

**Algebra 1 Benchmark Radicals**

**Topic: Simplifying Radicals**

Simplify the following radicals:

1.  $\sqrt{80}$

$2\sqrt{4} \cdot \sqrt{20}$

$2\sqrt{4} \sqrt{5}$

$2 \cdot 2 \cdot \sqrt{5}$

$4\sqrt{5}$

$\sqrt{1} = 1$   
 $\sqrt{4} = 2$   
 $\sqrt{9} = 3$   
 $\sqrt{16} = 4$   
 $\sqrt{25} = 5$   
 $\sqrt{36} = 6$   
 $\sqrt{49} = 7$   
 $\sqrt{64} = 8$

2.  $\sqrt{\frac{81}{49}} = \frac{\sqrt{81}}{\sqrt{49}} = \frac{9}{7}$

3.  $\frac{8\sqrt{5} - \sqrt{5} + 2\sqrt{5}}{7\sqrt{5} + 2\sqrt{5}}$

$9\sqrt{5}$

**Algebra 1 Benchmark 14.2**

**Topic: Solving Quadratic Equations by Completing the Square**

1. Solve.

$\sqrt{(2x+1)^2} = 9$

$2x+1 = \pm 3$

$2x = -1 \pm 3$

$x = \frac{-1+3}{2} = \frac{2}{2} = 1$

$x = \frac{-1-3}{2} = \frac{-4}{2} = -2$

2. Solve by completing the square.

$x^2 - 8x = -14$

$x^2 - 8x + 16 = -14 + 16$

$(\frac{-8}{2})^2 = (-4)^2 = 16$

$(x-4)(x-4) = 2$

$\sqrt{(x-4)^2} = \sqrt{2}$

$x-4 = \pm\sqrt{2}$

$x = 4 \pm \sqrt{2}$

**Algebra 1 Benchmark 20.0**

**Topic: Solving Quadratic Equations by Quadratic Formula**

1. Solve by using the quadratic formula.  $2x^2 - 3x = x - 1$

$ax^2 + bx + c = 0$

Standard form  $2x^2 - 4x + 1 = 0$

$a=2$   $b=-4$   $c=1$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(2)(1)}}{2(2)}$

$x = \frac{4 \pm \sqrt{16-8}}{4}$

$x = \frac{4 \pm \sqrt{8}}{4} = \frac{4 \pm 2\sqrt{2}}{4} = \frac{2 \pm \sqrt{2}}{2}$