

## The Five-Step Rule for Writing Modified Expressions





## Background

Sometimes a symbol is placed either directly over or under an expression in print. For example, a horizontal bar is often placed over the digits in a repeating decimal. A horizontal bar is also placed directly over the named endpoints for a line segment.

$\overline{.03}$  or  $\overline{AB}$

As you probably noticed in the examples, it often takes several braille cells in the Nemeth code to describe the type of modifier and where it is placed in print. Most modified expressions start with a multipurpose indicator (dot 5) and end with the termination indicator (dots 1-2-4-5-6).

There is a process that we follow when writing modified expressions. We call this the Five-Step Rule because there are five steps, and we must use the same order each time. Without the rule, modified expressions would be more difficult to read and understand.

1. Multipurpose indicator  (dot 5)
2. Expression being modified
3. Directly-over indicator  (dots 1-2-6) or  
directly-under indicator  (dots 1-4-6)
4. Modifier
5. Termination indicator  (dots 1-2-4-5-6)

Modified expressions should be placed on a single line if possible.

## Detailed Examples

0.257

This would be read as zero point two five seven with the 257 repeating. There is a horizontal bar over the 257, so this would be considered a modified expression.

**Note:** When reading these expressions in braille, the multipurpose indicator (dot 5) is often misread as a "1".

Begin by writing the numeric indicator, zero, and the decimal point.

Time for Step 1: Write the multipurpose indicator (dot 5).

Step 2: Write the digits that will be repeating, 257, which is the expression being modified.

Step 3: Write the directly-over indicator (dots 1-2-6).

Finish with Step 5: Write the termination indicator (dots 1-2-4-5-6).

[illegible]


Let's review how this was written:

Step 1: Write the multipurpose indicator (dot 5).

Step 3: Write the directly-over indicator (dots 1-2-6).

Step 4: Write the horizontal bar (dots 1-5-6).

Step 5: Write the termination indicator (dots 1-2-4-5-6).

1.  $\frac{1}{7} = 0.\overline{142857}$     

This would be read as one seventh equals zero point one four two eight five seven with the 142857 repeating.

This would be read as ray AB by the math teacher. Notice the letters are capitalized and the contracted right-pointing arrow is used to indicate the ray.

Let's review how this was written:

Step 1: Write the multipurpose indicator (dot 5).

Step 2: Write what is being modified (capital A, capital B).

Step 3: Write the directly-over indicator (dots 1-2-6).

Step 4: Write the contracted right-pointing arrow (dots 1-2-4-6, dots 1-3-5).

Step 5: Write the termination indicator (dots 1-2-4-5-6).

**Activity time:** Describe how the Five-Step Rule is used.

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 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

This would be read as line CD. The two-way horizontal arrow is used to indicate lines.

[illegible]

This would be read as segment EF. The horizontal bar is used to indicate segments.

4.  $\overleftrightarrow{AB} \parallel \overleftrightarrow{EF}$



This would be read as line AB is parallel to line EF. The Nemeth symbol for "is parallel to" is dots 1-2-4-6 followed by dots 1-2-3.

5.  $\overrightarrow{BA} \perp \overrightarrow{BC}$



This would be read as ray BA is perpendicular to ray BC. The Nemeth symbol for "is perpendicular to" is dots 1-2-4-6 followed by dots 1-2-3-4.

6.  $\overline{JK} \cong \overline{LM}$



This would be read as segment JK is congruent to segment LM. The Nemeth symbol for "is congruent to" is dot 4, dots 1-5-6, dots 4-6, dots 1-3.