



Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

## Writing a Repeating Decimal as a Fraction (1 digit repeats) #1

**Example A:** To write  $0.\overline{3}$  as a fraction, let  $x = 0.\overline{3}$

- Notice that only *one number is repeating*. Multiply both sides of the equation by 10.  
Then  $10x = 3.\overline{3}$  or  $3.3333\dots$

$$\begin{array}{r}
 10x = 3.3333\dots \\
 - \quad x = 0.3333\dots \\
 \hline
 9x = 3.0000
 \end{array}$$

$$\begin{array}{r}
 3. \text{ Solve for } x \text{ and simplify.} \\
 \frac{9x}{9} = \frac{3.0000}{9} \\
 x = \frac{1}{3}
 \end{array}$$

$\frac{1}{3}$  is the equivalent fraction for  $0.\overline{3}$

**Write each decimal as a fraction.**

1.  $0.\overline{4}$
2.  $-0.\overline{2}$
3.  $0.\overline{8}$

**Example B:** To write  $0.2\overline{3}$  as a fraction, let  $x = 0.2\overline{3}$

- Notice that only *one number is repeating*. Multiply both sides of the equation by 10.  
Then  $10x = 2.\overline{3}$  or  $2.3333\dots$

$$\begin{array}{r}
 10x = 2.3333\dots \\
 - \quad x = 0.2333\dots \\
 \hline
 9x = 2.1000
 \end{array}$$

$$\begin{array}{r}
 3. \text{ Solve for } x \text{ and simplify.} \\
 \frac{9x}{9} = \frac{2.1000}{9} \\
 x = \frac{2.1}{9}, \text{ so } \frac{2.1}{9} = \frac{21}{90} = \frac{7}{30}
 \end{array}$$

$\frac{7}{30}$  is the equivalent fraction for  $0.2\overline{3}$

**Write each decimal as a fraction.**

1.  $0.4\overline{3}$
2.  $0.7\overline{5}$
3.  $2.0\overline{6}$