

## Lesson 5-2

### Example 1 Write Mixed Numbers and Integers as Fractions

a. Write  $3\frac{5}{8}$  as a fraction.

$$3\frac{5}{8} = \frac{29}{8} \quad \text{Write } 3\frac{5}{8} \text{ as an improper fraction.}$$

b. Write  $-7$  as a fraction.

$$-7 = \frac{-7}{1}$$

### Example 2 Write Terminating Decimals as Fractions

Write each decimal as a fraction or mixed number in simplest form.

a. 0.28

$$\begin{aligned} 0.28 &= \frac{28}{100} && 0.28 \text{ is 28 hundredths.} \\ &= \frac{7}{25} && \text{Simplify. The GCF of 28 and 100 is 4.} \end{aligned}$$

b. 2.488

$$\begin{aligned} 2.488 &= 2\frac{488}{1000} && 2.488 \text{ is 2 and 488 thousandths.} \\ &= 2\frac{61}{125} && \text{Simplify. The GCF of 488 and 1000 is 8.} \end{aligned}$$

### Example 3 Write Repeating Decimals as Fractions

Write  $0.\overline{6}$  as a fraction in simplest form.

$$\begin{aligned} N &= 0.666\dots && \text{Let } N \text{ represent the number.} \\ 10N &= 10(0.666\dots) && \text{Multiply each side by 10} \\ 10N &= 6.666\dots && \text{because one digit repeats.} \end{aligned}$$

$$\begin{aligned} 10N &= 6.666\dots && \text{Subtract } N \text{ from } 10N \text{ to eliminate} \\ - (N &= 0.666\dots) && \text{the repeating part, 0.666.} \\ \hline 9N &= 6 && 10N - N = 10N - 1N \text{ or } 9N \end{aligned}$$

$$\frac{9N}{9} = \frac{6}{9} \quad \text{Divide each side by 9.}$$

$$N = \frac{2}{3} \quad \text{Simplify. The GCF of 6 and 9 is 3.}$$

$$\text{Therefore, } 0.\overline{6} = \frac{2}{3}.$$

**CHECK:**  $2 \div 3$   0.6666666667

**Example 4 Classify Numbers**

**Identify all sets to which each number belongs.**

**a.**  $3\frac{1}{4}$

Because  $3\frac{1}{4} = \frac{13}{4}$ , it is a rational number. It is neither a whole number nor an integer.

**b.**  $-4.12867359\dots$

This is a nonterminating, nonrepeating decimal. So, it is not a rational number.

**c.**  $5$

$5$  is an integer and a rational number.