

Name: _____

Quadratic Details Part 2

From Standard to Vertex	From Factored to Vertex	From Standard to Factored	From Vertex to Factored	From Factored to Standard	From Vertex to Standard
<p>Easiest way: Determine the vertex using $x = \frac{-b}{2a}$, then plug it in to find y. Use vertex to write in vertex form.</p>	<p>Easiest way: Determine the vertex using $x = \frac{r_1+r_2}{2}$, then plug it in to find y. Use vertex to write in vertex form.</p>	<p>Easiest way (if it's factorable): Factor the quadratic.</p>	<p>Easiest way: Set it equal to 0, and solve for your roots. Then, use the roots to write in factored form.</p>	<p>Easiest way: Multiply the binomials, combine like terms and then distribute a.</p>	<p>Easiest way: Expand using the exponent, multiply the binomials, combine like terms, distribute a and then add k.</p>
<p>or: Complete the Square (which we have not learned yet) by remembering that $h = -\frac{b}{2a}$ and $k = c - a(h)^2$</p>	<p>or: Multiply the binomials to create standard form, then use one of the standard form methods of converting to vertex form.</p>	<p>or: Use the quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ to determine the roots, then use them to write in factored form.</p>	<p>or: Expand and multiply the binomials to create standard form, then use one of the standard form methods of converting to vertex form.</p>	<p>or: Determine a (front of the equation). Determine b (use the formula $h = \frac{r_1+r_2}{2}$, then plug h into the formula $h = -\frac{b}{2a}$ and solve for b). Determine c (plug in $x = 0$). Then, use a, b & c to write in standard form.</p>	<p>or: Determine a (front of the equation), b (use the formula: $h = -\frac{b}{2a}$), & c (plug in $x = 0$). Then, use a, b & c to write in standard form.</p>

Write each given quadratic equation in the other two forms, then draw a *sketch* of the graph.

1.		
Standard: $f(x) = 3x^2 - 18x + 12$	Factored:	Vertex:

2.

Standard: $f(x) = x^2 + 12x - 45$	Factored:	Vertex:
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3.

Standard: $f(x) = -2x^2 + 8x - 10$	Factored:	Vertex:
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4.

Standard:	Factored: $f(x) = -(x - 3)(x + 5)$	Vertex:
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5.

Standard:	Factored: $f(x) = 2(x + 6)(x + 4)$	Vertex:
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6.

Standard:	Factored: $f(x) = -4(x - 1)(x - 3)$	Vertex:
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7.

Standard:	Factored:	Vertex: $f(x) = 5(x + 6)^2 + 40$
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8.

Standard:	Factored:	Vertex: $f(x) = -3(x - 2)^2 + 150$
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9.

Standard:	Factored:	Vertex: $f(x) = 2(x + 5)^2 - 8$
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Answers

1.	Factored: $f(x) = 3(x - (3 + \sqrt{2}))(x - (3 - \sqrt{2}))$	Vertex: $f(x) = 3(x - 3)^2 - 15$
2.	Factored: $f(x) = (x + 15)(x - 3)$	Vertex: $f(x) = (x + 6)^2 - 81$
3.	Factored: $f(x) = -2(x - (2 - i))(x - (2 + i))$	Vertex: $f(x) = -2(x - 2)^2 - 2$
4.	Standard: $f(x) = -x^2 - 2x + 15$	Vertex: $f(x) = -(x + 1)^2 + 16$
5.	Standard: $f(x) = 2x^2 + 20x + 48$	Vertex: $f(x) = 2(x + 5)^2 - 2$
6.	Standard: $f(x) = -4x^2 + 16x - 12$	Vertex: $f(x) = -4(x - 2)^2 + 4$
7.	Standard: $f(x) = 5x^2 + 60x + 220$	Factored: $f(x) = 5(x - (-6 + 2i\sqrt{2}))(x - (-6 + 2i\sqrt{2}))$
8.	Standard: $f(x) = -3x^2 + 12x + 138$	Factored: $f(x) = -3(x - (2 + 5\sqrt{2}))(x - (2 - 5\sqrt{2}))$
9.	Standard: $f(x) = 2x^2 + 20x + 42$	Factored: $f(x) = 2(x + 3)(x + 7)$