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<p><i>symbols in order to solve problems and uses the necessary algebraic skills required to simplify algebraic expressions and solve equations and inequalities in problem situations.</i></p> <p>A.7 Linear functions. <i>The student formulates equations and inequalities based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.</i></p>	<p>equations, and factor as necessary in problem situations;</p> <p><i>[Factoring addressed in Bundle 7]</i></p> <p>A.4B Use the commutative, associative, and distributive properties to simplify algebraic expressions.</p> <p>A.7B Investigate methods for solving linear equations and inequalities using concrete models, graphs, and the properties of equality, select a method, and solve the equations and inequalities.</p> <p>A.7C Interpret and determine the reasonableness of solutions to linear equations and inequalities.</p>	<p>figures (using shaded area and perimeter)</p> <ul style="list-style-type: none"> • Solve proportions • Define and simplify algebraic expressions using the commutative, associative, and distributive properties • Solve equations if given one coordinate of an ordered pair and substituting into a given linear equation • Solve equations using involving one-step equations • Use given equations to relate solution(s) to the equation and determine reasonableness of the solution(s) <i>[Inequalities addressed in Bundle 2]</i>
<p>8.14 <i>The student applies Grade 8 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school.</i></p>	<p>8.14.A Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics.</p>	<ul style="list-style-type: none"> • Use real world situations to discuss their relationships between two quantities

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<p><i>A.6 Linear functions. The student understands the meaning of the slope and intercepts of the graphs of linear functions and zeros of linear functions and interprets and describes the effects of changes in parameters of linear functions in real-world and mathematical situations.</i></p> <p><i>A.7 Linear functions. The student formulates equations and inequalities based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.</i></p> <p><i>8.3 Patterns, relationships, and</i></p>	<p>A.6G Relate direct variation to linear functions and solve problems involving proportional change.</p> <p>A.7A Analyze situations involving linear functions and formulate linear equations or inequalities to solve problems;</p> <p>A.7B Investigate methods for solving linear equations and inequalities using concrete models, graphs, and the properties of equality, select a method, and solve the equations and inequalities.</p> <p>A.7C Interpret and determine the reasonableness of solutions to linear equations and inequalities.</p> <p>8.3B Estimate and find solutions to application problems involving</p>	<ul style="list-style-type: none"> • relate tables, models, symbols, graphs, and verbal representations to direct variation and proportional situations including changes in similar geometric figures. <i>[Addressed in Bundle 3, 8th grade TEK 8.2d]</i> • use one and two variable verbal and algebraic representations of linear inequalities to analyze and formulate problem situations. • extend tables and substitute values to solve inequalities • use proportions to solve equations involving perimeter • Relate solution(s) to the equation/inequality and the problem situation and determine reasonableness of the solution(s) • set up a proportion problem from a verbal description
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<p><i>algebraic thinking. The student identifies proportional or non-proportional linear relationships in problem situations and solves problems.</i></p> <p>8.6 Geometry and spatial reasoning. The student uses transformational geometry to develop spatial sense.</p>	<p>percents and other proportional relationships including similarity and rates.</p> <p>8.6 A Generate similar figures using dilations including enlargements and reductions.</p>	<ul style="list-style-type: none"> • use data in a table • use standard and metric units • find unit conversions include real world situations including speed, density, price, recipes, and student-teacher ratio • discuss appropriate labels • graph figures on a coordinate grid • find missing dimensions using figures with dimensions labeled in the diagram • label dilations with ‘prime notation’ • mark similar sides and angles on created figures and originals • find the scale factor • use scale factor to create similar figure
<p>8.14 <i>The student applies Grade 8 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school.</i></p>	<p>8.14B Use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness.</p>	<ul style="list-style-type: none"> • Use a real world situation and choose a strategy to solve it and check for reasonableness

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Subject Area	Math	Bundle #:	3
Grade/Level	Algebra I	Weeks:	7-9
Overview			
Function Machines; Patterns and Expressions			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
<i>A.1 Foundations for functions. The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways.</i>	A.1A Describe independent and dependent quantities in functional relationships.	<ul style="list-style-type: none"> • Verbalize statements about dependent and independent quantities • Use tables, graphs, verbal descriptions, concrete models, diagrams and equations using function notation to relate dependent and independent quantities in real world situations • Define functions [every x value corresponds to exactly one y value] 	
<i>A.4 Foundations for functions. The student understands the importance of the skills required to manipulate symbols in order to solve problems and uses the necessary algebraic skills required to simplify algebraic expressions and solve equations and inequalities in problem situations.</i>	A.4C Connect equation notation with function notation, including $y = x + 1$ and $f(x) = x + 1$.	Use function notation to establish relationships between independent and dependent quantities	
<i>A.1 Foundations for functions. The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways.</i>	A.1B Gather and record data and use data sets to determine functional relationships between quantities.	<ul style="list-style-type: none"> • Collect data that models linear and non-linear functions through exploration • Analyze all given data and determine if a dependent relationship exists indicating the data represent a function (<i>Note: Substituting independent quantities to determine dependent</i> 	

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<p><i>A.2 Foundations for functions. The student uses the properties and attributes of functions.</i></p>	<p>A.1D Represent relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities.</p> <p>A.1E Interpret and make decisions, predictions, and critical judgments from functional relationships.</p> <p>A.2B Identify mathematical domains and ranges and determine reasonable domain and range values for given situations, both continuous and discrete.</p>	<p><i>quantities, not using calculators shortcuts)</i></p> <ul style="list-style-type: none"> • Represent relations in different ways, including: graphs, tables, mappings, equations, verbal descriptions, and concrete models, pictures, ordered pairs. • Make connections between various representations, including how an ordered pair in the table, and mapping, matches a point on the graph and how it relates to the equation. • Match one representation of a function with other representations of the same function. <ul style="list-style-type: none"> • Relate functional relationships to real world situations • Extend data in a table, from a concrete model using equations, or from analyzing the graph. • Answer questions and make predictions based on the representations: verbal, tabular, graphical, model, and/or symbolic • Determine choices, options, or draw conclusions from different representations of the problem situation <ul style="list-style-type: none"> • Identify domain and range from data in a table, a graph, concrete model, and verbal description of real world situation using inequality notation; for example the domain: $2 \leq x \leq 5$ • Relate domain to horizontal axis and range to vertical axis.
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<p>8.16 <i>The student uses logical reasoning to make conjectures and verify conclusions</i></p>	<p>8.16.A The student is expected to make conjectures from patterns or sets of examples and non-examples;</p> <p>8.16.B Validate his/her conclusions using mathematical properties and relationships.</p>	<ul style="list-style-type: none"> • Write a function from a table, pattern, diagram (Venn diagram) and geometric shapes • Use given problem situations to verify conclusions
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Subject Area	Math	Bundle #:	4
Grade/Level	Algebra I	Weeks:	10-12
Overview			
Slope; Graphing Linear Equations; Parent Graphs; Determine effect of changes on slope and y-intercept			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
<p>A.1 <i>Foundations for functions. The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways.</i></p>	<p>A.1A Describe independent and dependent quantities in functional relationships.</p> <p>A.1B Gather and record data and use data sets to determine functional relationships between quantities.</p> <p>A.1C Describe functional relationships for given problem</p>	<ul style="list-style-type: none"> • Use linear and non-linear functions • Verbalize statements about dependent and independent quantities • Utilize graphing technology effectively • Connect to real world situations • Use tables, graphs, verbal descriptions, concrete models, diagrams and equations to relate dependent and independent quantities • Collect data that models linear and non-linear functions through exploration • Analyze all given data and determine if a dependent relationship exists indicating the data represent a function. • Generate tables of values, find a pattern in the data, and develop an equation or inequality that fits the data from a problem situation. 	

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	<p>situations and write equations or inequalities to answer questions arising from the situations.</p>	<ul style="list-style-type: none"> • Represent data in different ways, including: graphs, tables, mappings, equations, verbal descriptions, concrete models, pictures • Generate tables of values from patterns found in geometric figures and write equations representing the functions in problem situations. • Describe the functional relationship for given problem situations verbally specific to a rate of change and a constant value.
	<p>A.1D Represent relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities.</p>	<ul style="list-style-type: none"> • Make connections between various representations, including how an ordered pair in the table, and mapping, matches a point on the graph and how it relates to the equation. • Match one representation of a function with other representations of the same function. • Relate domain to horizontal axis and range to vertical axis.
	<p>A.1E Interpret and make decisions, predictions, and critical judgments from functional relationships.</p>	<ul style="list-style-type: none"> • Relate functional relationships to real world situations • Extend data in a table, from a concrete model using equations, or from analyzing the graph. • Answer questions and make predictions based on the representations: verbal, tabular, graphical, model, and/or symbolic • Determine choices, options, or draw conclusions from different representations, of the problem situation. <p>Include linear relationships as they relate to Geometry (perimeters of squares and equilateral triangles, circumference, constant rate of change, and</p>

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<p><i>A.2 Foundations for functions. The student uses the properties and attributes of functions.</i></p>	<p>A.2A Identify and sketch the general forms of linear ($y = x$) and quadratic ($y = x^2$) parent functions.</p> <p>A.2B Identify mathematical domains and ranges and determine reasonable domain and range values for given situations, both continuous and discrete.</p> <p>A.2C Interpret situations in terms of given graphs or creates situations that fit given graphs.</p> <p>A.5B Determine the domain and range for linear functions in given situations.</p>	<p>similar figures) and quadratic relationships (area of circle and square) communicated with concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities.</p> <ul style="list-style-type: none"> • Investigations with and without a graphing calculator: • Identify from a table, graph, concrete model, and/or verbal description and match to the parent function $y = x$ • Sketch the graph corresponding to a given symbolic representation. • Identify domain and range from data in a table, a graph, concrete model, and verbal description of real world situation using inequality notation; for example the domain: $2 \leq x \leq 5$ • Create situations from a graph that match critical attribute of the graph; examples are speeding up, slowing down, positive or negative direction, horizontal segments of the graph, x-and y-intercepts. • Accurately sketch a graph including critical attributes of a given problem situation. • Differentiate between the domain and range of the function and the reasonable domain and range for the real world situation.
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	<p>predict the effects of changes in m and b on the graph of $y = mx + b$;</p> <p>A.6D Graph and write equations of lines given characteristics including two points, a point and a slope, or a slope and y-intercept.</p> <p>A.6E Determine the intercepts of the graphs of linear functions and zeros of linear functions from graphs, tables, and algebraic representations.</p> <p>A.6F Interpret and predict the effects of changing slope and y-intercept in applied situations.</p>	<ul style="list-style-type: none"> • Describe and predict the change in the graph: <ul style="list-style-type: none"> ○ When m changes in value (negative, zero, positive) ○ When b is increased or decreased • Use various methods to find the slope <ul style="list-style-type: none"> ○ Slope formula ○ Graphically ○ Rise over run ○ From different forms of equations • Use various methods to find y-intercept <ul style="list-style-type: none"> ○ graphically ○ substitute $x = 0$ ○ from different forms of equations • Write linear equations in slope-intercept, point-slope, and standard forms. • Forms of equations: standard form, slope-intercept form, point-slope form • Find the y-intercepts of linear functions, given a graph, table, or algebraic equation. • Find the x-intercepts/zeros of linear functions given either a graph, table or solutions/roots given an algebraic equation. • Explain the numerical values of the slope and intercepts in terms of the units from the problem situation. • Show, relate, and understand the changes in the graph to corresponding changes in the problem situation.
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<p><i>A.2 Foundations for functions. The</i></p>	<p>A.1D Represent relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities.</p>	<ul style="list-style-type: none"> • Make connections between various representations, including how an ordered pair in the table, and mapping, matches a point on the graph and how it relates to the equation. • Describe a specific pattern from a sequence including geometric figures • Match one representation of a function with other representations of the same function. • Relate domain to horizontal axis and range to vertical axis.
	<p>A.1E Interpret and make decisions, predictions, and critical judgments from functional relationships.</p>	<ul style="list-style-type: none"> • Relate functional relationships to real world situations • Extend data in a table, from a concrete model using equations, or from analyzing the graph. • Answer questions and make predictions based on the representations: verbal, tabular, graphical, model, and/or symbolic • Determine choices, options, or draw conclusions from different representations, of the problem situation. <p>Include linear relationships as they relate to Geometry (perimeters of squares and equilateral triangles, circumference, constant rate of change, and similar figures) and quadratic relationships (area of circle and square) communicated with concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities.</p>
	<p>A.2B Identify mathematical</p>	<p>Identify domain and range from data in a table, a</p>

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<p><i>A.6 Linear functions. The student understands the meaning of the slope and intercepts of the graphs of linear functions and zeros of linear functions and interprets and describes the effects of changes in parameters of linear functions in real-world and mathematical situations.</i></p>	<p>situations.</p> <p>A.5C Use, translate, and make connections among algebraic, tabular, graphical, or verbal descriptions of linear functions.</p> <p>A.6B Interpret the meaning of slope and intercepts in situations using data, symbolic representations, or graphs;</p> <p>A.6C Investigate, describe, and predict the effects of changes in m and b on the graph of $y = mx + b$;</p> <p>A.6D Graph and write equations of lines given characteristics including two points, a point and a slope, or a</p>	<p>and range for the real world situation.</p> <ul style="list-style-type: none"> • Find domain and range from a graph, table, equation, or problem situation. • Differentiate between continuous and discrete data <ul style="list-style-type: none"> • Be able to connect among all representations of linear functions including real world situations. <ul style="list-style-type: none"> • Connect the slope to rate of change and the intercepts to the context of a problem situation. • State the rate of change/slope in terms of the units used in the problem situation. Ex. 1 mile/4 hours • Relate the rate of change and its explanation in the different representations of a linear function. <p>with and without graphing technology:</p> <ul style="list-style-type: none"> • Describe and predict the change in the graph: <ul style="list-style-type: none"> ○ When m changes in value (negative, zero, positive) ○ When b is increased or decreased • Use various methods to find the slope <ul style="list-style-type: none"> ○ Slope formula ○ Graphically ○ Rise over run
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<p><i>A.7 Linear functions. The student formulates equations and inequalities based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.</i></p>	<p>slope and y-intercept.</p>	<ul style="list-style-type: none"> ○ From different forms of equations ● Use various methods to find y-intercept <ul style="list-style-type: none"> ○ graphically ○ substitute $x = 0$ ○ from different forms of equations ● Write linear equations in slope-intercept, point-slope, and standard forms. ● Forms of equations: standard form, slope-intercept form, point-slope form
	<p>A.6E Determine the intercepts of the graphs of linear functions and zeros of linear functions from graphs, tables, and algebraic representations</p>	<ul style="list-style-type: none"> ● Find the y-intercepts of linear functions, given a graph, table, or algebraic equation. ● Find the x-intercepts/zeros of linear functions given either a graph, table or solutions given an algebraic equation.
	<p>A.6F Interpret and predict the effects of changing slope and y-intercept in applied situations.</p>	<ul style="list-style-type: none"> ● Explain the numerical values of the slope and intercepts in terms of the units from the problem situation. ● Show, relate, and understand the changes in the graph to corresponding changes in the problem situation.
<p>A.7A Analyze situations involving linear functions and formulate linear equations or inequalities to solve problems;</p>	<ul style="list-style-type: none"> ● Use different representations of linear functions to create equations or inequalities for problem situations. ● Solve the problem algebraically or graphically 	

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	A.7C Interpret and determine the reasonableness of solutions to linear equations and inequalities.	<ul style="list-style-type: none"> • Relate solution(s) to the equation/inequality and the problem situation and determine reasonableness of the solution(s)
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Subject Area	Math	Bundle #:	6
Grade/Level	Algebra I	Weeks:	16-18

Overview

Scatter Plots (including calculator entry, L1 & L2) ; Sketch Line of Best Fit; Use Calculator to Write Line of Best Fit

TEKS - Texas Knowledge & Skills

Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification
<p><i>A.2 Foundations for functions. The student uses the properties and attributes of functions.</i></p>	<p>A.2D Collect and organize data, make and interpret scatter plots (including recognizing positive, negative, or no correlation for data approximating linear situations), and model, predict, and make decisions and critical judgments in problem situations.</p>	<ul style="list-style-type: none"> • Collect data through explorations and/or problem solving situations, then name axis, plot points, describe general trends in the data, and determine independent and dependent quantities. • Make critical judgments and predictions using graphs and tables.
<p><i>A.5 Linear functions. The student understands that linear functions can be represented in different ways and translates among their various representations.</i></p>	<p>A.5A Determine whether or not given situations can be represented by linear functions.</p>	<ul style="list-style-type: none"> • Determine from a verbal description whether there is a constant rate of change or that the rate of change is not constant. • Determine from graphs, tables, and symbolic representations whether the rate of change is constant.

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Subject Area	Math	Bundle #:	7
Grade/Level	Algebra I	Weeks:	19-21
Overview			
Write, Solve and Graph Linear Inequalities			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
<p><i>A.1 Foundations for functions. The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways.</i></p>	<p>A.1C Describe functional relationships for given problem situations and write equations or inequalities to answer questions arising from the situations.</p>	<ul style="list-style-type: none"> • Generate tables of values, find a pattern in the data, and develop an inequality that fits the data from a problem situation. • Represent data in different ways, including: graphs, tables, mappings, equations, verbal descriptions, concrete models, pictures • Generate tables of values from patterns found in geometric figures and write inequalities representing the functions in problem situations. • Describe the functional relationship for given problem situations verbally specific to a rate of change and a constant value. 	
	<p>A.1D Represent relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities.</p>	<ul style="list-style-type: none"> • Make connections between various representations, including how an ordered pair in the table, and mapping, matches a point on the graph and how it relates to the equation. • Match one representation of a function with other representations of the same function. • Relate domain to horizontal axis and range to vertical axis. 	
	<p>A.1E Interpret and make decisions,</p>	<ul style="list-style-type: none"> • Relate functional relationships to real world 	

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<p><i>A.7 Linear functions. The student formulates equations and inequalities based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.</i></p>	<p>A.7A Analyze situations involving linear functions and formulate linear equations or inequalities to solve problems;</p> <p>A.7B Investigate methods for solving linear equations and inequalities using concrete models, graphs, and the properties of equality, select a method, and solve the equations and inequalities.</p> <p>A.7C Interpret and determine the reasonableness of solutions to linear equations and inequalities.</p>	<ul style="list-style-type: none"> • Use different representations of linear functions to create inequalities for problem situations. • Solve the problem algebraically or graphically • Choose an appropriate method for solving a particular linear inequality. • Be able to use all methods (models, graphs, properties of equality,..) to solve inequalities • Relate and connect the methods to each other. • Relate symbols ($<$, $>$, \leq, \geq) to graphical and verbal representations (i.e. IS less than) • Relate solution(s) to the inequality and the problem situation and determine reasonableness of the solution(s) •
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Subject Area	Math	Bundle #:	8
Grade/Level	Algebra I	Weeks:	22-24
Overview			
Writing and Solving Systems of Equations (solving must include, but is not limited to, substitution and graphing methods)			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
<p><i>A.8 Linear functions. The student formulates systems of linear equations from problem situations, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.</i></p>	<p>A.8A Analyze situations and formulate systems of linear equations in two unknowns to solve problems;</p> <p>A.8B Solve systems of linear equations using concrete models, graphs, tables, and algebraic methods.</p> <p>A.8C Interpret and determine the reasonableness of solutions to systems of linear equations.</p>	<ul style="list-style-type: none"> • Assign variables for a given situation and set up a system of linear equations to describe the problem situation • Solve systems of linear equations using models, graphs, tables, and algebraic methods (substitution) Note: elimination can be introduced • Show concepts with and without graphing technology • Interpreting the solution from the graph of a system of linear equations and relating it to the problem situation. • Relate the solution from a table of values of the linear equations and interpret the reasonableness of that solution • Interpret the algebraic solution to a system of linear equations and relate it to the problem situation. 	

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<p><i>quadratic equation and solves them using appropriate methods.</i></p>	<p>A.10B Make connections among the solutions (roots) of quadratic equations, the zeros of their related functions, and the horizontal intercepts (x-intercepts) of the graph of the function.</p>	<p>quadratic equations (graphical, tabular, factoring, quadratic formula) to each other.</p> <ul style="list-style-type: none"> • Show concepts with and without a graphing calculator • Understand that x-intercepts and zeros are associated with graphs and are related in a function • Determine x-intercepts/zeros from the graph or table of a quadratic function
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Subject Area	Math	Bundle #:	11
Grade/Level	Algebra I	Weeks:	31-33
Overview			
Solving Quadratic Equations			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
<p><i>A.9 Quadratic and other nonlinear functions. The student understands that the graphs of quadratic functions are affected by the parameters of the function and can interpret and describe the effects of changes in the parameters of quadratic functions.</i></p>	<p>A.9A Determine the domain and range for quadratic functions in given situations;.</p>	<ul style="list-style-type: none"> • Differentiate between the domain and range for a problem situation and the domain and range of the mathematical function. • Determine domain and range from a graph, table, equation, or verbal situation. 	
<p><i>A.10 Quadratic and other nonlinear functions. The student understands there is more than one way to solve a</i></p>	<p>A.10A Solve quadratic equations using concrete models, tables, graphs, and algebraic methods.</p>	<ul style="list-style-type: none"> • Determining an appropriate method for solving a quadratic equation based upon the parameters. 	

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<p><i>quadratic equation and solves them using appropriate methods.</i></p>	<p>A.10B Make connections among the solutions (roots) of quadratic equations, the zeros of their related functions, and the horizontal intercepts (x-intercepts) of the graph of the function.</p>	<ul style="list-style-type: none">• Relate the different methods of solving quadratic equations (graphical, tabular, factoring, quadratic formula) to each other.• Show concepts with and without a graphing calculator • Understand that roots and solutions are associated with equations and that x-intercepts and zeros are associated with graphs and are related in a function and use each appropriately• Determine the solutions/roots from an equation and determine x-intercepts/zeros from the graph or table of a quadratic function
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