

Repeating Decimals to Fractions

(Repeating pattern with non-repeating digits)

1. Find the fraction equal to $0.0\overline{2}$.

2. Find the fraction equal to $0.1\overline{52}$.

3. Find the fraction equal to $0.01\overline{64}$.

4. Find the fraction equal to $0.1\overline{8}$.

5. Find the fraction equal to $1.3\overline{2}$.

6. Find the fraction equal to $14.00\overline{5}$.

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(Repeating pattern with non-repeating digits)

1. Find the fraction equal to $0.0\bar{2}$.

$$\begin{aligned}x &= 0.0\bar{2} \\10x &= 0.\bar{2} \\100x &= 2.\bar{2} \\100x - 10x &= 2.\bar{2} - 0.\bar{2} \\90x &= 2 \\x &= \frac{2}{90} = \frac{1}{45}\end{aligned}$$

2. Find the fraction equal to $0.1\bar{5}\bar{2}$.

$$\begin{aligned}x &= 0.1\bar{5}\bar{2} \\10x &= 1.\bar{5}\bar{2} \\1000x &= 152.\bar{5}\bar{2} \\1000x - 10x &= 152.\bar{5}\bar{2} - 1.\bar{5}\bar{2} \\990x &= 151 \\x &= \frac{151}{990}\end{aligned}$$

3. Find the fraction equal to $0.01\bar{6}\bar{4}$.

$$\begin{aligned}x &= 0.01\bar{6}\bar{4} \\100x &= 1.\bar{6}\bar{4} \\10000x &= 164.\bar{6}\bar{4} \\10000x - 100x &= 164.\bar{6}\bar{4} - 1.\bar{6}\bar{4} \\9900x &= 163 \\x &= \frac{163}{9900}\end{aligned}$$

4. Find the fraction equal to $0.1\bar{8}$.

$$\begin{aligned}x &= 0.1\bar{8} \\10x &= 1.\bar{8} \\100x &= 18.\bar{8} \\100x - 10x &= 18.\bar{8} - 1.\bar{8} \\90x &= 17 \\x &= \frac{17}{90}\end{aligned}$$

5. Find the fraction equal to $1.3\bar{2}$.

$$\begin{aligned}x &= 1.3\bar{2} \\10x &= 13.\bar{2} \\100x &= 132.\bar{2} \\100x - 10x &= 132.\bar{2} - 13.\bar{2} \\90x &= 119 \\x &= \frac{119}{90}\end{aligned}$$

6. Find the fraction equal to $14.00\bar{5}$.

$$\begin{aligned}x &= 14.00\bar{5} \\100x &= 1400.\bar{5} \\1000x &= 14005.\bar{5} \\1000x - 100x &= 14005.\bar{5} - 1400.\bar{5} \\900x &= 12605 \\x &= \frac{12605}{900} = \frac{2521}{180}\end{aligned}$$