

## 11.2 Solve Using Square Roots

Algebra 1

Name: Solutions

Practice

Solve each equation. Give EXACT answers (simplified radical form).

<p>1. <math>x^2 - 8 = 17</math>  <math>x^2 = 25</math>  <math>x = \pm 5</math></p>	<p>2. <math>\frac{d^2}{3} = 15</math>  <math>d^2 = 45</math>  <math>d = \pm \sqrt{4 \cdot 5}</math>  <math>d = \pm 3\sqrt{5}</math></p>	<p>3. <math>g^2 + 4 = 20</math>  <math>g^2 = 16</math>  <math>g = \pm 4</math></p>
<p>4. <math>\frac{h^2}{5} = 20</math>  <math>h^2 = 100</math>  <math>h = \pm 10</math></p>	<p>5. <math>3x^2 - 12 = 0</math>  <math>3x^2 = 12</math>  <math>x^2 = 4</math>  <math>x = \pm 2</math></p>	<p>6. <math>4x^2 - 80 = 0</math>  <math>4x^2 = 80</math>  <math>x^2 = 20</math>  <math>x = \pm \sqrt{4 \cdot 5}</math>  <math>x = \pm 2\sqrt{5}</math></p>
<p>7. <math>10 - 4g^2 = 14</math>  <math>-4g^2 = 4</math>  <math>g^2 = -1</math>  <math>g = \pm \sqrt{-1}</math>  <math>\uparrow</math>  <math>\text{No solution!}</math></p>	<p>8. <math>7q^2 + 4 = 144</math>  <math>7q^2 = 140</math>  <math>q^2 = 20</math>  <math>q = \pm \sqrt{4 \cdot 5}</math>  <math>q = \pm 2\sqrt{5}</math></p>	<p>9. <math>3z^2 - 18 = -18</math>  <math>3z^2 = 0</math>  <math>z^2 = 0</math>  <math>z = 0</math></p>
<p>10. <math>\frac{x^2}{2} + 6 = 13</math>  <math>\frac{x^2}{2} = 7</math>  <math>x^2 = 14</math>  <math>x = \pm \sqrt{14}</math></p>	<p>11. <math>(x - 25)^2 = 100</math>  <math>x - 25 = \pm 10</math>  <math>x - 25 = 10</math>   <math>x - 25 = -10</math>  <math>x = 35</math> or <math>x = 15</math></p>	<p>12. <math>(x + 92)^2 = 49</math>  <math>x + 92 = \pm 7</math>  <math>x + 92 = 7</math>   <math>x + 92 = -7</math>  <math>x = -85</math> or <math>x = -99</math></p>
<p>13. <math>(x + 1)^2 = -64</math>  <math>x + 1 = \pm \sqrt{-64}</math>  <math>\uparrow</math>  <math>\text{No solution}</math></p>	<p>14. <math>\frac{(x-4)^2}{2} = 18</math>  <math>(x-4)^2 = 36</math>  <math>x-4 = \pm 6</math>  <math>x-4 = 6</math> or <math>x-4 = -6</math>  <math>x = 10</math> or <math>x = -2</math></p>	<p>15. <math>3(x - 5)^2 = 36</math>  <math>(x - 5)^2 = 12</math>  <math>x - 5 = \pm \sqrt{12}</math>  <math>x - 5 = \pm 2\sqrt{3}</math>  <math>x = 5 \pm 2\sqrt{3}</math></p>

16.  $(x+3)^2 + 10 = 26$

$$(x+3)^2 = 16$$

$$x+3 = \pm 4$$

$$x+3=4 \quad \text{or} \quad x+3=-4$$

$$x=1 \quad \text{or} \quad x=-7$$

17.  $6(x+1)^2 - 4 = -28$

$$6(x+1)^2 = -24$$

$$(x+1)^2 = -4$$

$$x+1 = \sqrt{-4}$$

no solution

18.  $3(x+3)^2 + 30 = 3$

$$3(x+3)^2 = -27$$

$$(x+3)^2 = -9$$

$$x+3 = \pm \sqrt{-9}$$

no solution

19.  $\frac{(x+8)^2}{2} - 7 = 25$

$$\frac{(x+8)^2}{2} = 32$$

$$(x+8)^2 = 64$$

$$x+8 = \pm 8$$

$$x+8=8 \quad \text{or} \quad x+8=-8$$

$$x=0 \quad \text{or} \quad x=-16$$

Solve each equation. Give DECIMAL answers (round to the nearest hundredth).

20.  $(x-5)^2 = 21$

$$x-5 = \pm \sqrt{21}$$

$$x=5+\sqrt{21} \quad \text{or} \quad x=5-\sqrt{21}$$

$$x \approx 9.58 \quad \text{or} \quad x \approx 0.42$$

21.  $(x+7)^2 = 12$

$$x+7 = \pm \sqrt{12}$$

$$x=-7+\sqrt{12} \quad \text{or} \quad x=-7-\sqrt{12}$$

$$x \approx -3.54 \quad \text{or} \quad x \approx -10.46$$

22.  $(x+4)^2 + 7 = 10$

$$(x+4)^2 = 3$$

$$x+4 = \pm \sqrt{3}$$

$$x+4 = \sqrt{3} \quad \text{or} \quad x+4 = -\sqrt{3}$$

$$x = -4 + \sqrt{3} \quad x = -4 - \sqrt{3}$$

$$x \approx -2.27 \quad \text{or} \quad x \approx -5.73$$

23.  $8(x-6)^2 = 13$

$$(x-6)^2 = \frac{13}{8}$$

$$x-6 = \pm \sqrt{\frac{13}{8}}$$

$$x-6 = \sqrt{\frac{13}{8}} \quad \text{or} \quad x-6 = -\sqrt{\frac{13}{8}}$$

$$x = 6 + \sqrt{\frac{13}{8}} \quad x = 6 - \sqrt{\frac{13}{8}}$$

$$x \approx 7.27 \quad \text{or} \quad x \approx 4.73$$