



SKILL 13: Solving 1-Step Equations

To solve an equation, you “undo” operations until the variable is alone on one side of the equation. Remember that addition and subtraction undo each other, and multiplication and division undo each other. Also recall that you can use a fraction to show division. To check the solution, substitute the solution for the variable in the equation.

Example 1

Solve: $x + 7 = 18$.

$$x + 7 = 18$$

$$x + 7 - 7 = 18 - 7 \quad \text{Undo addition by subtracting. Subtract 7 from both sides.}$$

$$x = 11$$

$$\text{Check: } 11 + 7 \stackrel{?}{=} 18$$

$$18 = 18$$

The solution is 11.

Example 2

Solve: $5x = -15$.

$$5x = -15$$

$$\frac{5x}{5} = \frac{-15}{5} \quad \text{Undo multiplication by dividing. Divide both sides by 5.}$$

$$x = -3$$

$$\text{Check: } 5(-3) \stackrel{?}{=} -15$$

$$-15 = -15$$

The solution is -3.

Guided Practice

Solve each equation. Check your solution.

1. $x - 3 = 10$

$$x - 3 + \underline{\hspace{1cm}} = 10 + \underline{\hspace{1cm}}$$

$$x = \underline{\hspace{1cm}}$$

Check:

$$\underline{\hspace{1cm}} - 3 \stackrel{?}{=} 10$$

$$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

The solution is $\underline{\hspace{1cm}}$.

2. $8x = -16$

$$\frac{8x}{8} = \frac{-16}{8}$$

$$x = \underline{\hspace{1cm}}$$

Check:

$$8(\underline{\hspace{1cm}}) \stackrel{?}{=} -16$$

$$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

The solution is $\underline{\hspace{1cm}}$.

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

$$\frac{x}{7} (\underline{\hspace{1cm}}) = 9(\underline{\hspace{1cm}})$$

$$x = \underline{\hspace{1cm}}$$

Check:

$$\frac{63}{7} \stackrel{?}{=} 9$$

$$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

The solution is $\underline{\hspace{1cm}}$.

SKILL 13: Practice

Solve each equation.

1. $x + 6 = 14$

$x = \underline{\hspace{2cm}}$

2. $x + 9 = 19$

$x = \underline{\hspace{2cm}}$

3. $x - 3 = 7$

$x = \underline{\hspace{2cm}}$

4. $2x = 18$

$x = \underline{\hspace{2cm}}$

5. $\frac{n}{5} = 9$

$n = \underline{\hspace{2cm}}$

6. $(-4)x = 20$

$x = \underline{\hspace{2cm}}$

7. $m - 10 = -6$

$m = \underline{\hspace{2cm}}$

8. $\frac{k}{-8} = 6$

$k = \underline{\hspace{2cm}}$

9. $10x = -70$

$x = \underline{\hspace{2cm}}$

10. $n - (-8) = 15$

$n = \underline{\hspace{2cm}}$

11. $-4x = -60$

$x = \underline{\hspace{2cm}}$

12. $8p = -96$

$p = \underline{\hspace{2cm}}$

13. $\frac{n}{-11} = 8$

$n = \underline{\hspace{2cm}}$

14. $x + (-6) = 9$

$x = \underline{\hspace{2cm}}$

15. $-7k = -63$

$k = \underline{\hspace{2cm}}$

16. $x + 23 = 37$

$x = \underline{\hspace{2cm}}$

17. $x - 13 = -28$

$x = \underline{\hspace{2cm}}$

18. $\frac{m}{-9} = 20$

$m = \underline{\hspace{2cm}}$

19. $\frac{k}{-6} = -12$

$k = \underline{\hspace{2cm}}$

20. $12y = -84$

$y = \underline{\hspace{2cm}}$

21. $m + (-15) = 30$

$m = \underline{\hspace{2cm}}$

22. $x - (-13) = 2$

$x = \underline{\hspace{2cm}}$

23. $\frac{n}{3} = -14$

$n = \underline{\hspace{2cm}}$

24. $-8x = -168$

$x = \underline{\hspace{2cm}}$

Solve.

25. In a video game, Charles scored -250 points on his second play. This brought his total score to 500 . What was his score on the first play? _____

26. Each day for several days, the change in the price of a share of stock was $-\$3$. The total change in price during those days was $-\$36$. Over how many days did the price decline? _____

27. What is the solution of $4x = -28$?

Skill 13

A 24

C -24

B -7

D -32

28. Evaluate: $-4(9 + 5)$.

Skill 12

F 56

H -41

G 41

J -56