

Decimals and Fractions

We need to use place values when converting decimals to fractions.

Express each decimal as a fraction or mixed number in simplest form:

1. 0.8

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

2. 0.28

$$\frac{28 \div 4}{100 \div 4} = \frac{7}{25}$$

3. 15.125

$$15 \frac{125 \div 25}{1000 \div 25} = 15 \frac{5}{40} = 15 \frac{1}{8}$$

hundreds tens ones tenths hundredths thousandths

Practice:

4. 0.6

$$\frac{6 \div 2}{10 \div 2} = \frac{3}{5}$$

5. 0.45

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

6. 2.08

$$2 \frac{8}{100}$$

$$2 \frac{4}{50}$$

$$2 \frac{2}{25}$$

7. 4.375

$$4 \frac{375 \div 25}{1000 \div 25}$$

$$4 \frac{15}{40}$$

$$4 \frac{3}{8}$$

8. 95.5

$$95 \frac{5}{10}$$

$$95 \frac{1}{2}$$

9. 0.055

$$\frac{55 \div 5}{1000 \div 5} = \frac{11}{200}$$

Converting Fractions to Decimals

To write a fraction as a decimal, we must divide the numerator by the denominator.

1. $3/8$

$$\begin{array}{r} 0.375 \\ 8 \overline{) 3.000} \\ \underline{-24} \\ 60 \\ \underline{-56} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

2. $5/11$

$$\begin{array}{r} 0.4545\ldots \\ 11 \overline{) 5.0000} \\ \underline{-44} \\ 60 \\ \underline{-55} \\ 50 \\ \underline{-44} \\ 60 \\ \underline{-55} \\ 50 \\ \underline{-44} \\ 60 \end{array}$$

A terminating decimal has a definite end, a repeating decimal has one or more digits that repeat endlessly.

You Try:

Write as a decimal in simplest form:

3. $1/6$

$$\begin{array}{r} 0.1\overline{6} \\ 6 \overline{) 1.000} \\ \underline{-6} \\ 40 \\ \underline{-36} \\ 40 \\ \underline{-36} \\ 40 \\ \underline{-36} \\ 4 \end{array}$$

4. 3 and $1/5$

$$\begin{array}{r} 3.2 \\ 5 \overline{) 1.0} \\ \underline{-10} \\ 0 \end{array}$$

5. 2 and $11/5$

$$\begin{array}{r} 2.2 \\ 5 \overline{) 11} \\ \underline{-10} \\ 10 \\ \underline{-10} \\ 0 \end{array}$$

Winona's measuring cup is $\frac{2}{3}$ full of water. What is this amount as a decimal?

$$\begin{array}{r} .66 \\ 3 \overline{) 2.00} \\ \underline{-18} \\ 20 \\ \underline{-18} \\ 18 \end{array}$$

$$0.\overline{6}$$

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Tabitha's hiking distance in July was 2 and $\frac{1}{6}$ miles. She wrote the distance as $2.\overline{16}$ miles. What error did she make?

Did not divide properly only 6 repeats.

$$2.\overline{16}$$