

Unit 7: REI and SSE- Quadratic Equations

4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	<i>In addition to score 3.0 performance, partial success at score 4.0 content</i>
3.0	Solve quadratic equations in one variable. (A-REI.B.4) 1. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. 2. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b. • I can write a quadratic equation that represents a situation. • I can use a graph to find the solutions to a quadratic equation but also know its limitations. • I can find solutions to quadratic equations by reasoning about the values that make the equation true. • I can recognize quadratic equations that have 0, 1, or 2 solutions when they are written in factored form. • I can rearrange a quadratic equation to be written as expression in factored form $=0$ and find the solutions. • I can use the factored form of a quadratic expression or a graph of a quadratic function to answer questions about a situation. • I can recognize quadratic equations that have a perfect-square expression and solve the equations. • I can solve quadratic equations by completing the square and finding square roots. • When given a quadratic equation in which the coefficient of the squared term is 1, I can solve it by completing the square. • I can complete the square for quadratic expressions of the form $ax^2 + bx + c$ when it is not 1 and explain the process. • I can solve quadratic equations in which the squared term coefficient is not 1 by completing the square. • I can use the quadratic formula to solve quadratic equations and interpret the solutions in terms of a situation. Use the structure of an expression to identify ways to rewrite it. (SSE.A.2) • When given quadratic expressions in factored form, I can rewrite them in standard form. • When given quadratic expressions of the form $ax^2 + bx + c$ and a is not 1, I can write equivalent expressions in factored form. • I can recognize perfect-square expressions written in different forms. • When given a quadratic expression in standard form, I can rewrite it in vertex form Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. (SSE.B.3) 1. Factor a quadratic expression to reveal the zeros of the function it defines. 2. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. 3. Use the properties of exponents to transform expressions for exponential functions. • I can find solutions to quadratic equations when one side is a product of factors and the other side is zero. • When given quadratic expressions in the form of $x^2 + bx + c$, I can rewrite them in factored form • When given a quadratic expression given in standard form with a negative constant term, I can write an equivalent expression in factored form. • I can explain why multiplying a sum and a difference, $(x+m)(x-m)$, results in a quadratic expression with no linear term.	

		• I can find the maximum or minimum of a function by writing the quadratic expression that defines it in vertex form. • When given a quadratic function in vertex form, I can explain why the vertex is a maximum or minimum.
	2.5	<i>No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content</i>
2.0	The student will perform basic processes (REI.B.4) • I can recognize the factored form of a quadratic expression and know when it can be useful for solving problems. • I know that quadratic equations may have two solutions or no solutions • I can explain why dividing by a variable to solve a quadratic equation is not a good strategy. • I can explain what it means to “complete the square” and describe how to do it. • I can use the radical and “plus-minus” symbols to represent solutions to quadratic equations. • I know why the plus-minus symbol is used when solving quadratic equations by finding square roots. • I know some ways to tell if a number is a solution to a quadratic equation. • I can identify the vertex of the graph of a quadratic function when the expression that defines it is written in vertex form. • I know the meaning of the term “vertex form” and can recognize examples of quadratic expressions written in this form. (SSE.A.2) • I can explain how the numbers in a quadratic expression in factored form relate to the numbers in an equivalent expression in standard form (SSE.B.3) • I can explain the meaning of the “zero product property.” • I can explain how the numbers and signs in a quadratic expression in factored form relate to the numbers and signs in an equivalent expression in standard form.	
	1.5	<i>Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content</i>
1.0	With help, partial success at score 2.0 content and score 3.0 content	
	0.5	<i>With help, partial success at score 2.0 content but not at score 3.0 content</i>
0.0	Even with help, no success	