

Solving Multi-Step Equations (Pages 165–170)

Solving Multi-Step Equations

- Work backward to isolate the variable and solve the equation.
- Use subtraction to undo addition, and use addition to undo subtraction.
- Use multiplication to undo division, and use division to undo multiplication.

Consecutive integers are integers in counting order, such as -3 , -2 , and -1 .

EXAMPLES

A Solve $\frac{x-3}{4} = 9$.

$$\frac{x-3}{4} = 9$$

$$4\left(\frac{x-3}{4}\right) = 4(9) \quad \text{Multiply each side by 4.}$$

$$x - 3 = 36$$

$$x - 3 + 3 = 36 + 3 \quad \text{Add 3 to each side.}$$

$$x = 39$$

B Find 3 consecutive odd integers whose sum is -3 .

Let n = the least odd integer. Then $n + 2$ = the next greater odd integer, and $n + 4$ = the greatest of the three odd integers.

$$n + (n + 2) + (n + 4) = -3$$

$$3n + 6 = -3 \quad \text{Add like terms.}$$

$$3n + 6 - 6 = -3 - 6$$

$$3n = -9$$

$$\frac{3n}{3} = \frac{-9}{3}$$

$$n = -3$$

$n + 2 = -3 + 2$ or -1 and $n + 4 = -3 + 4$ or 1 , so the consecutive odd integers are -3 , -1 , and 1 .

PRACTICE

Solve each equation. Check your solution.

1. $10 - 7p = -18$

2. $-1.9r + 9.3 = 15$

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

4. $\frac{m-3}{-6} = -9$

5. $-6 = \frac{n-3}{4}$

6. $\frac{t}{5} - 4 = -10$

7. $11 = -7 - \frac{g}{3}$

8. $\frac{1}{6}b - 8 = -11$

9. $13 = -8 - 3t$

10. $-\frac{3+n}{7} = -5$

11. $\frac{s+4}{-2} = -16$

12. $3 - 9t = 21$

Write an equation and solve each problem.

13. Find two consecutive odd integers whose sum is 128.

14. Find three consecutive even integers whose sum is 90.



15. Standardized Test Practice Sally is eight years older than John. John is fourteen years older than Kareem. If the sum of all three ages is 90, how old is Kareem?

A 8

B 18

C 28

D 40

Answers: 1. 4 2. -3 3. 18 4. 57 5. -21 6. -30 7. -54 8. -18 9. -7 10. 32 11. 28 12. -2 13. 63, 66 14. 28, 30, 32 15. B