SLIDE 15

Turning Repeating Decimals to Fractions

Connect Your Learning!

You already know your decimal places (tenths, hundredths, thousandths, etc.) as well as the steps for turning a decimal into a fraction from our previous lesson.

Review Examples:

0.3 =

3 tenths or $\frac{3}{10}$

2.48 =

2 and 48 hundredths

$2\frac{48}{100} = 2\frac{48 \div 4}{100 \div 4} = 2\frac{12}{25}$

0.012

12 thousandths

$\frac{12}{1000} = \frac{12 \div 4}{1000 \div 4} = \frac{3}{250}$

For repeating decimals follow the same pattern. However, when you identify the decimal place (tenths, hundredths, etc) and make this your denominator subtract one.
For example: Instead of tenths you would use 9 and instead of 100 you would use 99.

SLIDE 16

Turning Repeating Decimals to Fractions

Make sure to take all notes/write down all steps when completing class examples so that you have information to refer to when you need help.

Write each decimal as a fraction in simplest form.

$0.\overline{4}$

$\frac{4}{10 - 1} = \frac{4}{9}$

$0.\overline{45}$

$\frac{45}{100 - 1} = \frac{45 \div 9}{99 \div 9} = \frac{5}{11}$

$0.\overline{24}$

$\frac{24}{100 - 1} = \frac{24 \div 3}{99 \div 3} = \frac{8}{33}$

$0.5\overline{3}$

$\frac{53 - 5}{100 - 10} = \frac{48 \div 6}{90 \div 6} = \frac{8}{15}$

Converting Decimals to Fractions (A)

Name: _____ Date: _____

Convert each decimal to a fraction.

$0.45 = \frac{45 \div 5}{100 \div 5} = \frac{9}{20}$

$0.\overline{18} = \frac{18}{100 - 1} \rightarrow \frac{18 \div 9}{99 \div 9} = \frac{2}{11}$

$0.3 = \frac{3}{10}$

$0.95 = \frac{95 \div 5}{100 \div 5} = \frac{19}{20}$

$0.8 = \frac{8 \div 2}{10 \div 2} = \frac{4}{5}$

$0.\overline{63} = \frac{63}{100 - 1} \rightarrow \frac{63 \div 9}{99 \div 9} = \frac{7}{11}$

$0.\overline{54} = \frac{54}{100 - 1} \rightarrow \frac{54 \div 9}{99 \div 9} = \frac{6}{11}$

$0.125 = \frac{125 \div 25}{1000 \div 25} = \frac{5 \div 5}{40 \div 5} = \frac{1}{8}$

$0.8\overline{3} = \frac{83 - 8}{100 - 10} \rightarrow \frac{75 \div 15}{90 \div 15} = \frac{5}{6}$

$0.\overline{90} = \frac{90}{100 - 1} \rightarrow \frac{90 \div 9}{99 \div 9} = \frac{10}{11}$

$0.\overline{285714} = \frac{285,714}{1,000,000 - 1} \rightarrow \frac{285,714}{999,999}$

$0.\overline{1} = \frac{1}{10 - 1} \rightarrow \frac{1}{9}$

$0.\overline{3} = \frac{3}{10 - 1} \rightarrow \frac{3 \div 3}{9 \div 3} = \frac{1}{3}$

$0.1\overline{6} = \frac{16 - 1}{100 - 10} \rightarrow \frac{15 \div 15}{90 \div 15} = \frac{1}{6}$

$0.\overline{857142} = \frac{857,142}{1,000,000 - 1} \rightarrow \frac{857,142}{999,999}$

$0.\overline{4} = \frac{4}{10 - 1} \rightarrow \frac{4}{9}$

$0.875 = \frac{875 \div 25}{1000 \div 25} = \frac{35 \div 5}{40 \div 5} = \frac{7}{8}$

$0.25 = \frac{25 \div 25}{100 \div 25} = \frac{1}{4}$

$0.\overline{428571} = \frac{428,571}{1,000,000 - 1} \rightarrow \frac{428,571}{999,999}$

$0.4 = \frac{4 \div 2}{10 \div 2} = \frac{2}{5}$

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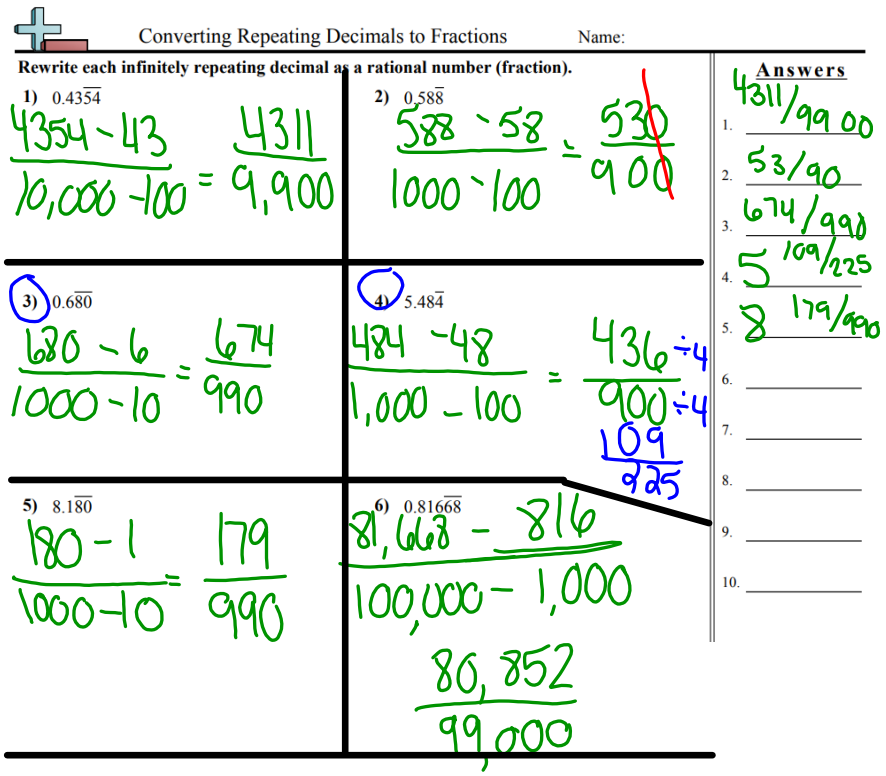

Converting Repeating Decimals to Fractions Name:

Rewrite each infinitely repeating decimal as a rational number (fraction).

1) $0.43\overline{54}$

$\frac{4354-43}{10,000-100} = \frac{4311}{9,900}$

2) $0.5\overline{88}$

$\frac{588-58}{1000-100} = \frac{530}{900}$

3) $0.6\overline{80}$

$\frac{680-6}{1000-10} = \frac{674}{990}$

4) $5.48\overline{4}$

$\frac{484-48}{1,000-100} = \frac{436 \div 4}{900 \div 4}$

$\frac{109}{225}$

5) $8.1\overline{80}$

$\frac{180-1}{1000-10} = \frac{179}{990}$

6) $0.81\overline{668}$

$\frac{81,668-816}{100,000-1,000}$

$\frac{80,852}{99,000}$

Answers

1. 4311/9900
2. 53/90
3. 674/990
4. $5\ 109/225$
5. $8\ 179/990$
6. _____
7. _____
8. _____
9. _____
10. _____

7) $5.24\overline{690}$

$\frac{24690-246}{100,000-100} \rightarrow 5\ \frac{24,444}{99,000}$

8) $9.23\overline{31}$

$\frac{2331-23}{10,000-100} \rightarrow 9\ \frac{2308}{9,900}$

9) $27.\overline{91}$

$\frac{91-9}{100-10} \rightarrow \frac{82}{90} \div 2 = 27\ \frac{41}{45}$

10) $4.59\overline{35}$

$\frac{5935-593}{10,000-1,000} \rightarrow \frac{5342}{90,000}$