

Decimals and Fractions (pages 70–73)

Any fraction can be written as a decimal by using division.

Write a Fraction as a Decimal	Use paper and pencil to write $\frac{4}{5}$ as a decimal. $\frac{4}{5}$ means $4 \div 5$. Divide 4 by 5, and the quotient is the decimal you want to find, 0.8.
Repeating Decimals	Decimals like $0.333333 \dots$ are called repeating decimals because the digits repeat. Bar notation can be used to indicate that decimals repeat. $0.666666 \dots = 0.\overline{6}$, $0.277777 \dots = 0.2\overline{7}$, $0.737373 \dots = 0.\overline{73}$ Bar notation is useful because some fractions, when written as decimals, are repeating decimals. For example, $\frac{2}{3} = 0.\overline{6}$.

EXAMPLES

Express the fractions as decimals. Use bar notation for repeating decimals.

A $\frac{3}{5}$

$$\frac{3}{5} = 3 \div 5$$

$$\begin{array}{r} 0.6 \\ 5 \overline{)3.0} \\ \underline{-30} \\ 0 \end{array} \quad \begin{array}{l} \text{Divide 3 by 5.} \\ \text{Therefore, } \frac{3}{5} = 0.6. \end{array}$$

B $\frac{3}{11}$

$$\frac{3}{11} = 3 \div 11$$

$$\begin{array}{r} 0.2727 \dots \\ 11 \overline{)3.00} \\ \underline{-22} \\ 80 \\ \underline{-77} \\ 30 \\ \underline{-22} \\ 8 \end{array}$$

Divide 3 by 11. The digits 2 and 7 will repeat since 8 and 3 will continue to alternate as the remainders.

Therefore, $\frac{3}{11} = 0.\overline{27}$.

Try These Together

Express each fraction or mixed number as a decimal. If the decimal is a repeating decimal, use bar notation.

1. $\frac{1}{6}$

HINT: Divide 1 by 6.

2. $4\frac{7}{8}$

HINT: The whole number is written to the left of the decimal point.

PRACTICE

Express each fraction or mixed number as a decimal. If the decimal is a repeating decimal, use bar notation.

3. $\frac{3}{6}$

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

5. $\frac{12}{25}$

6. $5\frac{2}{3}$

7. $8\frac{4}{9}$

8. $7\frac{1}{4}$



9. Standardized Test Practice Suppose that $\frac{1}{8}$ of D'andre's class scored As on their science exam. Express this fraction as a decimal.

A 0.215

B 0.125

C 0.252

D 0.115

Answers: 1. 0.16 2. 4.875 3. 0.5 4. 0.2 5. 0.48 6. 5.6 7. 8.4 8. 7.25 9. B