

6-1 Writing Fractions as Decimals

(Pages 274–279)

To change a fraction to an **equivalent decimal**, divide the numerator by the denominator. If the division comes to an end (that is, gives a remainder of zero), the decimal is a *terminating* decimal. If the division never ends (that is, never gives a zero remainder), the decimal is a *repeating* decimal. For example, $\frac{1}{8}$ gives the terminating decimal 0.125, and $\frac{5}{6}$ gives the repeating decimal 0.8333, which is written $0.8\bar{3}$. The bar over the 3 indicates that the 3 repeats forever. You can use a calculator to change a fraction to a decimal.

EXAMPLES

A Write $2\frac{2}{5}$ as a decimal.

Method 1: Use paper and pencil.

$$2\frac{2}{5} = 2 + \frac{2}{5}$$

$$\begin{array}{r} .4 \\ 5 \overline{)2.0} \\ \underline{-20} \\ 0 \end{array}$$

So $2 + 0.4 = 2.4$.

Method 2: Use a calculator.

Enter 2 $\boxed{+}$ 2 $\boxed{\div}$ 5 $\boxed{=}$. Result: 2.4.

Make sure your calculator follows the order of operations.

B Replace \bullet with $<$, $>$, or $=$: $\frac{2}{3} \bullet \frac{3}{4}$.

Method 1: Rewrite as decimals.

$$\frac{2}{3} = 0.\bar{6} \quad \frac{3}{4} = 0.75$$

$$0.6 < 0.75$$

Method 2: Write equivalent fractions with like denominators.

The LCM is 12.

$$\frac{2}{3} = \frac{8}{12} \text{ and } \frac{3}{4} = \frac{9}{12}$$

$$\frac{8}{12} < \frac{9}{12}, \text{ so } \frac{2}{3} < \frac{3}{4}.$$

Try These Together

Write each fraction as a decimal. Use a bar to show a repeating decimal.

1. $\frac{4}{10}$

2. $\frac{7}{9}$

3. $-\frac{1}{2}$

4. $5\frac{7}{16}$

PRACTICE

Write each fraction as a decimal. Use a bar to show a repeating decimal.

5. $-\frac{3}{4}$

6. $4\frac{16}{20}$

7. $\frac{3}{9}$

8. $\frac{18}{25}$

Replace each \bullet with $>$, $<$, or $=$ to make a true sentence.

9. $\frac{7}{8} \bullet \frac{5}{9}$

10. $-2\frac{2}{5} \bullet -2\frac{1}{4}$

11. $\frac{7}{12} \bullet \frac{21}{36}$



12. Standardized Test Practice An airplane flies at about 600 miles per hour. At some point during its landing, it drops to about $\frac{2}{9}$ of this speed. Write this fraction as a decimal.

A 0.60

B 0.50

C 0.40

D $0.\bar{2}$

Answers: 1. 0.4 2. 0.4 3. $0.\bar{7}$ 4. 5.4375 5. -0.75 6. 4.8 7. $0.\bar{3}$ 8. $0.\bar{72}$ 9. $>$ 10. $<$ 11. $=$ 12. D