

Lesson 5-1

Example 1 Write a Fraction as a Terminating Decimal

Write $\frac{5}{8}$ as a decimal.

Method 1 Use paper and pencil.

$$\begin{array}{r} 0.625 \\ 8 \overline{)5.000} \\ \underline{-48} \\ 20 \\ \underline{-16} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

0.625 is a terminating decimal.

Method 2 Use a calculator.

$$5 \div 8 \quad \boxed{\text{ENTER}} \quad 0.625$$

$$\frac{5}{8} = 0.625$$

Example 2 Write a Mixed Number as a Decimal

Write $6\frac{3}{4}$ as a decimal.

$$6\frac{3}{4} = 6 + \frac{3}{4} \quad \text{Write as the sum of an integer and a fraction.}$$

$$= 6 + 0.75 \quad \frac{3}{4} = 0.75$$

$$= 6.75 \quad \text{Add.}$$

Example 3 Write Fractions as Repeating Decimals

a. Write $\frac{5}{9}$ as a decimal.

$$\frac{5}{9} \rightarrow 9 \overline{)5.0000...} \quad \begin{array}{l} 0.5555... \\ 5.0000... \end{array} \quad \text{The digit 5 repeats.}$$

$$\text{So, } \frac{5}{9} = 0.\bar{5}.$$

b. Write $-\frac{2}{11}$ as a decimal.

$$-\frac{2}{11} \rightarrow 11 \overline{) 2.0000} \begin{array}{l} 0.1818... \\ 2.0000 \end{array} \quad \text{The digits 18 repeat.}$$

$$\text{So, } -\frac{2}{11} = -0.\overline{18}.$$

Example 4 Compare Fractions and Decimals

Replace \bullet with $<$, $>$, or $=$ to make $\frac{2}{3} \bullet 0.6$ a true sentence.

$$\frac{2}{3} \bullet 0.6 \quad \text{Write the sentence.}$$

$$0.\overline{6} \bullet 0.6 \quad \text{Write } \frac{2}{3} \text{ as a decimal.}$$

$$0.\overline{6} > 0.6 \quad \text{In the hundredths place, } 6 > 0.$$

Example 5 Compare Fractions to Solve a Problem

MUSIC In a survey of students, $\frac{11}{20}$ of the boys and $\frac{14}{25}$ of the girls play a musical instrument. Of those surveyed, do a greater fraction of boys or girls play a musical instrument?

Write the fractions as decimals and then compare the decimals.

$$\text{boys: } \frac{11}{20} = 0.55$$

$$\text{girls: } \frac{14}{25} = 0.56$$

Since, $0.56 > 0.55$, $\frac{14}{25} > \frac{11}{20}$. So, a greater fraction of girls play a musical instrument.