



Name _____ Period _____ Date _____

Writing a Repeating Decimal as a Fraction (2-digit repeats) #2

Example A: To write $0.\overline{25}$ as a fraction, let $x = 0.\overline{25}$

1. Notice that only *two digits are repeating*. Multiply both sides of the equation by 100.
Then $100x = 25.\overline{25}$ or $25.2525\dots$

2. Subtract x from $10x$.

$$\begin{array}{r} 100x = 25.2525\dots \\ - \quad x = 0.2525\dots \\ \hline 99x = 25.0000 \end{array}$$

3. Solve for x and simplify.

$$\frac{99x}{99} = \frac{25.0000}{99}$$

$$x = \frac{25}{99}$$

$\frac{25}{99}$ is the equivalent fraction for $0.\overline{25}$

Write each decimal as a fraction.

1. $0.\overline{23}$ 2. $-\overline{0.50}$ 3. $3.\overline{81}$
4. $5.1212\dots$ 5. $1.303030\dots$

Example B: To write $0.0\overline{53}$ as a fraction, let $x = 0.0\overline{53}$

1. Notice that only *two digits are repeating*. Multiply both sides of the equation by 100.
Then $100x = 5.\overline{353}$ or $5.35353\dots$

2. Subtract x from $10x$.

$$\begin{array}{r} 100x = 5.35353\dots \\ - \quad x = 0.05353\dots \\ \hline 99x = 5.30000 \end{array}$$

3. Solve for x and simplify.

$$\frac{99x}{99} = \frac{5.30000}{99}$$

$$x = \frac{5.3}{99}, \text{ so } \frac{5.3}{99} = \frac{53}{990}$$

$\frac{53}{990}$ is the equivalent fraction for $0.0\overline{53}$

Write each decimal as a fraction.

1. $0.0\overline{37}$ 2. $-\overline{.354}$ 3. $2.\overline{931}$