

Evaluate the expression.

1.  $\pm\sqrt{289}$

2.  $-\sqrt{36}$

Approximate the square root to the nearest integer.

3.  $-\sqrt{21}$

4.  $\sqrt{620}$

5. A square courtyard has an area of 272 square feet. What is the side length of the courtyard to the nearest foot?

**Objective:**

Solve one-step equations using algebra. addition and subtraction.

**Vocabulary**

**Inverse operations** are two operations that undo each other, such as addition and subtraction.

**Equivalent equations** are equations that have the same solution(s).

**Properties of Equality**

**Addition Property of Equality** Adding the same number to each side of an equation produces an equivalent equation.

**Subtraction Property of Equality** Subtracting the same number from each side of an equation produces an equivalent equation.

**Multiplication Property of Equality** Multiplying each side of an equation by the same nonzero number produces an equivalent equation.

**Division Property of Equality** Dividing each side of an equation by the same nonzero number produces an equivalent equation.

**EXAMPLE 1****Solve an equation using subtraction**

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Solve  $x + 11 = 15$ .

**Solution**

Write original equation.

Use subtraction property of equality:

Subtract 11 from each side.

Simplify.

The solution is 4. Check by substituting 4 for  $x$  in the original equation.

***CHECK***

$$x + 11 = 15$$

Write original equation.

Substitute 4 for  $x$ .

Solution checks.

Homework: Day 1: Pages 87-89; #3-16all, #31-33all, #53.

Day 2: Page 88; #18-28even, #34-50even SHOW ALL WORK!!!

**EXAMPLE 2****Solve an equation using addition**Solve  $x - 8 = 17$ .

Solution

**Horizontal format**

$$\begin{aligned} x - 8 &= 17 \\ x - 8 + 8 &= 17 + 8 \\ x &= 25 \end{aligned}$$

Write original equation.

Add 8 to each side.

Simplify.

**Vertical format**

$$\begin{array}{r} x - 8 = 17 \\ + 8 \quad + 8 \\ \hline x = 25 \end{array}$$

The solution is \_\_\_\_\_

**Practice Exercises for Examples 1 and 2**

Solve the equation. Check your solution.

1. $x + 9 = 5$	2. $y + 2 = -5$	3. $19 = w + 13$
4. $8 = z - 11$	5. $m - 3 = 7$	6. $n - 4 = -12$

**EXAMPLE 3****Solve an equation using division**Solve  $7x = -63$ .

Write original equation.

Divide each side by 7.

Simplify.

**EXAMPLE 4****Solve an equation using multiplication**

Solve  $\frac{x}{12} = 4$

Write original equation.

Multiply each side by 12.

Simplify.

**EXAMPLE 5****Solve an equation by multiplying by a reciprocal**The coefficient of  $x$  is  $\frac{3}{5}$ . The reciprocal of  $\frac{3}{5}$  is  $\frac{5}{3}$ .

$$\frac{3}{5}x = 6$$

Write original equation.

Multiply each side by the reciprocal,  $\frac{5}{3}$ 

Simplify.

**Exercises for Examples 3, 4, and 5****Solve the equation. Check your solution.**

7. $-9x = -36$	8. $7y = 21$	9. $\frac{x}{3} = -24$
10. $18 = \frac{y}{-2}$	11. $\frac{2}{5}z = 8$	12. $16 = \frac{4}{7}m$

Homework: Day 1: Pages 87-89; #3-16all, #31-33all, #53.

Day 2: Page 88; #18-28even, #34-50even SHOW ALL WORK!!!

Name \_\_\_\_\_

Date \_\_\_\_\_

**2.2 Practice B****Algebra 1****Solve the equation.**

<b>1.</b> $x + 16 = 25$	<b>2.</b> $n - 9 = 17$	<b>3.</b> $-30 = w + 8$
<b>4.</b> $y + 5 = -13$	<b>5.</b> $a - 17 = -10$	<b>6.</b> $41 = 52 + m$
<b>7.</b> $c - 2.4 = 1.8$	<b>8.</b> $z + 4.1 = 9.6$	<b>9.</b> $-3.2 = 4.5 + p$
<b>10.</b> $9x = 54$	<b>11.</b> $-5b = 55$	<b>12.</b> $-42 = 3m$
<b>13.</b> $-52 = -4y$	<b>14.</b> $\frac{1}{3}n = 36$	<b>15.</b> $-\frac{3}{4}a = 12$
<b>16.</b> $0.5y = 17$	<b>17.</b> $-1.4a = 2.8$	<b>18.</b> $-6.5 = -1.3m$

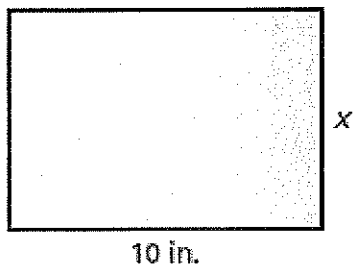
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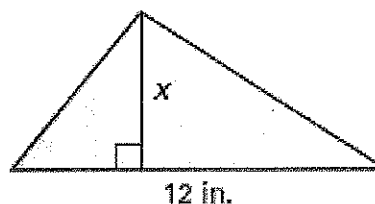
**2.2 Practice B****Algebra 1**

The rectangle or triangle has area  $A$ . Write and solve an equation to find the value of  $x$ .

19.  $A = 70 \text{ in.}^2$

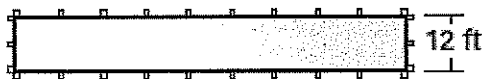


20.  $A = 30 \text{ in.}^2$



21. **Caves** Cumberland Caverns in Tennessee is 44.4 kilometers long. This cave is 10.9 kilometers longer than Carlsbad Caverns in New Mexico. How long is Carlsbad Caverns?

22. **Bocce** Bocce is a lawn bowling game that originated in Italy. The bocce court below has an area of 1032 square feet. The width of the court is 12 feet. What is the length of the court?



23. **Speedskating** In the 2002 Winter Olympics, Cartriona LeMay Doan won the 500-meter race. Her winning time was 74.75 seconds. Find her average speed to the nearest tenth of a meter per second.

24. **Part-Time Job** You work at a grocery store part-time. You estimate that you spend  $\frac{3}{5}$  of your time stocking shelves. You work 20 hours each week. How many hours of your work week do you spend stocking shelves?