

Multiplication and Division Lesson 3

Multiplication Cross and Beyond

Important Note

For all braille examples, emboss the "L3-Mul-Div-Problems-Only.brf" file as a supplement to this lesson.

Background

After you completed "Lesson 1 Multiplication Cross," you could write equations in a linear format with a multiplication cross and whole numbers in Nemeth Code. In this lesson, you will learn how to read and write equations in a linear format that include a multiplication cross as well as a grouping symbol and/or exponent.

Basic Rules with Grouping Symbols

Let's begin with learning how to read and write an equation with a multiplication cross and **grouping symbols**. Although there are additional comparison symbols and grouping symbols, we will use the following Nemeth symbols:

- Multiplication cross (dot 4, dots 1-6) (\times) ⠠⠨
- Equals sign (dots 4-6, dots 1-3) (=) ⠠⠨
- Open parenthesis (dots 1-2-3-5-6) (()) ⠠⠨
- Close parenthesis (dots 2-3-4-5-6) (()) ⠠⠨
- Open bracket (dot 4, dots 1-2-3-5-6) ([) ⠠⠨
- Close bracket (dot 4, dots 2-3-4-5-6) (]) ⠠⠨

The following steps outline how to write open parenthesis four times three close parenthesis minus seven equals in Nemeth Code:

1. Open parenthesis (dots 1-2-3-5-6) ⠠⠨
2. Four (dots 2-5-6) ⠠⠨
3. Multiplication cross (dot 4, dots 1-6) ⠠⠨
4. Three (dots 2-5) ⠠⠨

Activity Time with Grouping Symbols

Write the equations with a multiplication cross and grouping symbols from Examples 1 to 3.

1. Six plus open parenthesis six minus two close parenthesis times three equals what number?
2. Open parenthesis seven times ten close parenthesis plus open parenthesis four times one close parenthesis equals blank.
3. Two times open bracket five plus open parenthesis fourteen minus eight plus three close parenthesis close bracket equals?

Basic Rules with Exponents

Equations with the multiplication cross and **exponents** use the following Nemeth symbols:

- Multiplication cross (dot 4, dots 1-6) (×) ⠠⠨
- Equals sign (dots 4-6, dots 1-3) (=) ⠠⠨
- Superscript indicator (dots 4-5) ⠠
- Baseline indicator (dot 5) ⠠

The next equation includes a **superscript**, sometimes called an exponent or power. The following steps outline how to write the equation seventy times ten squared equals blank:

1. Numeric indicator (dots 3-4-5-6) ⠠
2. Seventy (dots 2-3-5-6, dots 3-5-6) ⠠⠨
3. Multiplication cross (dot 4, dots 1-6) ⠠⠨
4. Ten (dot 2, dots 3-5-6) ⠠⠨
5. Superscript indicator (dots 4-5) ⠠
6. Two (dots 2-3) ⠠
7. Space
8. Equals sign (dots 4-6, dots 1-3) ⠠⠨
9. Space
10. Long dash (dots 3-6, dots 3-6, dots 3-6, dots 3-6) ⠠⠠⠠⠠

