

Algebra 1 Year At A Glance

2018-2019

Algebra 1 : Year-at-a-Glance				
FIRST SEMESTER		SECOND SEMESTER		
Unit 1 Linear	Unit 2 Exponential	Unit 3 Polynomials	Unit 4 Quadratics	Unit 5 Data/Radicals
16 weeks	5 weeks	7 weeks	5 Weeks	3 weeks
<p><u>Equations</u></p> <ul style="list-style-type: none"> ● Multi-Step ● Proportions ● Formulas ● Absolute Value <p><u>Inequalities</u></p> <ul style="list-style-type: none"> ● Writing simple & compound inequalities ● Solving simple & compound inequalities <p><u>Functions</u></p> <ul style="list-style-type: none"> ● Domain/Range ● Function Notation ● Evaluating & comparing ● Compositions <p><u>Slope/ Writing Linear Equations</u></p> <ul style="list-style-type: none"> ● Find the slope given a graph & two points ● Write equation given: <ul style="list-style-type: none"> ○ Slope & y-intercept ○ A point and slope ○ Two points ○ Graph 	<p><u>Sequences</u></p> <ul style="list-style-type: none"> ● Linear/Arithmetic ● Exponential/ Geometric <p><u>Exponential</u></p> <ul style="list-style-type: none"> ● Identifying <ul style="list-style-type: none"> ○ Given Graph ○ Given Equation ○ Given Table ● Analyzing (Key Features) <ul style="list-style-type: none"> ○ Initial Value ○ Growth/Decay ○ Common Ratio/Factor ○ Intercepts ● Evaluating (for given domain in various forms) ● Graphing ● Writing Equations <ul style="list-style-type: none"> ○ Given description ○ Given table ○ Given graph ● Compound interest 	<p><u>Exponent Rules</u></p> <p><u>Polynomials</u></p> <ul style="list-style-type: none"> ● Add & Subtract ● Multiply <p><u>Factoring</u></p> <ul style="list-style-type: none"> ● GCF ● Grouping ● Trinomials ● Special Cases <p><u>Rational Expressions</u></p> <ul style="list-style-type: none"> ● Simplifying ● Multiplying ● Dividing ● Polynomial Division 	<p><u>Graphing</u></p> <ul style="list-style-type: none"> ● Standard Form ● Vertex Form ● Maximum/Minimum ● Axis of Symmetry ● Vertex ● Domain/Range ● Zeros/Roots/Solutions <p><u>Solving Quadratic Functions</u></p> <ul style="list-style-type: none"> ● Quadratic Formula/Square Root Property ● Completing the Square ● Factoring/Zero Product Property <p>Writing Quadratic Equations</p> <ul style="list-style-type: none"> ● Given a vertex ● Given a table of values <p>Quadratic Applications</p>	<p><u>Data</u></p> <ul style="list-style-type: none"> ● Dot Plots ● Histograms ● Box Plots ● Two-Way Frequency ● Central Tendencies <p><u>Scatterplots</u></p> <ul style="list-style-type: none"> ● Describe the relationship between the two variables ● Fit a function to the data ● Make predictions ● Interpret slope and intercepts ● Compute correlation coefficient (with tech) ● Causation/Correlation <p><u>Radicals</u></p> <ul style="list-style-type: none"> ● Simplify ● Add ● Subtract ● Multiply ● Divide ● Rationalize Denominators

<ul style="list-style-type: none"> ○ Real-world Context <p><u>Graph Lines</u></p> <ul style="list-style-type: none"> ● Given slope-intercept ● Given standard form ● Given contextual description ● Given point-slope ● Given an equation that must be manipulated ● Linear on an interval ● Piecewise <p><u>Solving Systems of Equations</u></p> <ul style="list-style-type: none"> ● Graphing ● Elimination ● Substitution <p><u>Linear Inequalities and Systems of Inequalities</u></p>				
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BLUE - Power Standard

BLACK - Additional Skills (additional standards)

RED - Closing the Achievement Gap (not in standards)

Green - Familiarity Only (briefly discussed)

[Unit 1](#)

[Unit 2](#)

[Unit 3](#)

[Unit 4](#)

[Unit 5](#)

Unit 1	Linear Functions	Grade Level	9	Approx length	16 Weeks
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CPSD Power Standards with Student Learning Objectives

HSA.REI.B.3.11 Solve linear equations, inequalities and absolute value equations in one variable, including equations with coefficients represented by letters

Student-Friendly Objectives:

- I can determine when it is appropriate to reverse an inequality symbol.
- I can solve an equation, inequality, and absolute value equation.
- I can solve an equation with many variables.
- I can represent my solution(s) graphically and using set notation when appropriate.
- I can check my solutions.

HSA.REI.C.6.12 Solve systems of equations algebraically and graphically Limitation: i) Tasks have a real-world context. ii) Tasks have hallmarks of modeling as a mathematical practice (less defined tasks, more of the modeling cycle).

Student-Friendly Objectives:

- I can solve a system of equations by substitution, elimination or graphing.
- I can determine if a point is a solution.
- I can write a system of equations for a real-world situation.
- I can solve and interpret the solution of a system of equations in a real-world context.

HSF.IF.A.1.14 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range • Understand that if f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x • Understand that the graph of f is the graph of the equation $y = f(x)$

Student-Friendly Objectives:

- I can determine if a relation is a function by looking at a set of ordered pairs, a table, a mapping, or a graph.
- I can relate the definition of a function to the use of the vertical line test.
- I can identify domain and range from graphs, mappings, sets of ordered pairs, or tables.

HSA.CED.A.2.9 Create equations in two or more variables to represent relationships between quantities • Graph equations, in two variables, on a coordinate plane

Student-Friendly Objectives:

- I can graph (a line, a parabola, & an exponential curve) given various information.
- I can write an equation from a verbal description, a table, or a graph.
- I can interpret slope in the context of a problem.

- I can calculate the common ratio of a data set and interpret its meaning.
- I can identify the y-intercept in linear, exponential, or quadratic functions and interpret its meaning.
- I can determine if a point is a solution to an equation.
- I can describe the relationship between the domain and range using the variables.

HSF.IF.A.2.14 In terms of a real-world context: • Use function notation • Evaluate functions for inputs in their domains • Interpret statements that use function notation

Student-Friendly Objectives:

- I can use function notation.
- I can find $f(x)$ if given x .
- I can explain the elements of function notation when it represents a real world context.

HSF.IF.B.5.15 Relate the domain of a function to its graph • Relate the domain of a function 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.*

Student-Friendly Objectives:

- I can describe the domain given a real-world problem.
- I can determine if the domain is appropriate for the real-world problem.
- I can identify the domain of linear, quadratic, and exponential functions.

HSF.IF.C.7.16 Graph functions expressed algebraically and show key features of the graph, with and *without technology (limited to parent functions only)* • Graph linear and quadratic functions and, when applicable, show intercepts, maxima, and minima • Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions • Graph exponential functions, showing intercepts and end behavior

Student-Friendly Objectives:

- I can name the key features of a graph and equation.
- I can graph the seven parent functions by hand.
- I can state the end behaviors from an equation and/or a graph.
- I can sketch the graph of an equation using the key features.

Learning Indicators of Power Standards

Students will know...

- The meaning of absolute value
- When (and why) the inequality symbol switches
- Which variable (among multiple letters) to isolate, i.e. $ax + b = 16$, solve for x in terms of a and b

And be able to...

- Isolate the variable of an equation, inequality, and absolute value (including with coefficients represented with letters -- literal equations)
- Set up and solve two equations based on an absolute value equation

- Solutions should be verified
- The definition of a systems of equations
- That a solution to a system of equations is the point(s) that makes both equations true
- Whether a system of equations has one solution, no solutions, or infinite solutions
- The definition of domain and range
- The definition of independent and dependent variables
- The independent variable is the input and the dependent variable is the output
- If x is an element of its domain, then $f(x)$ denotes the corresponding element of the range (y)
- The definition of function
- Various notations for domain and range
- The elements of function notation (i.e., if linear, then coefficient is a rate and constant term is often an initial value)
- The relationship between the domain and independent variable
- The appropriate domain could be the set or any subset of the real number system
- The key features of a graph
 - Intercepts
 - Jump discontinuities on piecewise functions
- The formula for slope/rate of change
- Slope-intercept form of a linear equation
- All solutions to a two-variable equation are points on a graph
- Understand that a function can be represented graphically, algebraically, verbally, etc.
- Know what an initial value represents and its graphic representation
- Know how domain/range relate to the graph and its variables

- Represent a solution to a linear equation, inequality, or absolute value equation graphically or on a number line
- Represent the solution to an inequality using set notation
- Determine whether a point is the solution to a system of equations
- Solve a system of equations algebraically using substitution or elimination
- Use graphs to solve a system of equations
- Create, solve, and interpret the solution of a system of equations from context
- Determine if a relation is a function when it's given as a set of ordered pairs, a table, a mapping, or a graph
- Graph an equation written in function notation
- Relate the vertical line test to the definition of a function
- Identify the domain and range of a relation from graph (including piecewise graphs), mapping, set of ordered pairs, or a table
- Write an equation using function notation
- Evaluate functions
- Interpret equations written in function notation (i.e. $C(n) = 2.79n$ means the cost of n gallons of gas is \$2.79 times the number gallons and \$2.79 is the price per gallon)
- Identify the domain given the graph
- Identify the domain given a problem in context
- Analyze the appropriateness of the identified domain
- Identify the domain of linear, quadratic, and exponential function both with and without a context
- Relate the domain of a function to the relationship it's describing (i.e. If $C(n) = 2.79n$ gives the cost of n gallons of gas, then an appropriate domain would be real numbers between 0 and the max the tank would hold)
- Identify the type of function
- Graph the parent functions for those listed above without technology
- Graph a function using the key features
- Identify the end behaviors from the equation and the graph
- Solve for a specific variable in terms of the others
- Determine if a data set is linear, exponential, or neither
- Interpret slope or common ratio in the context of a graph, verbal description, or table
- Graph functions (linear, exponential, and quadratic)
- Write a description of the relationship between the variables (verbal

- or equation)
- Determine whether an exponential function is exponential growth or exponential decay.
 - Translate between the tabular, algebraic, graphical, and verbal representations of equations

Additional Arkansas State Standards

HSN.Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems. Choose and interpret units consistently in formulas. Choose and interpret the scale and the origin in graphs and data displays.

HSN.Q.A.2 Define appropriate quantities for the purpose of descriptive modeling (i.e., use units appropriate to the problem being solved)

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

HSA.CED.A.3 Represent and interpret constraints by equations or inequalities, and by systems of equations and/or inequalities. Interpret solutions as viable or nonviable options in a modeling and/or real-world context

HSA.CED.A.4 Rearrange literal equations using the properties of equality

HSA.REI.C.5 Solve systems of equations in two variables using substitution and elimination. Understand that the solution to a system of equations will be the same when using substitution and elimination.

HSA.REI.D.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane

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 $f(x)=g(x)$

HSA.REI.D.12 Solve linear inequalities and systems of linear inequalities in two variables by graphing

HSF.IF.B.6 Calculate and interpret the average rate of change of a function over a specified interval. Estimate the rate of change from a graph

HSF.BF.B.3 Experiment with multiple transformations and illustrate an explanation of the effects on the graph with or without technology

HSS.ID.C.7 Interpret the slope (rate of change) and interpret the intercept (constant term) of a linear model in the context of the data

Unit 2	Exponential Functions	Grade Level	9	Approx Length	5 Weeks
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CPSD Power Standards with Student Learning Objectives

HSF.IF.C.7.16 Graph functions expressed algebraically and show key features of the graph, with and *without technology (limited to parent functions only)* • Graph exponential functions, showing intercepts and end behavior

Student-Friendly Objectives:

- I can name the key features of a graph and equation.
- I can graph the seven parent functions by hand.
- I can state the end behaviors from an equation and/or a graph.
- I can sketch the graph of an equation using the key features.

HSF.IF.B.5.15 Relate the domain of a function to its graph • Relate the domain of a function 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.*

Student-Friendly Objectives:

- I can describe the domain given a real-world problem.
- I can determine if the domain is appropriate for the real-world problem.
- I can identify the domain of linear, quadratic, and exponential functions.

HSF.IF.A.2.14 In terms of a real-world context: • Use function notation • Evaluate functions for inputs in their domains • Interpret statements that use function notation

Student-Friendly Objectives:

- I can use function notation.
- I can find $f(x)$ if given x .
- I can explain the elements of function notation when it represents a real world context.

HSA.CED.A.2.9 Create equations in two or more variables to represent relationships between quantities • Graph equations, in two variables, on a coordinate plane

Student-Friendly Objectives:

- I can graph (a line, a parabola, & an exponential curve) given various information.
- I can write an equation from a verbal description, a table, or a graph.
- I can calculate the common ratio of a data set and interpret its meaning.

- I can identify the y-intercept in linear, exponential, or quadratic functions and interpret its meaning.
- I can determine if a point is a solution to an equation.
- I can describe the relationship between the domain and range using the variables.

Learning Indicators of Power Standards

Students will know...

- The key features of a graph
 - Intercepts
 - End behavior
 - Extrema
 - Increasing/decreasing intervals
- The relationship between the domain and independent variable
- The appropriate domain could be the set or any subset of the real number system
- The elements of function notation (i.e., if linear, then coefficient is a rate and constant term is often an initial value)
- The formula for slope/rate of change
- Slope-intercept form of a linear equation
- All solutions to a two-variable equation are points on a graph
- Understand that a function can be represented graphically, algebraically, verbally, etc.
- Know what an initial value represents and its graphic representation
- Know how domain/range relate to the graph and its variables

And be able to...

- Identify the type of function
- Graph the parent functions for those listed above without technology
- Graph a function using the key features
- Identify the end behaviors from the equation and the graph
- Identify the domain given the graph
- Identify the domain given a problem in context
- Analyze the appropriateness of the identified domain
- Identify the domain of linear, quadratic, and exponential function both with and without a context
- Write an equation using function notation
- Evaluate functions
- Interpret equations written in function notation (i.e. $C(n) = 2.79n$ means the cost of n gallons of gas is \$2.79 times the number gallons and \$2.79 is the price per gallon)
- Solve for a specific variable in terms of the others
- Determine if a data set is linear, exponential, or neither
- Interpret slope or common ratio in the context of a graph, verbal description, or table
- Graph functions (linear, exponential, and quadratic)
- Write a description of the relationship between the variables (verbal or equation)
- Determine whether an exponential function is exponential growth or exponential decay.
- Translate between the tabular, algebraic, graphical, and verbal representations of equations

Additional Arkansas State Standards

HSF.IF.A.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers

HSF.IF.C.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions)

HSF.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions

- Show that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals
- Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another

HSF.LE.A.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly

HSN.Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems. Choose and interpret units consistently in formulas. Choose and interpret the scale and the origin in graphs and data displays.

HSN.Q.A.2 Define appropriate quantities for the purpose of descriptive modeling (i.e., use units appropriate to the problem being solved)

HSA.CED.A.3 Represent and interpret constraints by equations or inequalities, and by systems of equations and/or inequalities. Interpret solutions as viable or nonviable options in a modeling and/or real-world context

HSA.REI.C.5 Solve systems of equations in two variables using substitution and elimination. Understand that the solution to a system of equations will be the same when using substitution and elimination.

HSF.IF.B.6 Calculate and interpret the average rate of change of a function over a specified interval. Estimate the rate of change from a graph

HSF.BF.B.3 Experiment with multiple transformations and illustrate an explanation of the effects on the graph with or without technology

Unit 3	Polynomials	Grade Level	9	Approx Length	7 Weeks
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CPSD Power Standards with Student Learning Objectives

SA.APR.A.1.5 Add, subtract, and multiply polynomials • Understand that polynomials, like the integers, are closed under addition, subtraction, and multiplication Note: If p and q are polynomials $p + q$, $p - q$, and pq are also polynomials

Student-Friendly Objectives:

- I can write a polynomial in descending order.
- I can classify polynomials based on its terms and degree.
- I can add and subtract polynomials.
- I can multiply polynomials.
- I can explain why polynomials are closed under addition, subtraction, and multiplication.

Learning Indicators of Power Standards

<p>Students will know...</p> <ul style="list-style-type: none"> • The definition of a polynomial • Like terms can be added or subtracted • Polynomials are closed under addition, subtraction, and multiplication 	<p>And be able to...</p> <ul style="list-style-type: none"> • Write a polynomial in descending order • Classify a polynomial based on its terms and degree • Add, subtract, and multiply polynomials • Explain why polynomials are closed under addition, subtraction, and multiplication
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Additional Arkansas State Standards

HSN.RN.B.4 Simplify radical expressions, perform operations with radical expressions, and rationalize denominators and/or numerators

HSA.APR.D.7 Add, subtract, multiply, and divide by nonzero rational expressions. Understand that rational expressions, like the integers are closed under addition, subtraction, and multiplication

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

- Interpret parts of an expression using appropriate vocabulary, such as terms, factors, and coefficients
- Interpret complicated expressions by viewing one or more of their parts as a single entity

HSA.SSE.A.2 Use the structure of an expression to identify ways to rewrite it

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

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

Unit 4	Quadratic Functions	Grade Level	9	Approx Length	5 Weeks
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CPSD Power Standards with Student Learning Objectives

HSA.APR.B.3.6 Identify zeros of polynomials (**linear, quadratic only**) when suitable factorizations are available • Use the zeros to construct a rough graph of the function defined by the polynomial

Student-Friendly Objectives:

- I can find the zeros of a quadratic given its factored form.
- I can determine if the vertex of a quadratic is the maximum or minimum value of the function.
- I can identify the zeros from a graph/equation.
- I can use the zeros and the vertex (min/max) to make a rough sketch of a graph.

HSA.CED.A.2.9 Create equations in two or more variables to represent relationships between quantities • Graph equations, in two variables, on a coordinate plane

Student-Friendly Objectives:

- I can graph (a line, a parabola, & an exponential curve) given various information.
- I can write an equation from a verbal description, a table, or a graph.
- I can identify the y-intercept in linear, exponential, or quadratic functions and interpret its meaning.
- I can determine if a point is a solution to an equation.
- I can describe the relationship between the domain and range using the variables.

HSA.REI.B.4.11 Solve quadratic equations in one variable • 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. Introduce this with a leading coefficient of 1 in Algebra I. • Solve quadratic equations (as appropriate to the initial form of the equation) by: • Inspection of a graph • Taking square roots • Completing the square • Using the quadratic formula • Factoring • Limitation: i) Tasks do not require students to write solutions for quadratic equations that have roots with nonzero imaginary parts. However, tasks can require the student to recognize cases in which a quadratic equation has no real solutions. Note: Solving a quadratic equation by factoring relies on the connection between zeros and factors of polynomials

Student-Friendly Objectives:

- I can solve a quadratic equation
 - By completing the square
 - Using the quadratic formula
 - By factoring (including using difference of squares)
 - By inspecting the graph or table
 - By taking the square root.

- I can determine the easiest method of solving a quadratic equation (depending on its given form).

HSF.IF.C.7.16 Graph functions expressed algebraically and show key features of the graph, with and *without technology (limited to parent functions only)* • Graph linear and quadratic functions and, when applicable, show intercepts, maxima, and minima

Student-Friendly Objectives:

- I can name the key features of a graph and equation.
- I can graph the parent function by hand.
- I can state the end behaviors from an equation and/or a graph.
- I can sketch the graph of an equation using the key features.

Learning Indicators of Power Standards

Students will know...

- Zeros are the x-intercepts and are also referred to as solutions and/or roots
- The impact of the Zero Product Property
- The vertex of a quadratic will be the maximum or minimum of the function
- The leading coefficient determines the direction of opening
- All solutions to a two-variable equation are points on a graph
- Understand that a function can be represented graphically, algebraically, verbally, etc.
- Know what an initial value represents and its graphic representation
- Know how domain/range relate to the graph and its variables
- Solutions of quadratic equations are the x-intercepts of the graph and the zeros on the table
- The quadratic formula
- Not all quadratics are factorable
- The process of completing the square (how the new “c” coefficient is formed)
- The key features of a graph
 - Intercepts
 - End behavior
 - Extrema
 - Increasing/decreasing intervals

And be able to...

- Use the Zero Product Property to find the zeros of quadratic given its factored form
- Determine if the vertex of a quadratic is a minimum or maximum
- Determine zeros of a function from a given graph
- Use the zeros and the vertex (min/max) to make a rough sketch of a graph given the equation of the function
- Solve for a specific variable in terms of the others
- Determine if a data set is linear, exponential, or neither
- Interpret slope or common ratio in the context of a graph, verbal description, or table
- Graph functions (linear, exponential, and quadratic)
- Write a description of the relationship between the variables (verbal or equation)
- Translate between the tabular, algebraic, graphical, and verbal representations of equations
- Locate solutions of quadratic equations on a graph or table, if real solutions exist
- Solve a quadratic equation by factoring (including using difference squares)
- Complete the square algebraically (associate meaning of new “c” coefficient)
- Convert a quadratic equation from standard form to vertex form
- Solve a quadratic equation by completing the square

- Solve a quadratic equation by taking the square root
- Recognize an unfactorable quadratic equation, and use another appropriate method to solve
- Solve a quadratic equation by graphing (use technology for irrational roots)
- Identify the type of function
- Graph the parent functions for those listed above without technology
- Graph a function using the key features
- Identify the end behaviors from the equation and the graph

Additional Arkansas State Standards

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

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

HSA.CED.A.1 Create equations and inequalities in one variable and use them to solve problems

HSA.REI.A.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise

HSF.IF.C.8 Write expressions for functions in different but equivalent forms to reveal key features of the function.

- Use the process of factoring in a quadratic function to show zeros, extreme values (vertex), and symmetry of the graph, and interpret these in terms of a context

HSN.Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems. Choose and interpret units consistently in formulas. Choose and interpret the scale and the origin in graphs and data displays.

HSN.Q.A.2 Define appropriate quantities for the purpose of descriptive modeling (i.e., use units appropriate to the problem being solved)

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

HSA.CED.A.3 Represent and interpret constraints by equations or inequalities, and by systems of equations and/or inequalities. Interpret solutions as viable or nonviable options in a modeling and/or real-world context

HSA.REI.D.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane

HSF.BF.B.3 Experiment with multiple transformations and illustrate an explanation of the effects on the graph with or without technology

Unit 5	Data/Radical Expressions	Grade Level	9	Approx Length	3 Weeks
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CPSD Power Standards with Student Learning Objectives

HSS.ID.B.6.22 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related • Fit a function to the data; use functions fitted to data to solve problems in the context of the data Note: The focus of Algebra I should be on **linear and exponential models**

Student-Friendly Objectives:

- I can define the independent and dependent variables for a given situation.
- I can sketch a scatter plot using data.
- I can find an equation (function) that best fits the data.
- I can determine the practical domain and range for the line of best fit.
- I can use the line of best fit to solve problems.

Learning Indicators of Power Standards

<p>Students will know...</p> <ul style="list-style-type: none"> • a scatter plot is a graphical representation of two variables • a scatter plot could represent different functions including linear and exponential • the definition of regression model 	<p>And be able to...</p> <ul style="list-style-type: none"> • Define independent and dependent variables in context • Construct a scatter plot • Describe how one variable should affect another • Find an equation that best fits the scatter plot data from a graph and table, determine the practical domain and range of the equation, and use it to solve problems in the context of the data
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Additional Arkansas State Standards

HSN.RN.B.4 Simplify radical expressions, perform operations with radical expressions, and rationalize denominators and/or numerators

HSS.ID.A.1 Represent data with plots on the real number line (dot plots, histograms, and box plots)

HSS.ID.A.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets

HSS.ID.A.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers)

HSS.ID.B.5 Summarize categorical data for two categories in a two-way frequency table. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

HSS.ID.C.8 Compute (using technology) and interpret the correlation coefficient of a linear fit

HSS.ID.C.9 Distinguish between correlation and causation