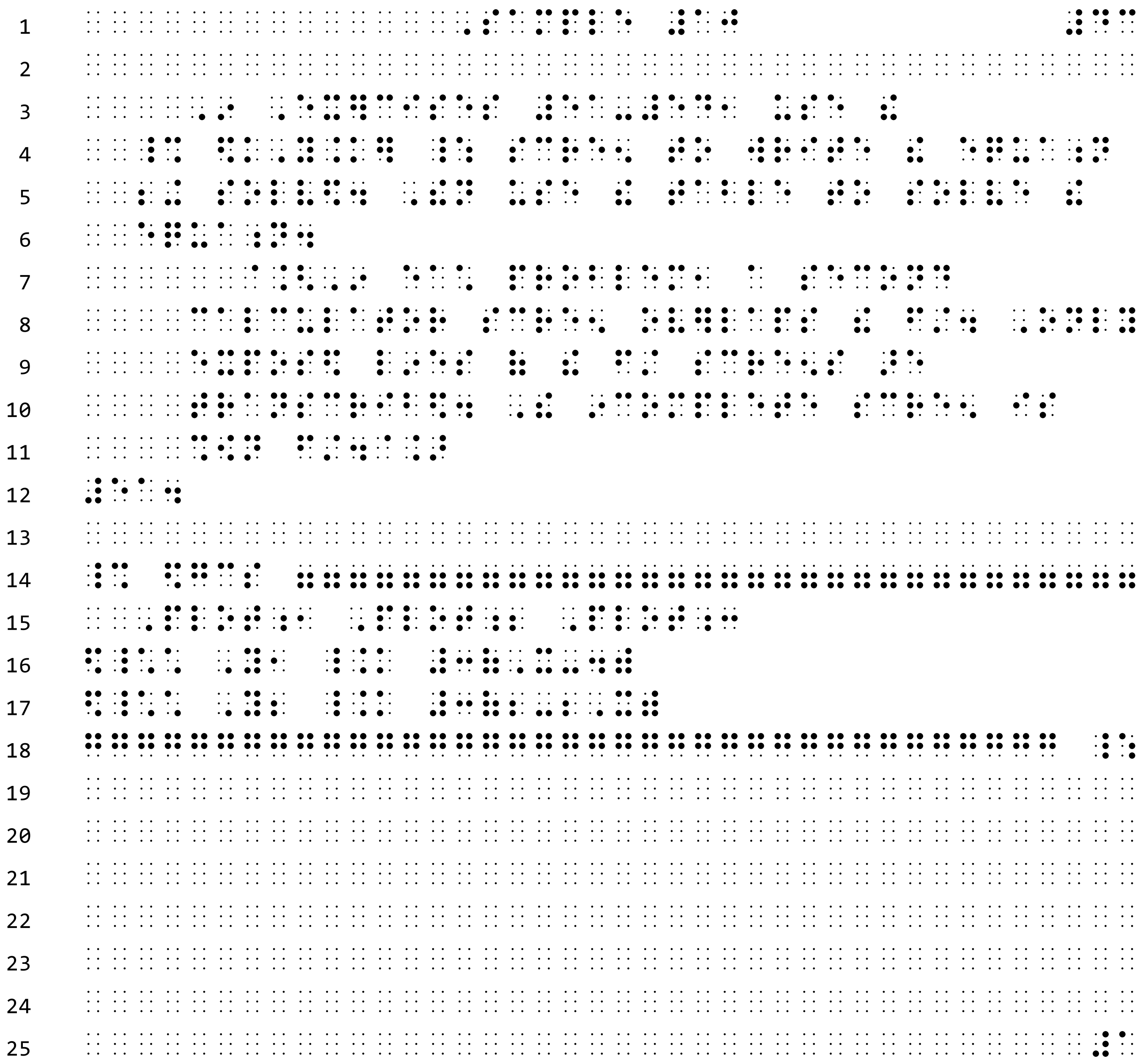
51.



```
Plot1 Plot2 Plot3
\Y1=3(X-4)
\Y2=3(2-2X)
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
```

X	Y1	Y2
-3	-21	24
-2	-18	18
-1	-15	12
0	-12	6
1	-9	0
2	-6	-6
3	-3	-12

X=-3



Line 4: For the keystroke Y=, no space is left before or after the equal sign (GC 6.2).
Lines 7-11: Transcriber's note explaining the overlapping calculator screens.
Line 13: A blank line is required by GC 4.3.
Line 14: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).
Line 15: The identifying numbers on *Plot* in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1)
Lines 16 and 17: Line styles are at the left margin and are spaced from the expressions that follow (GC 8.4). The equal signs are highlighted in print (GC 5.3).
Line 18: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

```
 1 ⠸⠩⠀⠫⠛⠉⠎⠀⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠀⠀⠀⠁⠼⠙⠉
 2 ⠰⠠⠭⠀⠀⠀⠠⠽⠂⠀⠀⠀⠠⠽⠆
 3 ⠐⠒⠒⠒⠀⠀⠐⠒⠒⠒⠀⠀⠐⠒⠒⠒
 4 ⠸⠤⠼⠒⠀⠀⠤⠼⠆⠂⠀⠀⠼⠆⠲
 5 ⠤⠼⠆⠀⠀⠀⠤⠼⠂⠦⠀⠀⠼⠂⠦
 6 ⠤⠼⠂⠀⠀⠀⠤⠼⠂⠢⠀⠀⠼⠂⠆
 7 ⠼⠴⠀⠀⠀⠀⠤⠼⠂⠆⠀⠀⠼⠖
 8 ⠼⠂⠀⠀⠀⠀⠤⠼⠔⠀⠀⠀⠼⠴
 9 ⠼⠆⠀⠀⠀⠀⠤⠼⠖⠀⠀⠀⠤⠼⠖
10 ⠼⠒⠀⠀⠀⠀⠤⠼⠒⠀⠀⠀⠤⠼⠂⠆
11 ⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒
12 ⠠⠭⠀⠨⠅⠀⠤⠼⠒
13 ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠀⠸⠱
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```
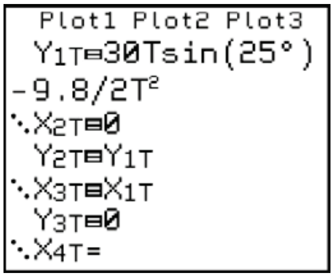

Line 1: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1). A top box line can appear on line 1 when a running head is not used (BF).
Line 2: The identifying numbers on the *Y*s in the screen are shown as subscripts (GC 6.1).
Line 4: The *-3* is highlighted (GC 5.2).
Lines 4-10: Entries are left-justified in the columns as in print.
Line 11: The line is the width of the braille page (GC 5.8).
Line 13: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

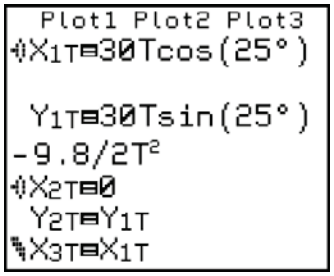
Sample 11

The horizontal component vector is defined by **X3T** and **Y3T**.



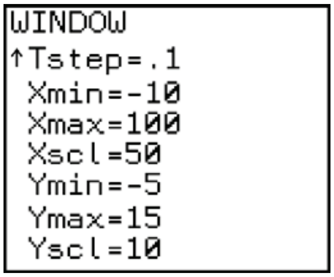
```
 Plot1 Plot2 Plot3
 Y1T=30Tsin(25°)
-9.8/2T²
⋱X2T=0
 Y2T=Y1T
⋱X3T=X1T
 Y3T=0
⋱X4T=
```

6. Press [VARS] [▸] **2**, and then press **1** [ENTER] to define **X3T**. Press **0** [ENTER] to define **Y3T**.



```
 Plot1 Plot2 Plot3
-○X1T=30Tcos(25°)

 Y1T=30Tsin(25°)
-9.8/2T²
-○X2T=0
 Y2T=Y1T
▚X3T=X1T
```

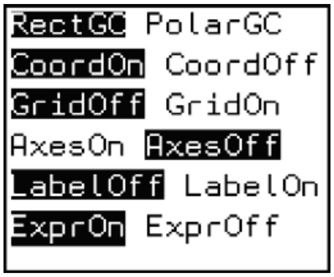
7. Press [◂] [◂] [▴] [ENTER] to change the graph style to ▚ for **X3T** and **Y3T**. Press [▴] [ENTER] [ENTER] to change the graph style to -○ for **X2T** and **Y2T**. Press [▴] [ENTER] [ENTER] to change the graph style to -○ for **X1T** and **Y1T**. (These keystrokes assume that all graph styles were set to ⋱ originally.)



```
WINDOW
↑Tstep=.1
 Xmin=-10
 Xmax=100
 Xscl=50
 Ymin=-5
 Ymax=15
 Yscl=10
```

8. Press [WINDOW]. Enter these values for the window variables.

Tmin=0	Xmin=-10	Ymin=-5
Tmax=5	Xmax=100	Ymax=15
Tstep=.1	Xscl=50	Yscl=10



```
RectGC PolarGC
CoordOn CoordOff
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
ExprOn ExprOff
```

9. Press [2nd] [FORMAT] [▾] [▾] [▾] [▸] [ENTER] to set **AxesOff**, which turns off the axes.

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⠀⠀⠃⠽ ⠸⠩ ⠠⠄⠸ ⠠⠭⠰⠒⠠⠞ ⠸⠠⠄ ⠠⠄⠯
⠀⠀⠠⠄⠸ ⠠⠽⠰⠒⠠⠞⠸⠲ ⠸⠠⠄ ⠸⠱
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⠫⠸⠡⠡ ⠠⠭⠰⠆⠠⠞ ⠸⠨⠅ ⠼⠴
⠀⠀⠠⠽⠰⠆⠠⠞ ⠸⠨⠅ ⠠⠽⠰⠂⠠⠞
⠫⠸⠡⠡ ⠠⠭⠰⠒⠠⠞ ⠸⠨⠅ ⠠⠭⠰⠂⠠⠞
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Line 1: This sample uses a running head.
Lines 3 and 4: The identifier, 3T, is a subscript but cannot be shown as such on a graphing calculator. In braille such identifiers will be shown as subscripts (GC 6.1).
Line 3: The single-word switch indicator was used before *and* to avoid switches.
Line 5: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth switches (GC 2.1, GC 2.2 and GC 2.3). No spaces are left between keystrokes (GC 2.6).
Line 7: Retain emphasis on **X3T**. Show **3T** as a subscript to **X** (GC 3). The single-word switch indicator was used before *Press* to avoid switches.
Line 9: Retain emphasis on **Y3T** and show **3T** as a subscript (GC 3).
Line 10: A blank line is required by GC 4.3
Line 11: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).
Lines 12, 13, 16 and 18: Lines are indented on the graphing screen two cells to the right of the beginning of the line above (GC 5.2.1).
Line 12: The identifying numbers on *Plot* in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1)
Lines 13 and 15-18: Equal signs are highlighted (GC 5.3)
Lines 15, 17, 19: Graph Line Styles are listed in GC 8.4. Each symbol is followed by a blank cell (GC 8.4).
Line 20: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).
Line 23: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth switches (GC 2.1, GC 2.2 and GC 2.3). No spaces are left between keystrokes (GC 2.6). Some of these keystrokes would have fit on line 22 but it is preferable to keep keystroke constructions on one line if possible (GC 2.6.2).
Line 24: See Graph Line Styles (GC 8.4).
Lines 24 and 25: The single-word switch indicator was used before *for* and *and* to avoid switches.
Line 25: Retain emphasis on **X3T** (GC 3).

```
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⠀⠀⠡⠁⠝⠛⠑ ⠮ ⠛⠗⠁⠏⠓ ⠌⠽⠇⠑ ⠞⠕ ⠸⠩ ⠫⠒⠨⠡ ⠠⠄⠿
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⠀⠀⠌⠽⠇⠑⠎ ⠶ ⠎⠑⠞ ⠞⠕ ⠸⠩ ⠫⠸⠡⠡ ⠸⠱ ⠕⠗⠊⠛⠔⠁⠇⠇⠽⠲⠐⠜
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⠀⠀⠧⠁⠇⠥⠑⠎ ⠿ ⠮ ⠺⠔⠙⠪ ⠧⠜⠊⠁⠃⠇⠑⠎⠲            ⠼⠃
```
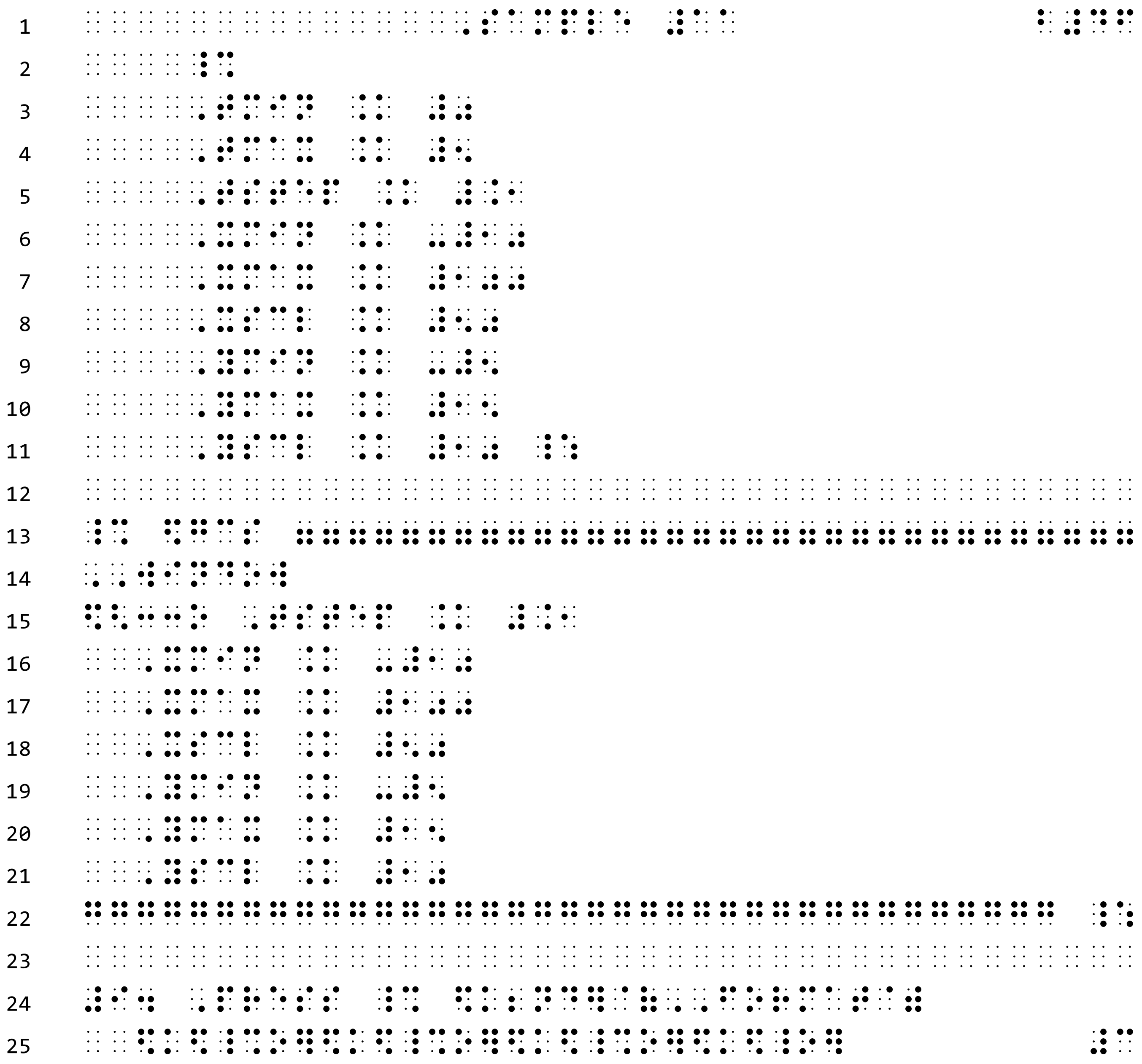
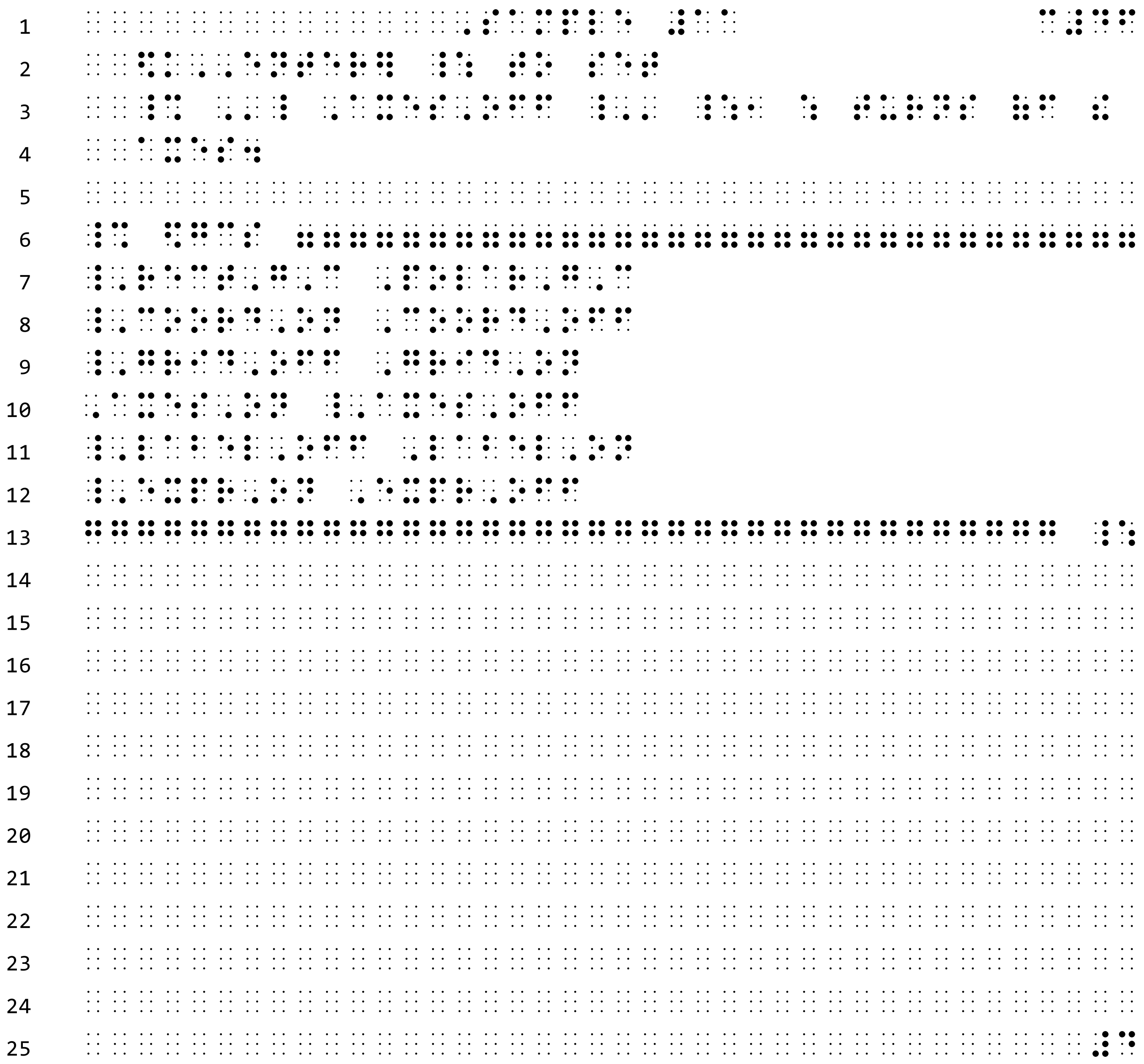

Line 2: Retain emphasis on **Y3T** and show **3T** as a subscript. single-word switch indicator was used before *Press* to avoid switches.
Line 3: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth switches (GC 2.1, GC 2.2 and GC 2.3). No spaces are left between keystrokes (GC 2.6).
Line 4: Graph Line Styles are listed in GC 8.4. The single-word switch indicator was used before *for*.
Line 5: Retain emphasis on **X2T**. The single-word switch indicator was used before *and*. Show **2T** as a subscript to **X.**
Lines 6-9: Comments for lines 2-5 apply to lines 6-9.
Line 12: A blank line is required by GC 4.3.
Line 13: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).
Line 14: The identifying numbers on *Plot* in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1)
Lines 14, 17, and 20: Lines are indented on the graphing screen two cells to the right of the beginning of the line above (GC 5.2.1).
Line 16: Blank line shown in print (GC 6.3).
Lines 15, 19 and 21: Graph line styles are listed in GC 8.4. Each symbol is followed by a blank cell (GC 8.4).
Lines 15, 17 and 19-21: Equal sign is highlighted (GC 5.3)
Lines 17-18: Start and stop text lines as they are shown in print (GC 5.2)
Line 22: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).
Line 23: A blank line is required by GC 4.3.



Lines 3-11: The variables are displayed to itemized material. No blank line is required preceding the list.
Line 13: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).
Line 14: Retain print capitalization (GC 5.4) and use no contractions within a screen (GC 5.1).
Line 15: Up-pointing arrow with shaft (GC 9)
Lines 16-21: Lines are indented on the graphing screen two cells to the right of the beginning of the line above (GC 5.2.1).
Line 22: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).
Line 23: A blank line is required by GC 4.3.
Line 24: [FORMAT] is a keystroke and is unspaced from keys preceding and following it.
Lines 24-25: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth switches (GC 2.1, GC 2.2 and GC 2.3). No spaces are left between keystrokes (GC 2.6).

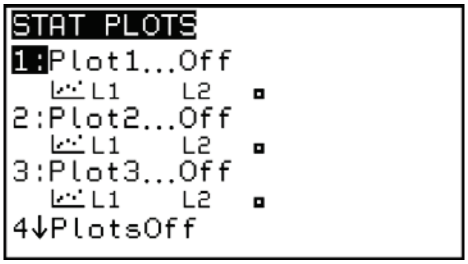


Line 2: **AxesOff** appears in text surrounding a screen. Emphasis must be retained and transcription must be without contractions (GC 3).
Line 5: A blank line is required by GC 4.3.
Line 6: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).
Lines 7-12: Highlighted terms or numbers on the screen are indicated by dots 456. (GC 5.3) Retain print capitalization (GC 5.4) and use no contractions within a screen (GC 5.1).
Line 13: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

Sample 12

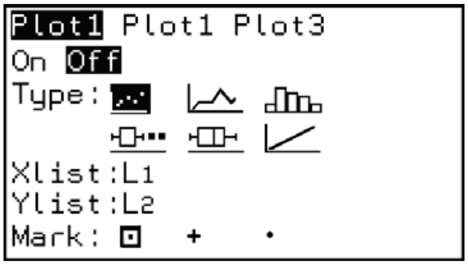
To define a plot, follow these steps.

1. Press [2nd] [STAT PLOT]. The STAT PLOTS menu is displayed with the current plot definitions.

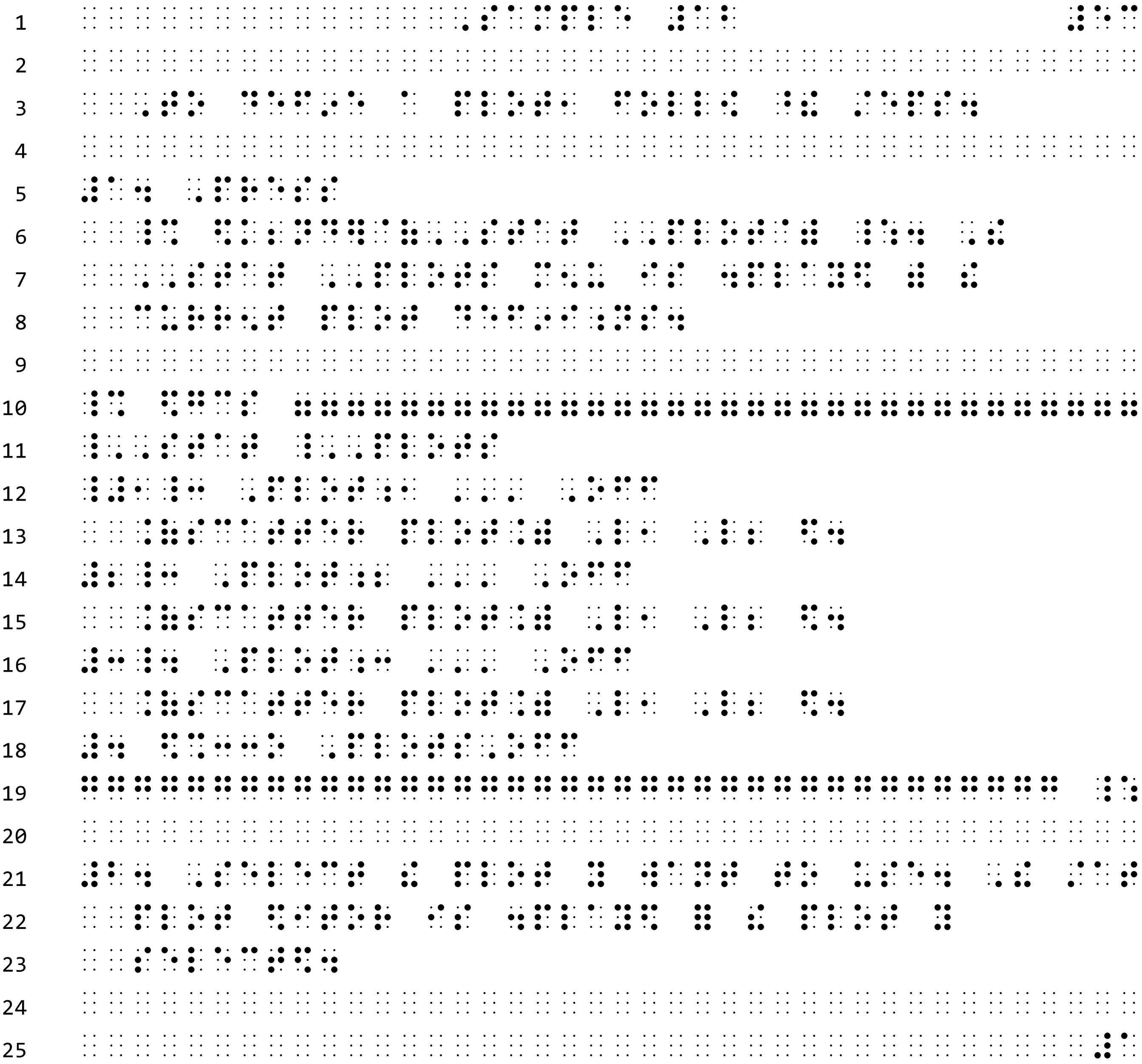


```
STAT PLOTS
1:Plot1...Off
     L1    L2  ▫
2:Plot2...Off
     L1    L2  ▫
3:Plot3...Off
     L1    L2  ▫
4↓PlotsOff
```

2. Select the plot you want to use. The stat plot editor is displayed for the plot you selected.



```
Plot1 Plot1 Plot3
On Off
Type:
Xlist:L1
Ylist:L2
Mark: ▫  +  ·
```



Line 6: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth Code switches (GC 2.1, GC 2.2 and GC 2.3). The words STAT PLOT in brackets is a keystroke so it is unspaced from the keystroke before it. Capitalization is retained and no contractions are used (GC 2.5 and GC 2.6)

Line 7: The words *STAT PLOTS* are transcribed uncontracted as they will appear in the screen (GC 3 and GC 5.1)

Line 10: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).

Lines 11 and 12: Highlighted terms or numbers on the screen are indicated by dots 456 (GC 5.3). Retain print capitalization (GC 5.4).

Lines 12, 14 and 16: The identifying numbers for *Plot* are subscripts (GC 6.1)

Lines 13, 15 and 17: Lines indented on the graphing screen are two cells to the right of the beginning of the previous line (GC 5.2.1). The plot style is named within braces (GC 8.5)

Line 18: Down-pointing arrow with shaft (GC 9). Follow capitalization of text and use no contractions within screen (GC 5.4 and GC 5.1)

Line 19: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

Line 20: A blank line is required by GC 4.3.

```
1   ⠀⠀⠀⠀⠀⠀⠈⠨⠣⠠⠮ ⠏⠇⠕⠞ ⠡⠕⠊⠉⠑⠎ ⠩⠪⠝ ⠵       ⠁⠼⠑⠉
2   ⠀⠀⠀⠀⠊⠉⠕⠝⠎ ⠔ ⠏⠗⠔⠞ ⠜⠑ ⠇⠊⠌⠫ ⠔ ⠮ ⠎⠉⠗⠑⠢
3   ⠀⠀⠀⠀⠋⠕⠇⠇⠪⠬ ⠮ ⠘⠺ ⠦⠠⠞⠽⠏⠑⠴⠈⠨⠜
4   ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
5   ⠸⠩ ⠫⠛⠉⠎ ⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶
6   ⠸⠠⠏⠇⠕⠞⠰⠂ ⠠⠏⠇⠕⠞⠰⠆ ⠠⠏⠇⠕⠞⠰⠒
7   ⠠⠕⠝ ⠸⠠⠕⠋⠋
8   ⠠⠞⠽⠏⠑⠒
9   ⠀⠸⠨⠷⠎⠉⠁⠞⠞⠑⠗⠨⠾
10  ⠀⠨⠷⠭⠽⠠⠇⠊⠝⠑⠨⠾
11  ⠀⠨⠷⠠⠓⠊⠎⠞⠕⠛⠗⠁⠍⠨⠾
12  ⠀⠨⠷⠠⠍⠕⠙⠠⠃⠕⠭⠏⠇⠕⠞⠨⠾
13  ⠀⠨⠷⠠⠃⠕⠭⠏⠇⠕⠞⠨⠾
14  ⠀⠨⠷⠠⠝⠕⠗⠍⠠⠏⠗⠕⠃⠠⠏⠇⠕⠞⠨⠾
15  ⠠⠭⠇⠊⠎⠞⠒ ⠠⠇⠂
16  ⠠⠽⠇⠊⠎⠞⠒ ⠠⠇⠆
17  ⠠⠍⠁⠗⠅⠒ ⠸⠫⠲ ⠬ ⠡
18  ⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
19  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
20  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
21  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
22  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
23  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
24  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
25  ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠼⠃
```

Lines 1-3: Transcriber’s note explaining use of words to describe the icons.
Line 4: A blank line is required by GC 4.3.
Line 5: Opening Nemeth Code indicator and opening screen line (GC 4 and GC 4.1).
Line 6: The identifying numbers on *Plot* in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1)
Lines 6, 7, 9 and 17: Highlighted items on the screen are indicated by dots 456. (GC 5.3)
Lines 9-14: The plot types are named rather than drawn. Names of these plot types were found in the manual for the graphing calculator (GC 8.5) The list is transcribed in cell 2 as a runover to *Type* (GC 5.2.5) The names of these types are shown in braces.
Lines 9 and 15: Blank lines normally required for a list are not inserted in a graphing calculator screen unless they are shown in print (GC 6.3).
Line 18: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).

Sample 13

Solution:

Keystrokes — *Screen Display*

2nd QUIT

F1 8 :Clear Home CLEAR

◆ Y=

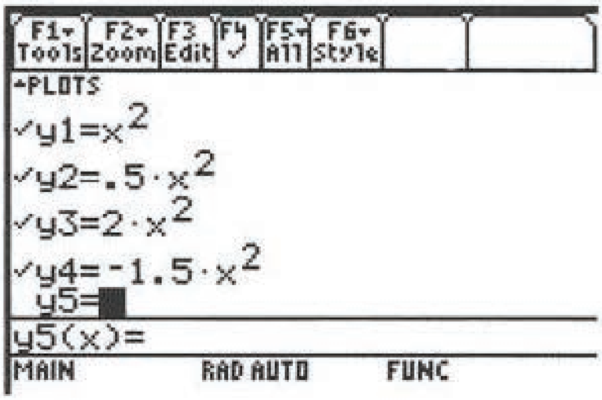
CLEAR X ^ 2 ENTER

CLEAR .5

X ^ 2 ENTER

CLEAR 2 X ^ 2

ENTER



F1▾ Tools
F2▾ Zoom
F3 Edit
F4 ✓
F5▾ All
F6▾ Style
▸PLOTS
MAIN
RAD AUTO
FUNC

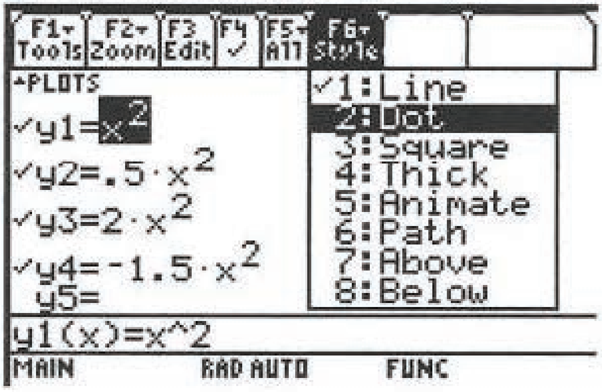
✓$y1=x^2$
✓$y2=.5\cdot x^2$
✓$y3=2\cdot x^2$
✓$y4=-1.5\cdot x^2$
$y5=$
y5(x)=

CLEAR (-) 1.5 X ^ 2

ENTER

▲ ▲ ▲ ▲ 2nd F6

2 :Dot



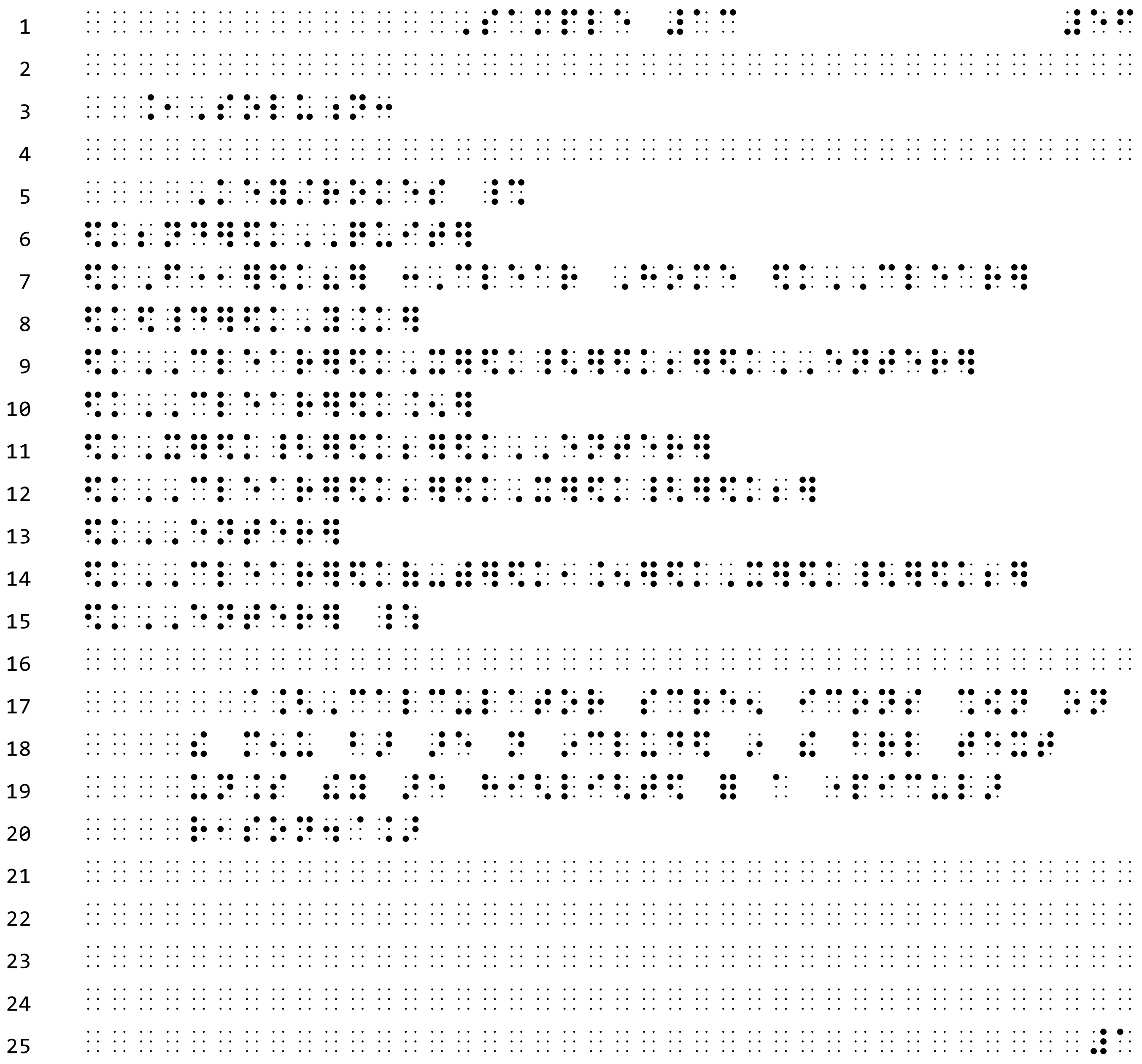
F1▾ Tools
F2▾ Zoom
F3 Edit
F4 ✓
F5▾ All
F6▾ Style
▸PLOTS
✓1:Line
2:Dot
3:Square
4:Thick
5:Animate
6:Path
7:Above
8:Below
MAIN
RAD AUTO
FUNC

✓$y1=x^2$
✓$y2=.5\cdot x^2$
✓$y3=2\cdot x^2$
✓$y4=-1.5\cdot x^2$
$y5=$
y1(x)=x^2

▼ 2nd F6 1 :Line

▼ 2nd F6 4 :Thick

▼ 2nd F6 1 :Line



Line 3: *Solution* is transcribed as a paragraph.
Line 5: *Keystroke* is a cell 5 heading.
Lines 6-15: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. This construction must be transcribed within the Nemeth Code switches (GC 2.1, GC 2.2 and GC 2.3). No spaces are inserted between keystrokes (GC 2.6). Use no contractions in words within a keystroke indicator (GC 2.5).
Lines 17-20: Transcriber's note explaining the omission of the menu bar tab labels.

```
⠀⠀⠀⠀⠠⠎⠉⠗⠑⠢ ⠠⠲⠏⠇⠁⠽                   ⠁⠼⠑⠋
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⠈⠜ ⠽⠆ ⠨⠅ ⠼⠨⠢⠡⠭⠘⠆
⠈⠜ ⠽⠒ ⠨⠅ ⠼⠆⠡⠭⠘⠆
⠈⠜ ⠽⠲ ⠨⠅ ⠤⠼⠂⠨⠢⠡⠭⠘⠆
⠀⠀⠽⠢ ⠨⠅ ⠫⠿
⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒
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⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒
⠠⠠⠍⠁⠊⠝  ⠠⠠⠗⠁⠙ ⠠⠠⠁⠥⠞⠕  ⠠⠠⠋⠥⠝⠉
⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛⠛ ⠸⠱
⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
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⠫⠅⠫⠸⠣⠕⠻⠫⠅⠫⠸⠣⠕⠻⠫⠅⠫⠸⠣⠕⠻⠫⠅⠫⠸⠣⠕⠻⠫⠅⠆⠝⠙⠻
⠀⠀⠫⠅⠠⠋⠐⠖⠻
⠫⠅⠆⠻ ⠒⠠⠙⠕⠞
⠫⠅⠫⠸⠩⠕⠻⠫⠅⠆⠝⠙⠻⠫⠅⠠⠋⠐⠖⠻⠫⠅⠂⠻ ⠒⠠⠇⠊⠝⠑
⠫⠅⠫⠸⠩⠕⠻⠫⠅⠆⠝⠙⠻⠫⠅⠠⠋⠐⠖⠻⠫⠅⠲⠻ ⠒⠠⠞⠓⠊⠉⠅
⠫⠅⠫⠸⠩⠕⠻⠫⠅⠆⠝⠙⠻⠫⠅⠠⠋⠐⠖⠻⠫⠅⠂⠻ ⠒⠠⠇⠊⠝⠑ ⠸⠱
⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀
⠀⠀⠀⠀⠀⠀⠈⠨⠣⠠⠮ ⠝⠑⠭⠞ ⠎⠉⠗⠑⠢ ⠓⠁⠎ ⠁ ⠙⠗⠕⠏⠙⠪⠝ ⠍⠢⠥
⠀⠀⠀⠀⠋ ⠮ ⠍⠢⠥ ⠃⠜⠲ ⠠⠁⠋ ⠁ ⠃⠇⠁⠝⠅ ⠇⠔⠑⠂ ⠹ ⠍⠢⠥
⠀⠀⠀⠀⠋⠕⠇⠇⠪⠎ ⠮ ⠎⠉⠗⠑⠢ ⠔⠿⠍⠁⠰⠝⠲⠈⠨⠜         ⠼⠃
```
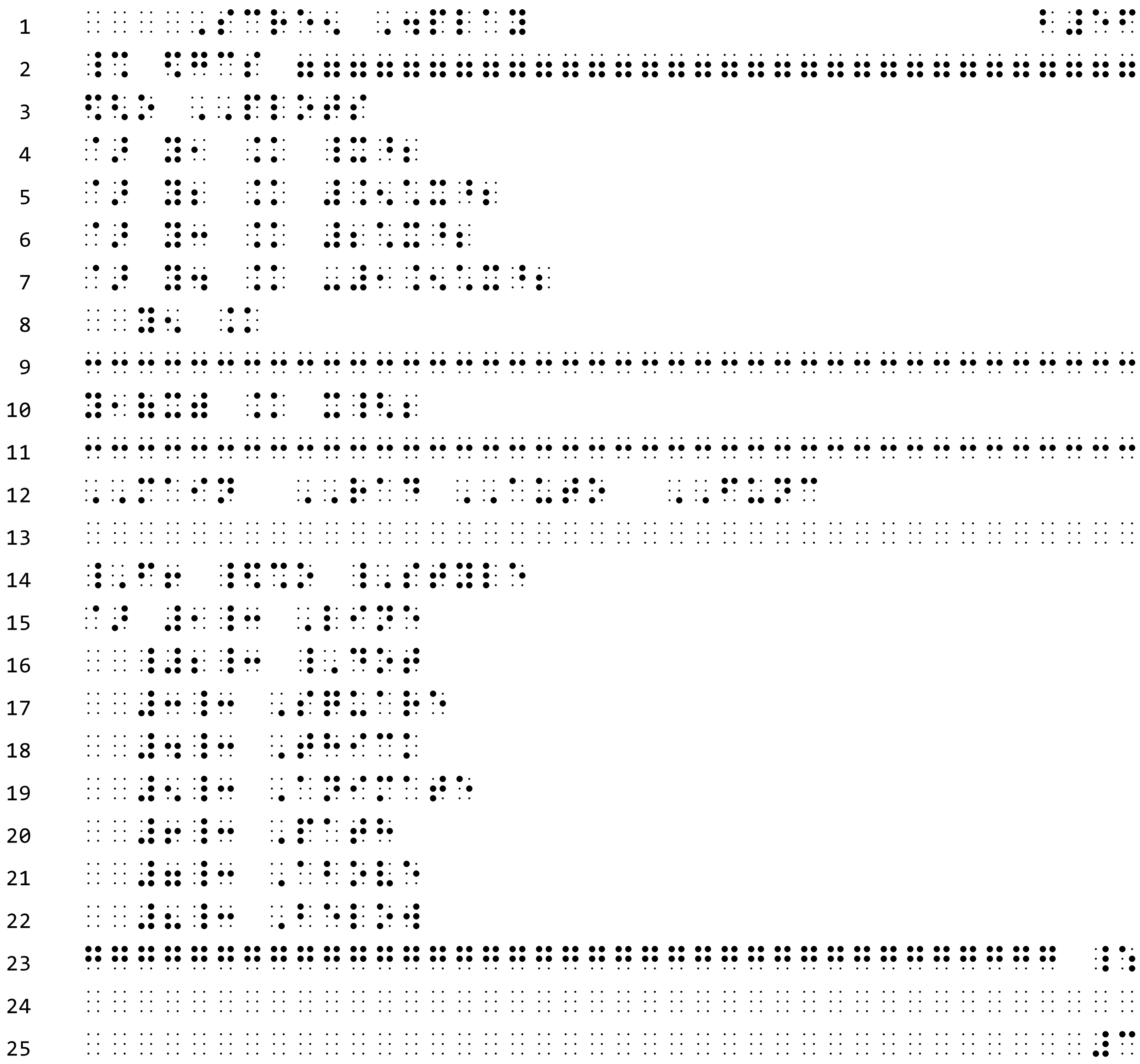

Line 1-2: A blank line is not left between an opening screen line and a related heading. (BF)
Line 3: Upward-pointing arrowhead (GC 8.3).
Lines 4-7: Check mark (GC 9).
Line 8: Line is indented in print. Transcribe two cells to the right of the beginning of the previous print line (GC 5.2.1). Solid cursor (GC 8.3).
Lines 9 and 11: Horizontal lines separating section of the screen run the width of the page (GC 5.8).
Line 10: Symbols are not inserted to replace blank spaces in print (GC 5.5).
Line 12: When items in a horizontal list consist of two or more words, two spaces are inserted between each item (GC 5.6).
Line 13: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).
Line 14: A blank line is required by GC 4.3.
Line 15: *Keystroke* is a cell 5 heading.
Lines 18-20: No contractions are used in *Line* and *Thick*. These words appear in the adjacent screen and need to replicate their appearance in the screen.
Lines 18-20: No space is inserted between a colon and a following word or letter to which it applies.
Lines 22-25: This is a transcriber's note explaining the drop-down menu in the following calculator screen.



Line 1-2: A blank line is not left between an opening screen line and a related heading. (BF)
Line 3: Upward-pointing arrowhead (GC 8.3).
Line 4: The term is highlighted in print (GC 5.3).
Lines 4-7 and 15: Check mark (GC 9).
Line 8: Line is indented in print. Transcribe two cells to the right of the beginning of the previous print line (GC 5.2.1). Symbols are not inserted to replace blank spaces in print (GC 5.5).
Lines 9 and 11: Horizontal lines separating sections of the screen run the width of the page (GC 5.8).
Line 10: Math caret (NC)
Line 12: When items in a horizontal list consist of two or more words, two spaces are inserted between each item (GC 5.6).
Line 13: Blank line per transcriber's note on previous page.
Line 14: A tab of the drop-down menu is highlighted (GC 5.2). Downward-pointing arrowhead (GC 8.3).
Line 16: Items are highlighted (GC 5.2).
Lines 16-22: Lines are indented in print. Transcribe two cells to the right of the beginning of the previous print line (GC 5.2.1).
Line 23: Closing screen line and Nemeth Code terminator (GC 4 and GC 4.1).