Stage 1 Desired Results

ESTABLISHED GOALS (CCSS)

A.SSE.1 Interpret expressions that represent a quantity in terms of its context.★

a. Interpret parts of an expression, such as terms, factors, and coefficients.

b. Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.

A.SSE.2 Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 – y^4$ as $(x^2)^2 – (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 – y^2)(x^2 + y^2)$

A.SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.★

a. Factor a quadratic expression to reveal the zeros of the function it defines.

b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

c. Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

A.APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.

A.CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

A.CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R**.**

A.REI.4 Solve quadratic equations in one variable.

a. 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.

b. 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. Reorgnize when the quadratic

Transfer

Students will be able to independently use their learning to…

apply the understanding of numbers, see structure in and recreate quadratic and exponential expressions, create and solve equations, inequalities and system of equations involving quadratic expressions

Meaning

UNDERSTANDINGS

Students will understand that…

- *that factoring and competing the square go hand-in-hand with understanding what different forms of a quadratic expression reveal*
- *data can be summarized, represented and interpreted on two categorical and quantitative variables*
- *linear model*

ESSENTIAL QUESTIONS:

What does the slope of a line indicate about the line?

What information does the equation of a line give you?

How can you make a prediction based on a scatter plot?

Acquisition

Students will know…

- ✓ *how to represent square and cube roots*
- ✓ to graph a piece wise function

Students will be skilled at…

- ✓ the structure of expressions
- ✓ write expressions in equivalent forms to solve problems
- ✓ performing arithmetic operations on polynomials
- ✓ creating equations that describe numbers and relations
- ✓ solving equations and inequalities in one variable
- ✓ solving systems of equations

formula gives complex solutions and write them as a ± bi for real numbers a and b. A.REI.7 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.		

Stage 2 Evidence

Evaluative Criteria	Assessment Evidence
PERFORMANCE TASKS	**CURRICULUM EMBEDED PERFOMANCE ASSESSMENT (PERFORMANCE TASKS):** • Solve • Use a table to complete each part • Solve. Show work and explain you steps
	OTHER EVIDENCE: • Use of fundamental math facts • Use of technology • Use of properties •
CLAIMS	**CLAIM 1** **CLAIM 2** **CLAIM 3** **CLAIM 4**
DEPTH OF KNOWLEDGE LEVELS	**DOK 1** **DOK2** **DOK 3** **DOK4**
ACHIEVEMENT LEVEL DESCRIPTORS	**ALD 1** **ALD 2** **ALD 3** **ALD 4**

Stage 3 Learning Plan

Summary of Key Learning Events and Instruction	
Lesson 4a	