

# Five-Step Rule and Exceptions Lesson 1

## Place Value

## Important Note

For all braille examples, emboss the “L1-Five-Step-Problems-Only.brf” file as a supplement to this lesson.

## Background

When you get older you will learn about the Five-Step Rule which is what we use to modify or change a math expression. When we modify just a single digit or letter, we don't use this rule. For these expressions, there is a contracted form that makes them easier and quicker to read.

## Basic Rules

When a horizontal bar is used directly under a single digit or letter, write the directly-under indicator (dots 1-4-6) and horizontal bar symbol (dots 1-5-6) immediately after the digit or letter. You will most often see this notation in place value problems, where you need to name the place value of the underlined digit

## Examples

1. The following steps outline how to write three hundred fifty-six with a bar under the 5:

356

- a. Numeric indicator (dots 3-4-5-6)    ⋮
- b. Three (dots 2-5)    ⋮
- c. Five (dots 2-6)    ⋮
- d. Directly-under indicator (dots 1-4-6)    ⋮
- e. Horizontal bar (dots 1-5-6)    ⋮
- f. Six (dots 2-3-5)    ⋮

2. The following steps outline how to write four point one five eight three with a bar under the 8:

4.1583









The figure shows a sequence of 10 diagrams, each representing a state of a pattern on a 3x10 grid. The pattern consists of black dots. The sequence shows the pattern growing from a small cluster on the left towards the right. The growth is non-linear, with some steps showing significant expansion and others showing more gradual growth. The final state (Diagram 10) shows a large, complex shape on the right side of the grid.

- a. Numeric indicator (dots 3-4-5-6)    ⋮
- b. Four (dots 2-5-6)    ⋮
- c. Decimal point (dots 4-6)    ⋮
- d. One (dot 2)    ⋮
- e. Five (dots 2-6)    ⋮
- f. Eight (dot 2-3-6)    ⋮
- g. Directly-under indicator (dots 1-4-6)    ⋮
- h. Horizontal bar (dots 1-5-6)    ⋮
- i. Three (dots 2-5)    ⋮

3. The following steps outline how to write seven thousand one hundred four with a bar under the 7:

7,104

Figure 1 shows a 3x3 grid of 3x3 dot patterns. Each pattern is a 3x3 grid of dots, with some dots filled (black) and others empty (white). The patterns represent different states of a 3x3 grid.

- a. Numeric indicator (dots 3-4-5-6) 
- b. Seven (dots 2-3-5-6) 
- c. Directly-under indicator (dots 1-4-6) 
- d. Horizontal bar (dots 1-5-6) 
- e. Comma (dot 6) 
- f. One (dot 2) 
- g. Zero (dots 3-5-6) 
- h. Four (dots 2-5-6) 

## **Activity Time**

Write the expressions from Examples 1 to 3:

1. three hundred fifty-six with a bar under the 5
2. four point one five eight three with a bar under the 8
3. seven thousand one hundred four with a bar under the 7