

Five-Step Rule and Exceptions Lesson 3 Multi-Digit Repeating Decimal Number Activity Answer Key

Reading Repeating Decimals

Read the following fractions and their equivalent repeating decimal using the braille document "L3-Five-Step-Activity.brf." [There is a braille answer document "L3-Five-Step-Activity-Answers.brf" that can be used to independently check answers.]

$$1. \frac{2}{7} = \overline{.285714}$$

Answer 1: Two-sevenths equals point two eight five seven one four with the 285714 repeating.

$$2. \frac{3}{7} = 0.\overline{428571}$$

The figure displays a sequence of 10 dot patterns, arranged in two rows of five. Each pattern is a 5x5 grid of dots. The dots are black, with some dots in each pattern highlighted in red. The patterns show a progression from a simple 2x2 grid to a more complex, interconnected structure.

Answer 2: Three-sevenths equals zero point four two eight five seven one with the 428571 repeating.

3. $\frac{2}{11} = .\overline{18}$

The figure consists of 10 sub-diagrams arranged in a single row, each showing a 5x5 grid of dots. Black dots represent the state of the system at each time step. The pattern starts as a small cluster of 4 dots in the first diagram and grows into a larger, more complex shape by the 10th diagram.

Answer 3: Two-elevenths equals point one eight with the 18 repeating.

4. $\frac{9}{11} = 0.\overline{81}$

Answer 4: Nine-elevenths equals zero point eight one with the 81 repeating.

Mistake: Use the exception to the Five-Step Rule. You only need the bar immediately after the number 7 and no multipurpose indicator, directly-over indicator, or termination indicator are needed.

Correct: $0.\overline{7}$

4. Teacher: two point eight eight nine five four with the 54 repeating

Incorrect: The following steps outline what the student wrote:

The figure consists of 15 small diagrams arranged in a single row, each showing a pattern of black dots on a 3x10 grid. The patterns evolve from left to right, starting with a small cluster of dots and growing into a larger, more complex shape.

- a. Numeric indicator (dots 3-4-5-6) ⋮
- b. Two (dots 2-3) ⋮
- c. Decimal point (dots 4-6) ⋮
- d. Multipurpose indicator (dot 5) ⋮
- e. Eight (dots 2-3-6) ⋮
- f. Eight (dots 2-3-6) ⋮
- g. Nine (dots 3-5) ⋮
- h. Five (dots 2-6) ⋮
- i. Four (dots 2-5-6) ⋮
- j. Directly-over indicator (dots 1-2-6) ⋮
- k. Horizontal bar (dots 1-5-6) ⋮
- l. Termination indicator (dots 1-2-4-5-6) ⋮

Mistake: The multipurpose indicator should be between the 9 and 5, not before the first 8.

Correct: $2.889\overline{54}$

5. Teacher: five point one eight with a bar over the 18

Incorrect: The following steps outline what the student wrote:

- a. Numeric indicator (dots 3-4-5-6) ⠠
- b. Five (dots 2-6) ⠼
- c. Decimal point (dots 4-6) ⠠
- d. One (dot 2) ⠠
- e. Eight (dots 2-3-6) ⠼
- f. Directly-over indicator (dots 1-2-6) ⠠
- g. Horizontal bar (dots 1-5-6) ⠠
- h. Termination indicator (dots 1-2-4-5-6) ⠠

Mistake: The multipurpose indicator is missing in front of the 1.

Correct: $5.\overline{18}$

The sequence shows the following transformations:

- Pattern 1:** A standard 3x3 grid of 9 dots.
- Pattern 2:** The top-right dot is removed, leaving 8 dots.
- Pattern 3:** The middle-right dot is removed, leaving 7 dots.
- Pattern 4:** The bottom-right dot is removed, leaving 6 dots.
- Pattern 5:** The bottom-middle dot is removed, leaving 5 dots.
- Pattern 6:** The bottom-left dot is removed, leaving 4 dots.
- Pattern 7:** The middle-left dot is removed, leaving 3 dots.
- Pattern 8:** The top-left dot is removed, leaving 2 dots.
- Pattern 9:** Only the two corner dots (top-left and bottom-right) remain, representing the final stage of the number 9.