Unit	Standards	Lessons	Textbook Correlation
4	CCSS.MATH.CONTENT.HSA.SSE.A.1.A Interpret parts of an expression, such as terms, factors, and coefficients. CCSS.MATH.CONTENT.HSA.SSE.A.1.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*. CCSS.MATH.CONTENT.HSA.SSE.A.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* $(x^2 - y^2)(x^2 + y^2)$. CCSS.MATH.CONTENT.HSA.APR.B.2 Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$. CCSS.MATH.CONTENT.HSA.APR.B.3 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. CCSS.MATH.CONTENT.HSA.APR.C.4 Prove polynomial identities and use them to describe numerical relationships. *For example, the polynomial identity* $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ *can be used to generate Pythagorean triples.* CCSS.MATH.CONTENT.HSA.APR.C.5 (+) Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of $x$and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle.[1] CCSS.MATH.CONTENT.HSA.APR.D.6 Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.	15 days	Pearson 5-1, 5-2, 5-3, 5-4, 5-5, 5-8

	CCSS.MATH.CONTENT.HSA.REI.D.11 Explain why the *x*-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.* CCSS.MATH.CONTENT.HSF.IF.B.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity*.* CCSS.MATH.CONTENT.HSF.IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.** CCSS.MATH.CONTENT.HSF.IF.B.6 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.* CCSS.MATH.CONTENT.HSF.IF.C.7.C Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. CCSS.MATH.CONTENT.HSF.IF.C.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. CCSS.MATH.CONTENT.HSF.IF.C.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum*.		

	CCSS.MATH.CONTENT.HSF.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\ f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.		
5	CCSS.MATH.CONTENT.HSA.SSE.A.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 $(x^2 - y^2)(x^2 + y^2)$.* CCSS.MATH.CONTENT.HSA.CED.A.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.* CCSS.MATH.CONTENT.HSA.REI.A.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise. CCSS.MATH.CONTENT.HSF.IF.C.7.B Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. CCSS.MATH.CONTENT.HSF.IF.C.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. CCSS.MATH.CONTENT.HSF.BF.A.1.B Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.* CCSS.MATH.CONTENT.HSF.BF.B.4.A Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. *For example, $f(x) = 2x^3$ or $f(x) = (x+1)/(x-1)$ for $x \neq 1$.*	15 days	Pearson 6-1, 6-2, 6-3, 6-4, 6-5, 6-8

6	CCSS.MATH.CONTENT.HSA.SSE.A.1.A Interpret parts of an expression, such as terms, factors, and coefficients. CCSS.MATH.CONTENT.HSA.SSE.A.1.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*. CCSS.MATH.CONTENT.HSA.CED.A.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*. CCSS.MATH.CONTENT.HSA.CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. CCSS.MATH.CONTENT.HSA.CED.A.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.*For example, represent inequalities describing nutritional and cost constraints on combinations of different foods*. CCSS.MATH.CONTENT.HSA.REI.D.11 Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.* CCSS.MATH.CONTENT.HSF.IF.C.7.E Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. CCSS.MATH.CONTENT.HSF.IF.C.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. CCSS.MATH.CONTENT.HSF.IF.C.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For*	20 days	Pearson Chapter 7 7-1, 7-2, 7-3, 7-4, 7-5, 7-6

	example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum. CCSS.MATH.CONTENT.HSF.BF.A.1.B Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.* CCSS.MATH.CONTENT.HSF.BF.B.4.A Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. *For example,* $f(x) = 2x^3$ *or* $f(x) = (x+1)/(x-1)$ *for* $x \neq 1$.		

Units:

4. Polynomials and Polynomial Functions
5. Radical Functions and Rational Exponents
6. Exponential and Logarithmic Functions

Mathematical Practices

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

I Can Statements:

- I can write a polynomial function given a polynomial equation.
- I can identify the degree of a polynomial equation.
- I can identify the highest power of a polynomial function.

- I can write a polynomial given its factors or zeros.
- I can identify the zeros of a polynomial function by finding the x-intercepts of its graph.
- I can factor a polynomial equation.
- I can apply the Zero-Product Property.
- I can simplify radical expressions.
- I can solve radical equations.
- I can determine the domain of radical functions.
- I can check for extraneous solutions.
- I can find inverse functions.
- I can graph functions and their inverses.
- I can model situations with exponential functions.
- I can use exponents to solve logarithmic equations and logarithms to solve exponential equations.
- I can show that exponents and logarithms are inverse functions.
- I can graph exponential and logarithmic functions.