

Algebra 1
Comparing Forms of Quadratic Functions

Comparing Forms of Quadratic Functions | A1-U09-P06
96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
04	Error Analysis & Strategy	24 tasks
05	Quick Answer Key	96 answers
06	Full Worked Solutions	96 solutions
07	Teacher / Parent Use Guide	included
08	Terms of Use & License	included

Topic focus
This topic is a focused set of 96 practice tasks on Comparing Forms of Quadratic Functions.
8 PDFs and a README; 59 buyer pages.

Algebra 1

Comparing Forms of Quadratic Functions

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

Select the equivalent factored form. Match the complete expression, feature values, or parameter values requested below; show the requested verification. The standard form is $x^2 - 5x + 6$. Compare the proposed factored forms $(x - 2)(x - 3)$; $(x + 2)(x + 3)$.

Bank label: _____

Choose the equivalent vertex form. Match the complete expression, feature values, or parameter values requested below; show the requested verification. The standard form is $x^2 + 6x + 5$. Compare the proposed vertex forms $(x + 3)^2 - 4$; $(x - 3)^2 - 4$.

Bank label: _____

Verify whether the three representations agree.

Label	Supplied expression or information
standard	$-2x^2 + 8x - 6$
vertex	$-2(x - 2)^2 + 2$
factored	$-2(x - 1)(x - 3)$

Bank label: _____

Which candidate matches the standard form? Match the complete expression, feature values, or parameter values requested below; show the requested verification. The standard form is $3x^2 - 15x + 18$.

Label	Supplied expression or information
A	$(x - 2)(x - 3)$
B	$3(x - 2)(x - 3)$

Bank label: _____

Algebra 1

Comparing Forms of Quadratic Functions

Name: _____ Date: _____ Class: _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

Choose the representation and state the roots. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Label</th> <th>Supplied expression or information</th> </tr> </thead> <tbody> <tr> <td>standard</td> <td>$6x^2 + x - 2$</td> </tr> <tr> <td>factored</td> <td>$(3x + 2)(2x - 1)$</td> </tr> </tbody> </table> 	Label	Supplied expression or information	standard	$6x^2 + x - 2$	factored	$(3x + 2)(2x - 1)$	Which form should be read, and what is the vertex? <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Label</th> <th>Supplied expression or information</th> </tr> </thead> <tbody> <tr> <td>standard</td> <td>$3x^2 + 12x + 8$</td> </tr> <tr> <td>vertex</td> <td>$3(x + 2)^2 - 4$</td> </tr> </tbody> </table> 	Label	Supplied expression or information	standard	$3x^2 + 12x + 8$	vertex	$3(x + 2)^2 - 4$		
Label	Supplied expression or information														
standard	$6x^2 + x - 2$														
factored	$(3x + 2)(2x - 1)$														
Label	Supplied expression or information														
standard	$3x^2 + 12x + 8$														
vertex	$3(x + 2)^2 - 4$														
Choose the representation that preserves the units and answer the question. The context is height $h(t)$ in feet. Determine initial height at $t = 0$. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Label</th> <th>Supplied expression or information</th> </tr> </thead> <tbody> <tr> <td>standard</td> <td>$-16t^2 + 48t + 6$</td> </tr> <tr> <td>vertex</td> <td>$-16(t - \frac{3}{2})^2 + 42$</td> </tr> </tbody> </table> 	Label	Supplied expression or information	standard	$-16t^2 + 48t + 6$	vertex	$-16(t - \frac{3}{2})^2 + 42$	Which form decides the claim immediately? Determine whether $x = 5$ is a zero. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Label</th> <th>Supplied expression or information</th> </tr> </thead> <tbody> <tr> <td>standard</td> <td>$2x^2 - 6x - 20$</td> </tr> <tr> <td>factored</td> <td>$2(x - 5)(x + 2)$</td> </tr> </tbody> </table> 	Label	Supplied expression or information	standard	$2x^2 - 6x - 20$	factored	$2(x - 5)(x + 2)$		
Label	Supplied expression or information														
standard	$-16t^2 + 48t + 6$														
vertex	$-16(t - \frac{3}{2})^2 + 42$														
Label	Supplied expression or information														
standard	$2x^2 - 6x - 20$														
factored	$2(x - 5)(x + 2)$														
Select the single form that shows both requested features. Determine opening direction and extreme output. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Label</th> <th>Supplied expression or information</th> </tr> </thead> <tbody> <tr> <td>standard</td> <td>$-2x^2 + 20x - 41$</td> </tr> <tr> <td>vertex</td> <td>$-2(x - 5)^2 + 9$</td> </tr> </tbody> </table> 	Label	Supplied expression or information	standard	$-2x^2 + 20x - 41$	vertex	$-2(x - 5)^2 + 9$	Which available form best answers the feature question? Determine minimum value. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Label</th> <th>Supplied expression or information</th> </tr> </thead> <tbody> <tr> <td>standard</td> <td>$x^2 + 4x + 8$</td> </tr> <tr> <td>vertex</td> <td>$(x + 2)^2 + 4$</td> </tr> <tr> <td>real factored</td> <td>does not exist</td> </tr> </tbody> </table> 	Label	Supplied expression or information	standard	$x^2 + 4x + 8$	vertex	$(x + 2)^2 + 4$	real factored	does not exist
Label	Supplied expression or information														
standard	$-2x^2 + 20x - 41$														
vertex	$-2(x - 5)^2 + 9$														
Label	Supplied expression or information														
standard	$x^2 + 4x + 8$														
vertex	$(x + 2)^2 + 4$														
real factored	does not exist														

Algebra 1

Comparing Forms of Quadratic Functions

Name: _____ Date: _____ Class: _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: b: -16; c: 9 Find a and k. Match the complete expression, feature values, or parameter values requested below; show the requested verification. <table border="1" data-bbox="154 598 795 724"> <thead> <tr> <th>Label</th> <th>Supplied expression or information</th> </tr> </thead> <tbody> <tr> <td>standard</td> <td>$ax^2 + 18x + 20$</td> </tr> <tr> <td>vertex</td> <td>$a(x + 3)^2 + k$</td> </tr> </tbody> </table> Your response: _____	Label	Supplied expression or information	standard	$ax^2 + 18x + 20$	vertex	$a(x + 3)^2 + k$	Incoming: factored form: $(x-m)(x-2)$; zeros: $m, 2$ Give the minimum and minimizers in terms of r. Use $f(x) = 2(x-r)(x+r)$. Restrict x to $[0, \infty)$. Let r be real. Determine minimum on domain. Your response: _____
Label	Supplied expression or information						
standard	$ax^2 + 18x + 20$						
vertex	$a(x + 3)^2 + k$						
Incoming: p: 3; q: -12 Choose and perform the useful conversion. Use $h(x) = x^2 - 7x + 12$. Determine zeros. Your response: _____	Incoming: factored form: $(x-3)(x-4)$; zeros: 3, 4 State the range and explain why no conversion is needed. Use $f(x) = -4(x+1)^2 + 9$. Determine range. Your response: _____						
Incoming: factored form: $-2(x-3)(x+2)$; positive: $(-2, 3)$ Find the range with a minimal vertex calculation. Use $f(x) = 5(x+2)(x-4)$. Determine range. Your response: _____	Incoming: factored form: $(3x+2)(2x-1)$; zeros: $-\frac{2}{3}, \frac{1}{2}$ Factor and answer the sign question. Use $f(x) = -2x^2 + 2x + 12$. Determine positive-output interval. Your response: _____						

Algebra 1

Comparing Forms of Quadratic Functions

Name: _____ Date: _____ Class: _____

Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Which supplied form reveals the requested feature most directly? Justify the form choice from the requested feature and the supplied expressions, then complete the original feature reading. Preserve the supplied alternatives and any restrictions. Determine y -intercept.

Label	Supplied expression or information
standard	$2x^2 - 5x + 7$
vertex	$2(x - \frac{5}{4})^2 + \frac{31}{8}$
factored	not supplied

Choose the form that answers the question immediately. Justify the form choice from the requested feature and the supplied expressions, then complete the original feature reading. Preserve the supplied alternatives and any restrictions. Determine minimum value.

Label	Supplied expression or information
standard	$x^2 - 6x + 11$
vertex	$(x - 3)^2 + 2$

Comparing Forms of Quadratic Functions

Full Worked Solutions - excerpt

Worked example

Problem. Convert directly from vertex to factored form. Use $f(x) = 3(x + 1)^2 - 27$. Determine zeros.

Answer. factored form: $3(x - 2)(x + 4)$; zeros: $-4, 2$

Explanation and check.

Factor $3[(x + 1)^2 - 9] = 3[(x + 1) - 3][(x + 1) + 3]$.

Worked example

Problem. Find a purposeful factorization and state the roots. Use $f(x) = x^2 - (m + 2)x + 2m$. Determine zeros in terms of m .

Answer. factored form: $(x - m)(x - 2)$; zeros: $m, 2$

Explanation and check.

The required sum is $m + 2$ and product $2m$, so the factors separate as $x - m$ and $x - 2$.