NAME _____ DATE _____ PERIOD _____

5-6 Study Guide and Intervention

Algebra: Solving Equations

Multiplicative inverses, or **reciprocals**, are two numbers whose product is 1. To solve an equation in which the coefficient is a fraction, multiply each side of the equation by the reciprocal of the coefficient.

Example 1 **Find the multiplicative inverse of $3\frac{1}{4}$.**

$3\frac{1}{4} = \frac{13}{4}$ Rename the mixed number as an improper fraction.

$\frac{13}{4} \cdot \frac{4}{13} = 1$ Multiply $\frac{13}{4}$ by $\frac{4}{13}$ to get the product 1.

The multiplicative inverse of $3\frac{1}{4}$ is $\frac{4}{13}$.

Example 2 **Solve $\frac{4}{5}x = 8$. Check your solution.**

$\frac{4}{5}x = 8$ Write the equation.

$\left(\frac{5}{4}\right)\frac{4}{5}x = \left(\frac{5}{4}\right)8$ Multiply each side by the reciprocal of $\frac{4}{5}$, $\frac{5}{4}$.

$x = 10$ Simplify.

The solution is 10.

Exercises

Find the multiplicative inverse of each number.

1. $\frac{4}{9}$ $\frac{9}{4}$ or $2\frac{1}{4}$

2. $\frac{12}{13}$ $\frac{13}{12}$ or $1\frac{1}{12}$

3. $-\frac{15}{4}$ $-\frac{4}{15}$

4. $6\frac{1}{7}$ $\frac{7}{43}$

Solve each equation. Check your solution.

5. $\frac{3}{5}x = 12$ 20

6. $16 = \frac{10}{3}a$ $4\frac{4}{5}$

7. $\frac{c}{2} = 7$ 14

8. $\frac{15}{7}y = 3$ $1\frac{2}{5}$

9. $\frac{m}{6} = -4$ −24

10. $\frac{14}{3} = -\frac{7}{9}b$ −6