# **Skills Readiness**

# 81 Solve Quadratic Equations

One method of solving quadratic equations is to find the square root of both sides of the equation. This method only works when the equation is limited to an  $x^2$  term and a constant.

To solve a quadratic equation by the square root method, follow these steps:

- Step 1: Simplify the expression by combining like terms and then isolate the  $x^2$  term.
- Step 2: Divide both sides of the equation by the coefficient of  $x^2$ .
- Step 3: Find the square root of both sides of the equation. Remember, you will get a positive and a negative value as your answers.

Example: Solve $5x^2 = 3x^2 + 32$ .	Step 1: Subtract $3x^2$ from both sides.
$2x^2 = 32$	Step 2: Divide both sides by 2.
$x^2 = 16$	Step 3: Find the square root of both sides.
x = 4  or  -4	

## **Practice on Your Own**

#### Solve each equation.

<b>1.</b> $7x^2 = 28$	<b>2.</b> $3x^2 = x^2 + 32$	<b>3.</b> $4x^2 - 4 = 60$
<i>x</i> = or	<i>x</i> = or	<i>x</i> = or
<b>4.</b> $2x^2 + x^2 = 3$	<b>5.</b> $200 = 2x^2$	<b>6.</b> $10x^2 - 27 = 7x^2$
<i>x</i> = or	<i>x</i> = or	<i>x</i> = or
<b>7.</b> $-220 = 5 - x^2$	<b>8.</b> $10x^2 = 5x^2 + 125$	<b>9.</b> $2x^2 - 6 = x^2 + 30$
<i>x</i> = or	<i>x</i> = or	<i>x</i> = or

## Check

## Solve each equation for the indicated variable.

<b>10.</b> $12x^2 = 12$	<b>11.</b> $6x^2 - 10 = 140$	<b>12.</b> 19 = $x^2 - 17$
<i>x</i> = or	<i>x</i> = or	<i>x</i> = or
<b>13.</b> $8 + x^2 = 3x^2$	<b>14.</b> $20 - x^2 = -80$	<b>15.</b> $2x^2 - 150 = 650$
<i>x</i> = or	<i>x</i> = or	<i>x</i> = or

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