

Name.....Class.....No.....

**Lesson 2.6**  
**Writing Recurring Decimals in Fraction Form 2**

**2) Recurring and non-terminating decimals**

Complete the following.

1. Write  $0.31\dot{7}$  in fraction form

Let  $N = 0.31\dot{7} = 0.31777\dots$  ... (1)

Multiply both sides of equation (1) by **100**:

$100 N = \dots\dots\dots$  ... (2)

Multiply both sides of equation (1) by **1,000**:

$1,000 N = \dots\dots\dots$  ... (3)

From equations (3) and (2), we get:

$1,000N - 100N = \dots\dots\dots$

$900N = \dots\dots\dots$

$N = \dots\dots\dots$

Since  $N = 0.31\dot{7}$ , then  $0.31\dot{7} = \dots\dots\dots$

2. Write  $1.54\dot{5}$  in fraction form

Let  $N = 1.54\dot{5} = 1.54545\dots$  ... (1)

Multiply both sides of equation (1) by **10**:

$10 N = \dots\dots\dots$  ... (2)

Multiply both sides of equation (1) by.....:

$\dots\dots\dots N = \dots\dots\dots$  ... (3)

From equations (3) and (2), we get:

$\dots\dots\dots N - \dots\dots\dots N = \dots\dots\dots$

$\dots\dots\dots N = \dots\dots\dots$

$N = \dots\dots\dots$

Since  $N = 1.54\dot{5}$ , then  $1.54\dot{5} = \dots\dots\dots$

3. Write  $6.43\overline{807}$  in fraction form

Let  $N = 6.43\overline{807} = \dots\dots\dots$  ... (1)

Multiply both sides of equation (...) by  $\dots\dots\dots$ :

$\dots\dots N = \dots\dots\dots$  ... (2)

Multiply both sides of equation (...) by  $\dots\dots\dots$ :

$\dots\dots\dots N = \dots\dots\dots$  ... (3)

From equations (...) and (...), we get:

$\dots\dots\dots N - \dots\dots\dots N = \dots\dots\dots$

$\dots\dots\dots N = \dots\dots\dots$

$N = \dots\dots\dots$

$N = \dots\dots\dots$

$N = \dots\dots\dots$

Since  $N = 6.43\overline{807}$ , then  $6.43\overline{807} = \dots\dots\dots$

From **Investigation**, we can see that:

$0.3\overline{7} = \frac{34}{90} = \frac{37 - 3}{90}$  ← 3 is used to subtract; it is a non-repeating digit of  $0.3\overline{7}$

With one repeating digit, add one 9 in the denominator.

With one non-repeating digit, add one 0 in the denominator.

$0.31\overline{7} = \frac{286}{900} = \frac{317 - 31}{900}$  ← 31 is used to subtract; it is a non-repeating digit of  $0.31\overline{7}$

With one repeating digit, add one 9 in the denominator.

With two non-repeating digits, add two 0s in the denominator.

$1.54\overline{5} = 1\frac{540}{990} = 1\frac{545 - 5}{990}$  ← 5 is used to subtract; it is a non-repeating digit of  $1.54\overline{5}$

With two repeating digit, add one 9s in the denominator.

With one non-repeating digit, add one 0 in the denominator.

$6.4380\overline{7} = 6\frac{43,764}{99,900} = 6\frac{43,807 - 43}{99,900}$  ← 43 is used to subtract; it is a non-repeating digit of  $6.4380\overline{7}$

With three repeating digit, add one 9s in the denominator.

With two non-repeating digits, add two 0s in the denominator.

Express the following decimals in fraction form.

1)  $0.5\dot{3}$

.....  
.....

2)  $1.73\dot{9}$

.....  
.....

3)  $3.00\dot{1}\dot{4}$

.....  
.....

4)  $16.17\dot{6}1\dot{4}$

.....  
.....

5)  $0.0\dot{1}$

.....  
.....

6)  $2.6\dot{0}5\dot{1}$

.....  
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