Franklin-Simpson High School

Course Name: *Algebra II* **Days for Unit:** *8-9 days*

Unit Name: *Conics*

Quality Core Objectives:

Unit 4 Functions, Relations, and Conics	
B.1. Mathematical Processes	a. Apply problem-solving skills (e.g., identifying irrelevant or missing information, making conjectures, extracting mathematical meaning, recognizing and performing multiple steps when needed, verifying results in the context of the problem) to the solution of real-world problems
	b. Use a variety of strategies to set up and solve increasingly complex problems
	c. Represent data, real-world situations, and solutions in increasingly complex contexts (e.g., expressions, formulas, tables, charts, graphs, relations, functions) and understand the relationships
	d. Use the language of mathematics to communicate increasingly complex ideas orally and in writing, using symbols and notations correctly
	e. Make appropriate use of estimation and mental mathematics in computations and to determine the reasonableness of solutions to increasingly complex problems
	f. Make mathematical connections among concepts, across disciplines, and in everyday experiences
	g. Demonstrate the appropriate role of technology (e.g., calculators, software programs) in mathematics (e.g., organize data, develop concepts, explore relationships, decrease time spent on computations after a skill has been established)
	h. Apply previously learned algebraic and geometric concepts to more advanced problems
C.1. Foundations	d. Perform operations on functions, including function composition, and determine domain and range for each of the given functions
E.2. Graphs, Relations, and Functions	a. Determine the domain and range of a quadratic function; graph the function with and without technology
	b. Use transformations (e.g., translation, reflection) to draw the graph of a relation and determine a relation that fits a graph
E.3. Conic Sections	a. Identify conic sections (e.g., parabola, circle, ellipse, hyperbola) from their equations in standard form
	b. Graph circles and parabolas and their translations from given equations or characteristics with and without technology
	c. Determine characteristics of circles and parabolas from their equations and graphs
	d. Identify and write equations for circles and parabolas from given characteristics and graphs

Purpose of the Unit: *To familiarize students with the four curves known as conic sections : parabolas, circles, ellipses, and hyperbolas ; to have students write and graph the equations of these conic sections with and without technology.*

Prerequisites: *graphing functions, completing the square, using the vertex form of quadratic functions, graphing absolute value functions*

Content Standards: *Functions (interpreting and analyzing)*
Geometry (translating between geometric description and equation)

Daily Lesson Guide

Day	Lesson Content and Objectives	Vocabulary	Focus Questions	Engagement	Assessment and/or Accommodations
1 10.3	Write and graph the equation of a circle in standard form. G.GPE.1 E.3.a.b.c	Circle Vertex Radius Translation	• Can you identify and write the equation of a circle from given characteristics? • Can you graph a circle and its translations with and without technology? • Can you determine the characteristics of a circle from its equation?	Graphic organizer Note taking	Visual check of notes Bell ringer 7-27 p.634

2 **10.3**	**Find the center and radius of a circle** **Graph a circle with and without technology** **G.GPE.1** **E.3.a.b.c.**	**Vertex form** **Absolute value** **Solving an equation for "y"**			
3 **10.4**	**Identify an ellipse from its equation in standard form.** **G.GPE3** **E.3.a**	**Ellipse** **Focus**			
4. **10.4**	**Identify a hyperbola from its equation in standard form.** **G.GPE.3** **E.3.a**	**Hyperbola** **Focus**			
5. **10.1**	**Write and graph the equation of a parabola in standard form. $y=ax^2$** **G.GPE.2** **E.3.a.b.c**	**Parabola** **Directrix** **Focal length**			

6. **10.1**	**Write and graph the equation of a parabola in standard form. $x=ay^2$** **G.GPE.2** **E.3.a.b.c.**	**Parabola** **Focus** **directrix**			
7.	**Review of conic sections**				
8.	**Summative assessment**				**EOC**