

HPISD Curriculum: Algebra II								
Title		Estimated Duration	6 Weeks					
Unit 4: Quadratic Functions Part II		2 weeks	1	2	3	4	5	6
Unit Overview								
Solving and graphing quadratic equations, identifying domain and range.								
Enduring Understandings								
<b>The student will understand that:</b>		<ul style="list-style-type: none"> <li>Quadratic functions can be represented and solved in different ways</li> <li>Changes in the parameters of a quadratic function transform its graph in predictable ways.</li> </ul>						
Concepts	Guiding/Essential Questions							
<ul style="list-style-type: none"> <li>relationships</li> </ul>	<ul style="list-style-type: none"> <li>What are the steps used in the process of completing the square?</li> <li>How do various changes in <math>a</math>, <math>h</math>, and <math>k</math> values transform the graph of a parabola equation in vertex form?</li> <li>What is a parameter and what are parameter changes?</li> </ul>							
Learning Targets								
<ul style="list-style-type: none"> <li>The student uses properties and attributes of functions and applies functions to problem situations.</li> <li>The student connects algebraic and geometric representations of functions.</li> <li>The student understands that quadratic functions can be represented in different ways and translates among their various representations.</li> <li>The student interprets and describes the effects of changes in the parameters of quadratic functions in applied and mathematical situations.</li> </ul>								
Formative Assessments			Summative Assessments					
homework, quizzes			test					

TEKS: Readiness Standards		TEKS: Related Supporting Standards	
<p><b>A2.1A</b> Identify the mathematical domains and ranges of functions and determine reasonable domain and range values for continuous and discrete situations.</p> <p><b>A2.4B</b> Extend parent functions with parameters and describe the effects of the parameter changes on the graph of parent functions.</p> <p><b>A2. 6A</b> determine the reasonable domain and range values of quadratic functions, as well as interpret and determine the reasonableness of solutions to quadratic equations and inequalities</p> <p><b>A2. 7A</b> Use characteristics of the quadratic parent function to sketch the related graphs and connect between the <math>y = ax^2 + bx + c</math> and the <math>y = a(x - h)^2 + k</math> symbolic representations of quadratic functions.</p>		<p><b>A2.4A</b> identify and sketch graphs of parent functions, including linear (<math>f(x) = x</math>), quadratic (<math>f(x) = x^2</math>), exponential (<math>f(x) = ax</math>), and logarithmic (<math>f(x) = \log ax</math>) functions, absolute value of <math>x</math> (<math>f(x) =  x </math>), square root of <math>x</math> (<math>f(x) = \sqrt{x}</math>), and reciprocal of <math>x</math> (<math>f(x) = 1/x</math>)</p> <p><b>A2.5.E</b> use the method of completing the square</p> <p><b>A2. 7B</b> Use the parent function to investigate, describe, and predict the effects of changes in <math>a</math>, <math>h</math>, and <math>k</math> on the graphs of <math>y = a(x - h)^2 + k</math> from of a function in applied and purely mathematical situations.</p>	
Processes and Skills: What students should be able to DO		Facts: What students should KNOW	
<ul style="list-style-type: none"> <li>• Write the domain and range in set and interval notation</li> <li>• Solve quadratic equations by completing the square.</li> <li>• Convert standard form quadratic equations into vertex form by completing the square. Manipulate various forms of quadratic equations.</li> <li>• Graph parabolas from vertex form.</li> </ul>		<ul style="list-style-type: none"> <li>• Domain is the set of all <math>x</math> values.</li> <li>• Range is the set of all <math>y</math> values.</li> <li>• Vertex form is <math>y = a(x - h)^2 + k</math></li> </ul>	
Topics			
completing the square vertex form		transformation of parabolas domain range	
Language of Instruction			
Standard form Vertex form		Completing the square Set and interval notation of domain and range	

<b>State Assessment Connections</b>	<b>National Assessment Connections</b>
<b>Resources</b>	
McDougal Littell – Algebra 2 Supplemental material	