Algebra
PISD Curriculum: Year at a Glance

Bundle	*Title*	
	Big Ideas/Enduring Understandings	Guiding Questions
1	***Foundations and Proportions***	
	Using mathematical models adds meaning to numerical relationships.	1. How do models, patterns, and mathematical properties elicit efficient methods for operational computations? 2. What is the conventional order to solving a problem that includes various mathematical operations and both positive and negative integers and why do we need that convention? 3. How can using ratio tables help understand relationships between proportional quantities?
	Proportional reasoning can be applied in many real world situations in the forms of ratios, rates, and proportions.	1. How are applications involving percents connected to proportional reasoning? 2. How can using ratio tables help to understand percents?
2	***Manipulating Equations***	
	Equations arise from functional relationships and can be used to predict and solve for specific values in a problem situation.	1. What does the solution of an equation or inequality mean in the problem situation? 2. Is there a pattern or process of manipulating symbols used to solve equations or inequalitities? 3. What are the various models used to solve equations and when would you choose to use each model?
3	***Functions***	
	Functions model real world phenomena when graphically represented and allow for analysis of trends and making predictions.	1. What do domain and range represent in the context of the problem situation? 2. What information is needed to graph a linear function? 3. How can the graph of a linear function be used to analyze trends and make predictions?
4	***Writing Linear Functions***	
	Linear functions represent situations with a constant rate of change.	1. What naturally occurring situations can be represented by a linear function? 2. How are the domain and range of a function related to the independent and dependent variables? 3. How do the domain and range relate to the viewing window on the graphing calculator? 4. How does a change the independent variable affect the dependent variable? 5. How can the rate-of-change be found from a table, a graph, an equation, and a verbal description?
5	***Slope and Intercepts of Linear Functions***	
	The rate-of-change and the intercepts can tell you a lot about a set of data and can help to write an equation to model and/or graph the data.	1. What do the slope and *y*-intercept represent in the context of the problem situation? 2. How are changes in the slope and y-intercept reflected in a table, a graph, an equation, and a verbal description? 3. How can the slope and y-intercept be used to write the equation of a line? 4. How can a point and a slope be used to write the equation of a line?
6	***Graphing Linear Functions, Final Exams***	
	The rate-of-change and the intercepts can tell you a lot about a set of data and can help to write an equation to model and/or graph the data.	1. What do the slope and *y*-intercept represent in the context of the problem situation? 2. How are changes in the slope and y-intercept reflected in a table, a graph, an equation, and a verbal description? 3. How can the slope and y-intercept be used to write the equation of a line? 4. How can a point and a slope be used to write the equation of a line?

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7	***Linear Systems, begin Working with Exponents***	
	No matter how you choose to solve a linear system, you are always looking for the point of intersection.	1. How many different ways can you solve a system? 2. How do you choose which method to use? 3. What does the solution to a system, or the intersection point, represent in a real life situation?
8	***Solving Quadratic Equations***	
	Quadratic equations can be used to model real world situations and can be solved using multiple strategies.	1. How many ways can you solve a quadratic equations and how do you choose the best way to solve a particular quadratic equation? 2. If a quadratic equation doesn't factor easily, does that mean it doesn't have solutions? 3. Where does the quadratic formula come from?
9	***Quadratic Functions***	
	The basic characteristics of quadratic functions can be determined from graphs of parent quadratic functions and the changes in the parameters of the function.	1. What real-world situations can be modeled by quadratic functions (i.e. vertical motion)? 2. How can you find axis of symmetry and vertex of the graph of a quadratic function? 3. What happens to the graph when changes are made to a in the function $ax^2 + c$? 4. What happens to the graph when changes are made to c in the function $ax^2 + c$?
10	***Solving Quadratic Equations (continued) and TAKS Review***	
	Measurement, geometry, and probability and statistics that are 8th grade TEKS are related to Algebra TEKS.	1. How does scale factor connect to finding perimeter, area, and volume of similar figures? 2. How is probability related to other proportional relationships? 3. Are perimeter and area, and volume linear functions, quadratic functions, or others? 4. What kind of statistical models do we look at often in Algebra 1 and what have you not seen since 8th grade? When are these models useful?
11	***TAKS and Growth and Decay using Exponential Function***	
	Measurement, geometry, and probability and statistics that are 8th grade TEKS are related to Algebra TEKS.	1. How does scale factor connect to finding perimeter, area, and volume of similar figures? 2. How is probability related to other proportional relationships? 3. Are perimeter and area, and volume linear functions, quadratic functions, or others? 4. What kind of statistical models do we look at often in Algebra 1 and what have you not seen since 8th grade? When are these models useful?
	Exponential functions can be applied to real world situations such as biological growth and decay, and financial growth and decay.	1. How are the graphs of quadratic and exponential functions similar? How are they different? 2. Describe how exponential growth and/or decay can be used in real world situations.
12	***Inverse Variation and Exponents/Roots***	
	Inverse variation functions are rational functions, which are used to model many real world situations such as the frequency at which a guitar string vibrates.	1. In an inverse variation, what dos the product xy represent? How do you determine k? 2. How does the Product Rule for inverse variation relate to the methods used to determine whether a relationship between data is an inverse variation?