# Nemeth Code Symbols Used in the Middle Grades and Strategies for Supporting Math Learning

## Lesson 3: Formatting Materials and Number Lines for Students in Grades 5-8

# Objectives

Participants will be able to:

1. Locate and use formatting resources

2. Transcribe and/or prepare the following:
   - Word problems
   - Number lines that include inequalities

3. Format the following:
   - Headings
   - Directions
   - Numbered problems
   - x/y data tables

# *Guidance for Transcription Using the Nemeth Code within UEB Contexts*

- Available from the Braille Authority of North America (BANA)

- Information about number lines is on page 14.

- Information about formatting begins on page 15.



http://www.brailleauthority.org/mathscience/math-science.html
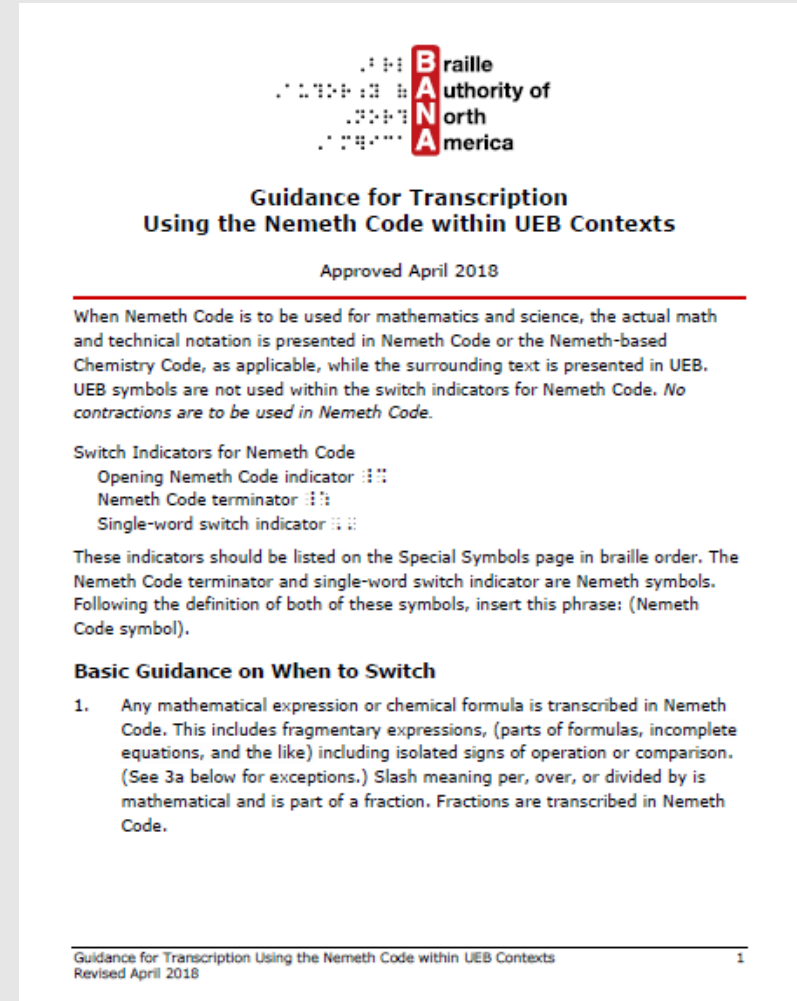
# Resource to Use When Transcribing Math Materials

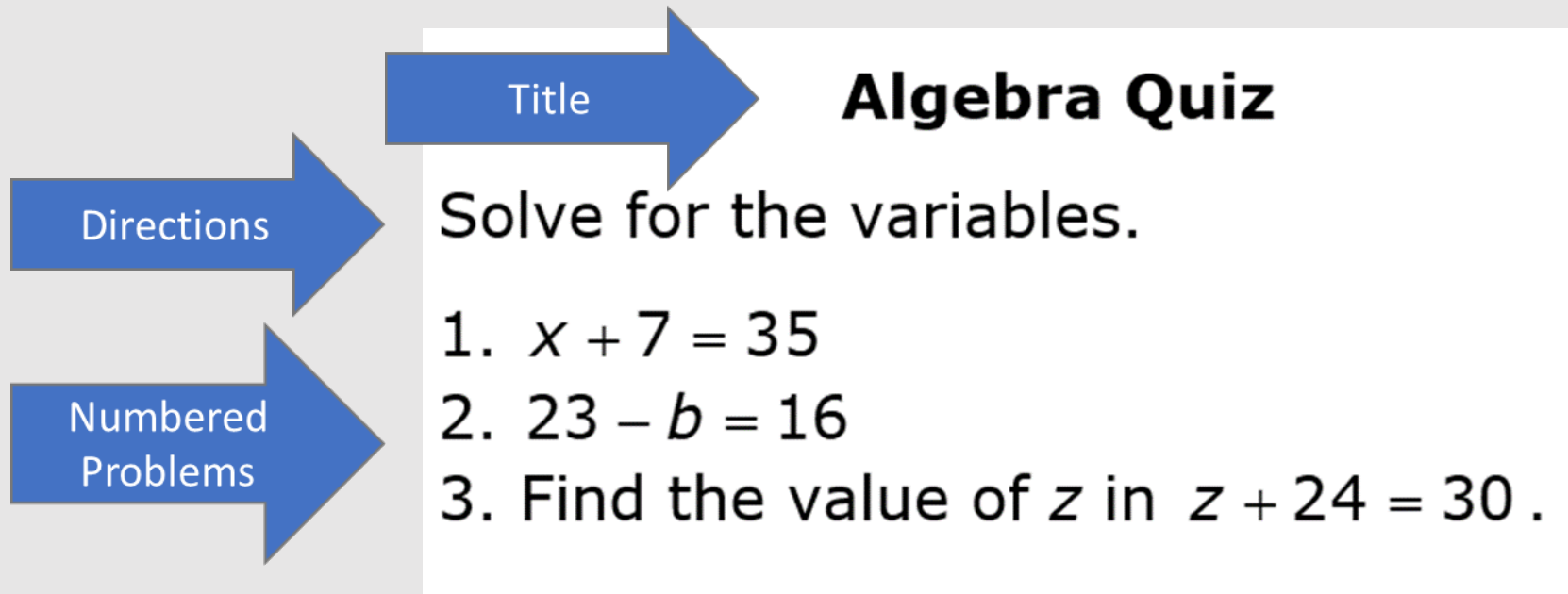*An Introduction to Braille Mathematics Using Nemeth Code within UEB Contexts*

- Available from the National Federation of the Blind

- Lesson 17 offers examples of data tables.

https://www.nfb.org/programs-services/braille-certification/mathematics-braille-transcribing

# Formatting Basics for Students in Grades 5-8

- Materials are single-spaced.
- BANA refers to titles as "centered headings."
- Center the title of a worksheet on the first line of the page and leave a blank line following it.
- Follow print for the sequence of problems, punctuation, and capitalization.
- Do not change directions or problems.

# Example of a Set of Problems in Print



Title → **Algebra Quiz**

Directions → Solve for the variables.

Numbered Problems →
1. $x + 7 = 35$
2. $23 - b = 16$
3. Find the value of $z$ in $z + 24 = 30$.

# Example of a Set of Problems in Braille

- Begin with a centered heading followed by a blank line.

- Directions begin in cell 5.

- The opening Nemeth Code indicator is placed on the same line as the directions.

- Problems begin in cell 1 with runover in cell 3.

- We chose to close Nemeth after numbering the third problem for consistency.

- The last Nemeth Code terminator was placed before the period.
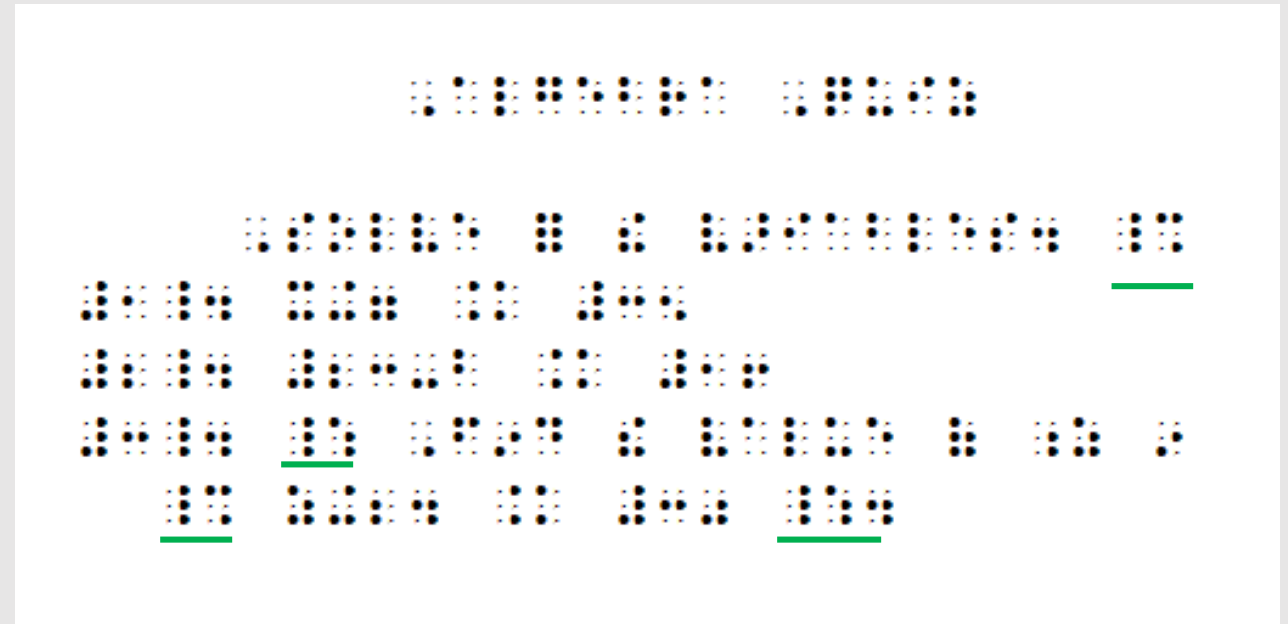
# Activity 3A

- Transcribe the worksheet below.

Evaluating Expressions Quiz

Evaluate if a = 5, b = -7, and c = 11.

1. $10^2 - 2|a + b|$

2. $\dfrac{3b}{7} + 45$
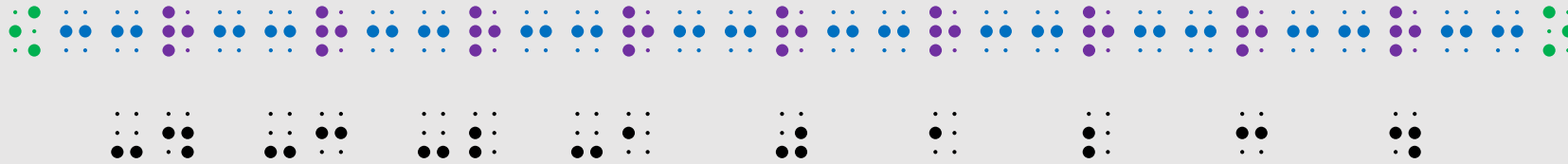
3. $\dfrac{c + a}{4} + \dfrac{3b}{7} + \dfrac{2a}{5}$

# Activity 3A: Answer Key
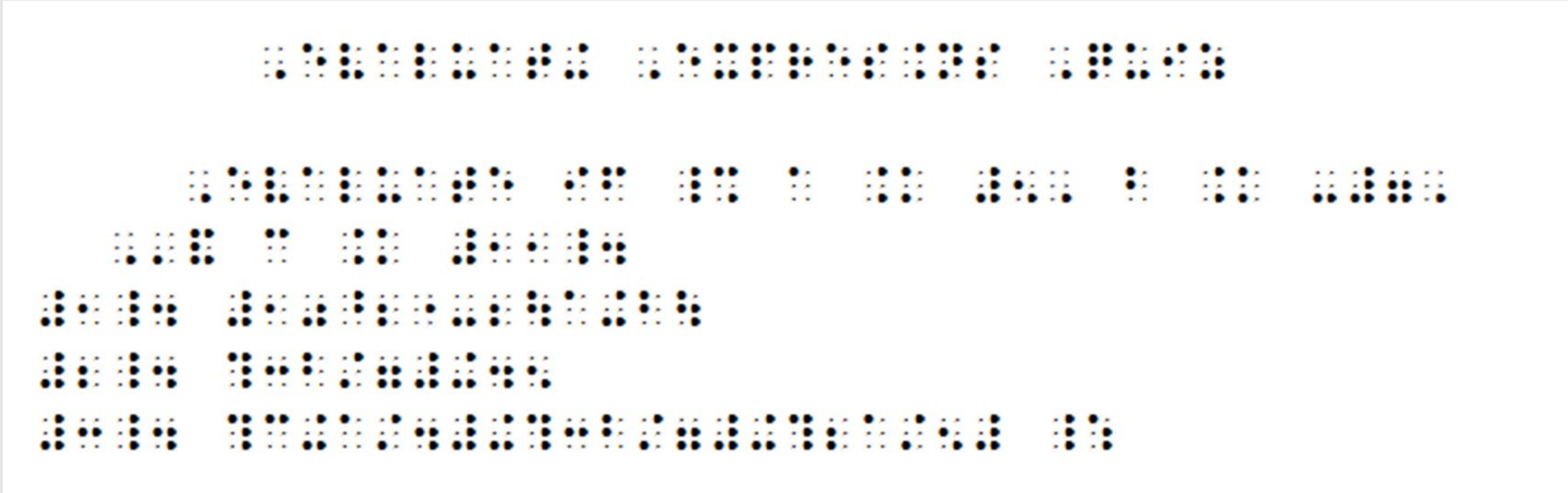
# Quick Review of Creating Number Lines

The following symbols are used to create number lines:

⠨ (dots 2-4-6) left-pointing arrowhead

⠒ (dots 2-5) line (axis line)

⠷ (dots 1-2-3-5) coordinate scale mark

⠕ (dots 1-3-5) right-pointing arrowhead

# Symbols for Graphing Inequalities on a Number Line

⠿ (dots 1-2-3-4-5-6) solid, filled-in, or closed circle (point included) placed above the number line

⠅ (dots 1-3-4-6) open circle (point not included) placed above the number line, which is only necessary when graphing an inequality involving "<" or ">" or "not equal to"

⠶ (dots 2-3-5-6) bold shaded line segment, which is used for shading the rest of the points included in the solution on the number line itself

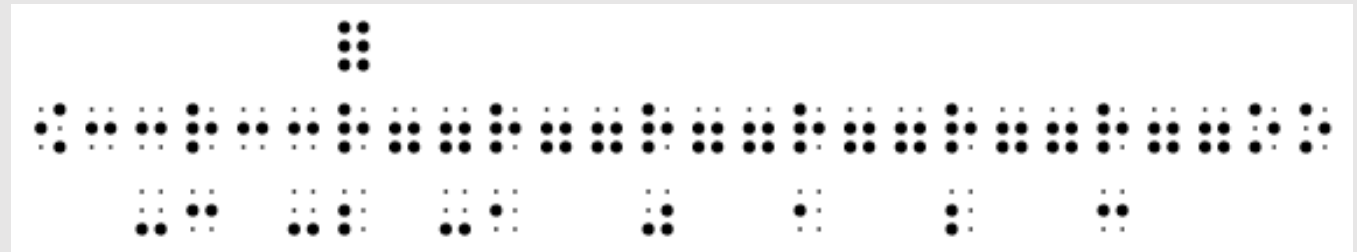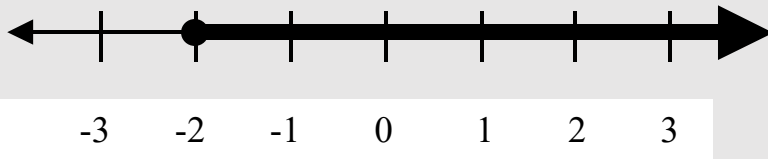⠪⠕ (dots 2-4-6 twice) bold left-pointing arrowhead, which is placed on the left side of the number line

⠕⠪ (dots 1-3-5 twice) bold right-pointing arrowhead, which is placed on the right side of the number line
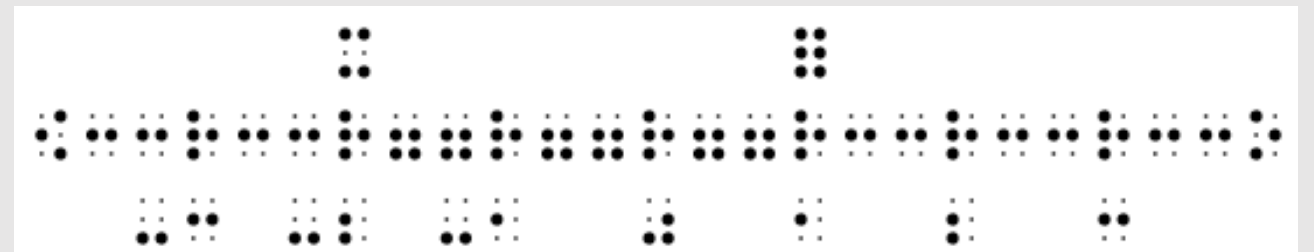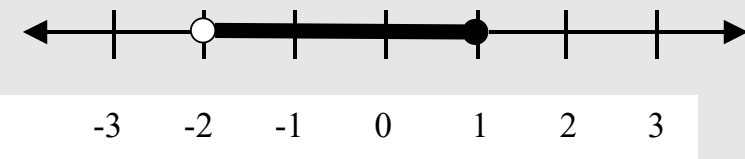
# Examples of Graphing Inequalities on a Number Line
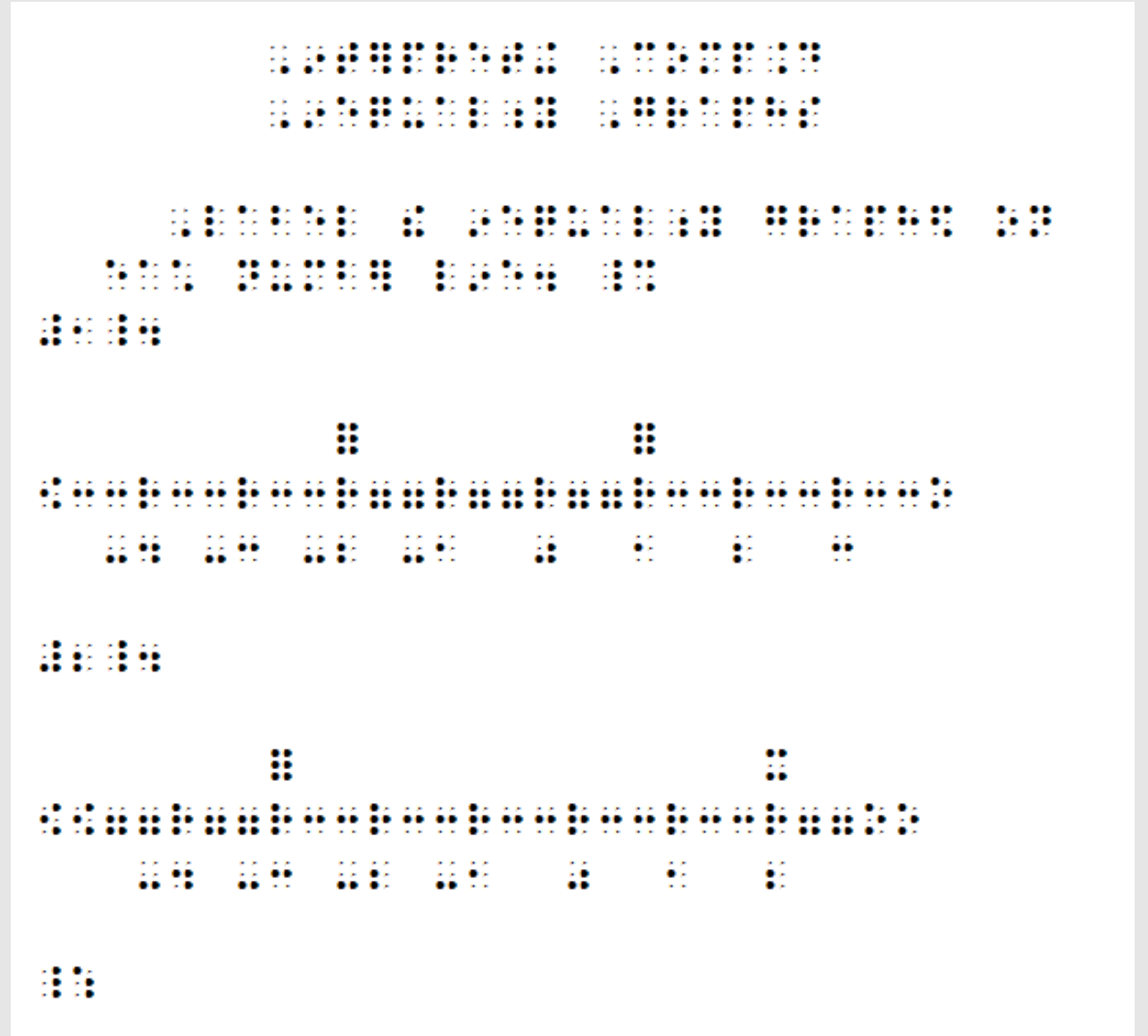
1. Graph $x < 3$.
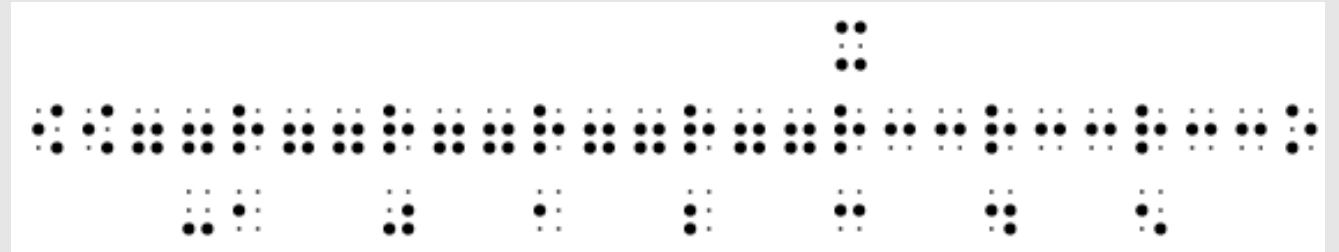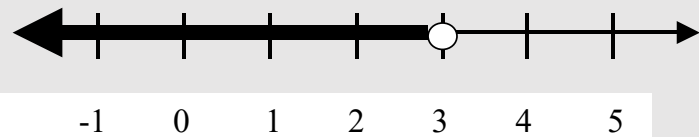


2. Graph $x \geq -2$.



3. Graph $-2 < x \leq 1$.

# Activity 3B

Interline the worksheet on the right. Notice how there is a blank line before and after each number line!
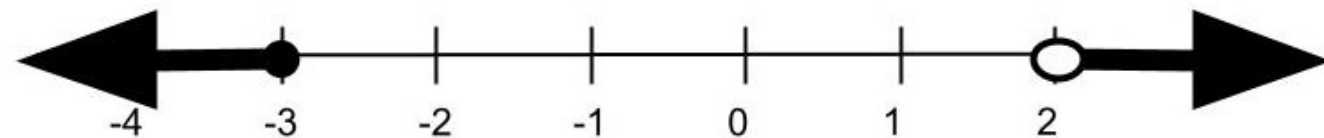
# Activity 3B: Answer Key

Interpreting Compound Inequality Graphs

Label the inequality graphed on each number line.

1.



2.

# Activity 3C

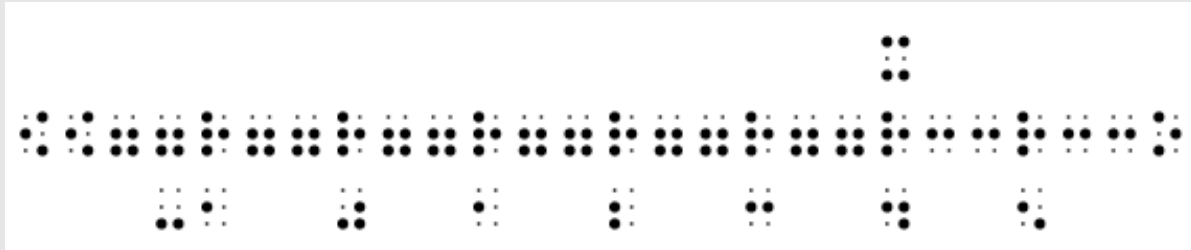Create the number lines for the following inequalities.

1. $x < 4$
2. $x \geq -4$
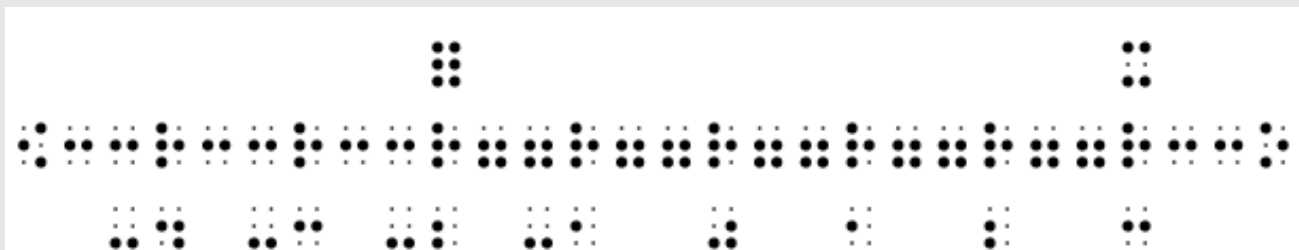3. $-2 \leq x < 3$

# Activity 3C: Answer Key

1. $x < 4$

2. $x \geq -4$

3. $-2 \leq x < 3$

# Data Tables

- Tables with only natural numbers (0, 1, 2, 3, …) are transcribed in UEB.

- Transcribe tables with math material (e.g., fractions, negative numbers) in Nemeth Code.

- Leave a blank line above and below the table.

- Start the first column heading in cell 1.

- Use a separation line below the column headings.

- Each column separation line should extend across the width of the column.

- Leave two blank cells between the column separation lines.

# Example of a Data Table



| x | y |
|---|---|
| 1 | 0.5 |
| 2 | 1.5 |
| 3 | 2.5 |

Column headings

Separation lines

Cell 1
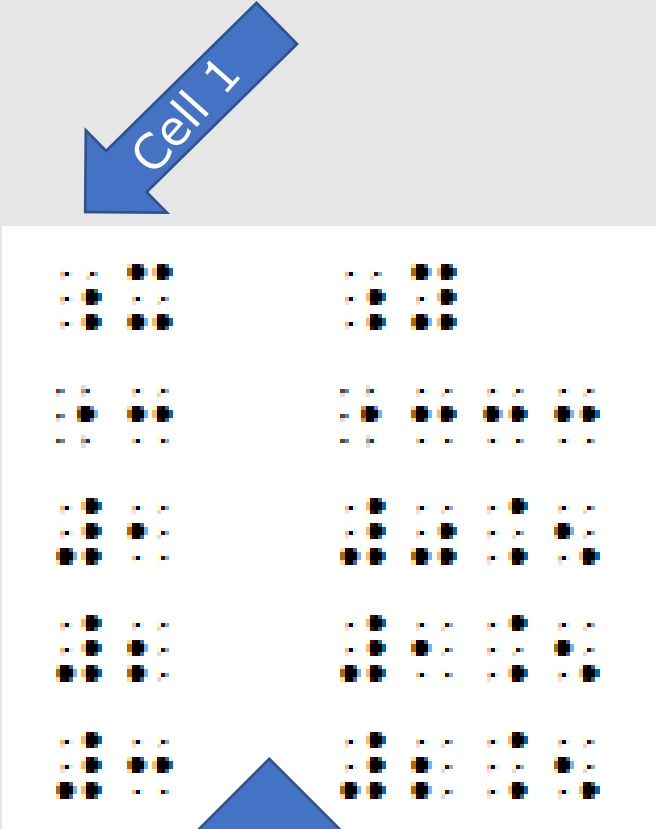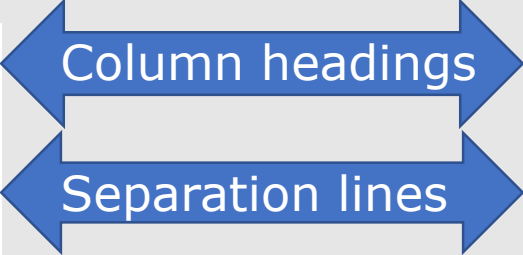
Two blank cells between the separation lines

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# Activity 3D

Transcribe the worksheet below:

Write a linear equation to match the data in the table below.

| x | y |
|---|---|
| -2 | 8 |
| -1 | 5 |
| 0 | 2 |
| 1 | -1 |
| 2 | -4 |

# Activity 3D: Answer Key