

# An Introduction to UEB Math/Science for Pre-Kindergarten – 1st Grade Students and Strategies for Supporting Math Learning

## Lesson 3: Tally Marks, Multiple Choice Problems, and Spatial Problems



University of South Carolina Upstate, Fall 2023

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## Lesson 3 Objectives


Participants will be able to:




1. Read and write tally marks
2. Read and write problems with multiple choice answers
3. Read and write spatial problems

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## Tally Marks


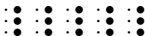




- Tally marks  are written with dots 4-5-6.
- The print horizontal or diagonal strike-through represents the counting of a fifth item. This can either be shown as a fifth tally mark in braille, or 4 tally marks with the **strike-through symbol** can be used.

  or  5

- Put a space after each group of 5 tally marks.

 2


  or   7

   or    13

3

3

## Multiple Choice Answers Using the Grade 1 Symbol Indicator

- The Grade 1 symbol indicator in UEB is , and it lets the braille reader know that what follows is a letter and not a contraction.
- In UEB when using letters for problem choices, place a Grade 1 indicator in front of each letter (except for *a*, *i*, and *o*).
- Follow the print for capitalization and punctuation of letters for multiple choice answers.
- Format multiple choice questions by beginning the question in cell 1 with runover in cell 5.
- Answer choices begin in cell 3 with runover in cell 5.

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### Capitalized Answer Choices

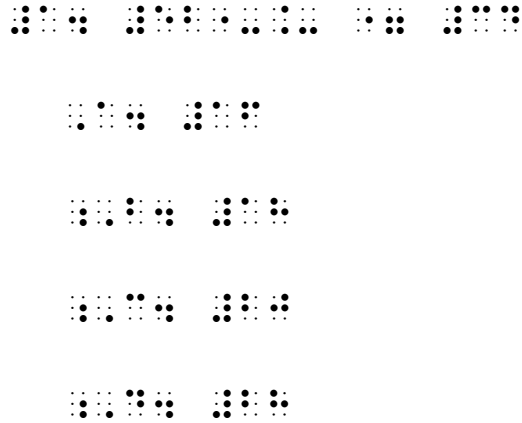
1.  $52 - \underline{\quad} = 34$

A. 16

B. 18

C. 20

D. 28



5

5

### Lower Case Answer Choices

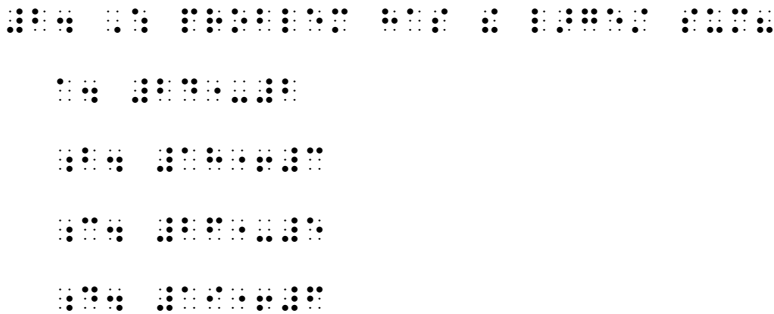
2. Which problem has the largest sum?

a.  $24 - 2$

b.  $18 + 3$

c.  $26 - 5$

d.  $19 + 6$



6

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## Activity 3A

Interline the multiple choice problem below:

7 + 5 = 12    7 + 5 = 12    7 + 5 = 12    7 + 5 = 12

a. 6    7

b. 7    7

c. 5    7

d. 9    7

7

7

## Activity 3A: Answer Key

1.  $7 + \underline{\quad} = 12$

7 + 5 = 12    7 + 5 = 12    7 + 5 = 12    7 + 5 = 12

a. 6

b. 7

c. 5

d. 9

e. 7

f. 7

g. 9

h. 7

8

8



## Consistency Helps Students Navigate Braille Materials Easily and Quickly

- Be consistent in formatting materials, regardless of grade level.
- Depending on the needs of young students, teachers may elect to include a space before and after signs of operation in horizontal problems.
- Follow print formatting for spatial problems, including where signs of operation are placed. For example, if the plus sign is to the left of the second addend, braille the plus sign to the left of the second addend.

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## Spatial Problems

- Keep calculation columns free from indicators and symbols of operation.
- Numeric mode continues through a numeric indicator followed immediately by a space.
- Be consistent with the placement of the operation sign and the extent of horizontal lines.
- Horizontal line mode should be used for the separation (horizontal) line.
- Horizontal line mode begins with ⠠⠠⠠ (dot 5, dots 2-5).
- Leave a blank line above and below a spatial problem.

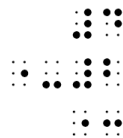
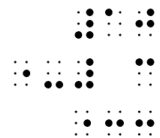
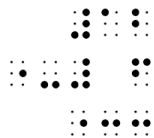
17  
-6  
-----  
  
⠠⠠⠠

12

12

## Spatial Problems Across a Line



- BANA does not have established rules about how to space spatial problems across a line.
- The Project INSPIRE team recommends leaving 2 blank cells between problems for students in PK–1<sup>st</sup> grade.
- Use consistent spacing for spatial problems on the entire worksheet or test.










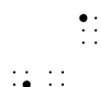


|   |   |  |
|---|---|--|
| $\begin{array}{r} 4 \\ - 2 \\ \hline \end{array}$                                 | $\begin{array}{r} 10 \\ - 3 \\ \hline \end{array}$                                | $\begin{array}{r} 12 \\ - 6 \\ \hline \end{array}$                                 |
|  |  |  |

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## Alternate Method: Spatial Problems Across a Line

- Alternatively use the numeric passage indicator  and the numeric terminator , which set numeric mode and grade 1 mode for the enclosed text. Notice there is not a blank line before or after the problems with this method.
- In a numeric passage, numeric indicators are not used.

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| $\begin{array}{r} 4 \\ - 2 \\ \hline \end{array}$                                   | $\begin{array}{r} 10 \\ - 3 \\ \hline \end{array}$                                  | $\begin{array}{r} 12 \\ - 6 \\ \hline \end{array}$                                  |  |  |   |  |
|  |  |  |  |  |  |  |
|   |   |   |  |   |   |   |

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## Activity 3D

Interline the spatially aligned problems that were brailled using the numeric passage indicators.

|  |   |   |
|--|---|---|
| $\begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array}$ | $\begin{array}{r} 20 \\ -10 \\ \hline 10 \end{array}$ | $\begin{array}{r} 14 \\ -7 \\ \hline 7 \end{array}$ |
|--|---|---|

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## Activity 3D: Answer Key

|  |   |   |
|--|---|---|
| $\begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array}$ | $\begin{array}{r} 20 \\ -10 \\ \hline 10 \end{array}$ | $\begin{array}{r} 14 \\ -7 \\ \hline 7 \end{array}$ |
|--|---|---|

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