Terminating and Non-Terminating (Repeating)

Decimals of Rational Numbers

Classwork

Exercises 1–5

1. Use long division to determine the decimal expansion of .
2. Use long division to determine the decimal expansion of .
3. Use long division to determine the decimal expansion of .
4. Use long division to determine the decimal expansion of .
5. What do you notice about the decimal expansions of Exercises 1 and 2 compared to the decimal expansions of Exercises 3 and 4?

**Example 1**

Consider the fraction . Is it a Terminating or Non-Terminating (Repeating) decimal? How do you know?

**Example 2**

Consider the fraction Is it a Terminating or Non-Terminating (Repeating) decimal? How do you know?

**Example 3**

Convert the fraction to a decimal. Is it a Terminating or Non-Terminating (Repeating) decimal? How do you know?

Identify the type of decimal expansion for each of the numbers in Exercises 6–8 as Terminating or Non-Terminating (Repeating). Explain why their decimal expansion is such.

Example 6

Write as a decimal. Is it a Terminating or Non-Terminating (Repeating) decimal? How do you know?

Example 7

Write as a decimal. Is it a Terminating or Non-Terminating (Repeating) decimal? How do you know?

Example 8

Write as a decimal. Is it a Terminating or Non-Terminating (Repeating) decimal? How do you know?