



Name _____ Date _____

Solving Equations (Pages 315–317)

You can use the skills you have learned for rational numbers as you solve equations that contain rational numbers.

Solving Equations with Rational Numbers

- To solve an equation, you get the variable alone on one side by using inverse operations.
- Reverse the order of operations by undoing addition and subtraction first.
- Then undo multiplication and division by doing the same inverse operation on each side.
- Check your solution by substituting it for the variable to see if it makes the two sides of the equation equal.

EXAMPLES

A Solve and check $\frac{a-5}{3} = 7$.

$$\frac{a-5}{3} = 7$$

$$3\left(\frac{a-5}{3}\right) = 3(7) \quad \text{Multiply each side by 3.}$$

$$a - 5 = 21 \quad \text{Simplify.}$$

$$a - 5 + 5 = 21 + 5 \quad \text{Add 5 to each side.}$$

$$a = 26 \quad \text{Simplify.}$$

$$\text{Check: Does } \frac{26-5}{3} \text{ equal 7? Yes, } \frac{21}{3} = 7.$$

B Solve and check $-8 - b = 6$.

$$-8 - b = 6$$

$$8 + (-8) - b = 6 + 8 \quad \text{Add 8 to each side.}$$

$$-b = 14 \quad \text{Simplify.}$$

$$(-1)(-b) = 14(-1) \quad \text{Multiply each side by } -1.$$

$$b = -14 \quad \text{Simplify.}$$

$$\text{Check: Does } -8 - (-14) \text{ equal 6? Yes.}$$

Try These Together

1. Solve and check $-15 = -\frac{w}{8}$.

HINT: Multiply each side by 8 and then by -1 .

2. Solve and check $5.8 + j = -7.3$.

HINT: Subtract 5.8 from each side.

PRACTICE

Solve each equation. Check your solution.

3. $2\frac{1}{5}n = 3\frac{3}{10}$

4. $h - (-0.09) = 4.3$

5. $\frac{y}{3} = -3.8$

6. $7g = -35$

7. $2.2 = 0.8 - z$

8. $-s + \frac{1}{4} = \frac{1}{2}$

9. $\frac{9}{10}m - (-7) = -11$

10. $\frac{a-23}{2} = 9.3$

11. $\frac{-27+u}{2} = 8$



12. Standardized Test Practice Solve $\frac{2}{5}k = -\frac{8}{9}$.

A $-\frac{16}{45}$

B $-\frac{5}{7}$

C $-1\frac{1}{8}$

D $-2\frac{2}{9}$

Answers: 1. 120 2. -13.1 3. $1\frac{2}{1}$ 4. 4.21 5. -11.4 6. -5 7. -1.4 8. $-\frac{4}{1}$ 9. -20 10. 41.6 11. 43 12. D