BerlinValley Brothers School District
Algebra II
1st Nine Weeks

Big Ideas	Concept(s)	Competencies	Essential Questions
Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions. Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations. Data can be modeled and used to make inferences. Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.	Students will know… ● Function notation ● Order of Operations ● How data relates to graphs ● Formulas ● Direct and inverse variations ● Graphs of variation equations ● How to model data	Students will be able to… ● Identify and apply notations for functions ● SImplify and solve equations ● Graph relations that are functions ● Rewrite formulas and set up explicit formulas ● Set up and solve direct and inverse variation equations ● Graph lines, parabolas, hyperbolas, and inverse square graphs ● Match equations to data	How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations? How is mathematics used to quantify, compare, represent, and model numbers? How can data be organized and represented to provide insight into the relationship between quantities? How are relationships represented mathematically?

Topics	**Approx # of weeks**	**PA Standards**	**Assessment Anchors & Eligible Content**
Functions Order of Operations Notations (Euler's and Mapping) Graph Functions Solve Equations with Functions Rewrite formulas Examine Explicit Formulas for Sequences	4.5 weeks	**CC.2.2.HS.D.1** Interpret the structure of expressions to represent a quantity in terms of its context. **CC.2.2.HS.D.2** Write expressions in equivalent forms to solve problems. **CC.2.2.HS.D.5** Use polynomial identities to solve problems. **CC.2.2.HS.D.9** Use reasoning to solve equations and justify the solution method.	A1.1.1.5.1 A1.1.1.5.2 A1.1.1.5.3 A2.1.2.2.1 A2.1.2.2.2
Topics	**Approx # of weeks - % of time**	**PA Standards**	**Assessment Anchors & Eligible Content**
Variations and their graphs Direct Variation Inverse Variation Fundamental Theorem of Variation Graphs of Direct and Inverse variation Models to data Combine and Joint Variation	4.5 weeks	**CC.2.2.HS.C.1** Use the concept and notation of functions to interpret and apply them in terms of their context **CC.2.2.HS.C.2** Graph and analyze functions and use their properties to make connections between the different representations. **CC.2.1.HS.F.1** Apply and extend the properties of exponents to solve problems with rational exponents. **CC.2.1.HS.F.2** Apply properties of rational and irrational numbers to solve real world or	A1.2.1.1.1 A1.2.1.1.2 A1.2.1.1.3 A1.2.2.1.1 A1.2.2.1.2 A1.2.2.1.3 A1.2.2.1.4 A2.2.1.1.1 A2.2.1.1.2 A2.2.1.1.3 A2.2.1.1.4 G.2.2.2.1 G.2.2.2.2 G.2.2.2.3 G.2.2.2.4 G.2.2.2.5 A1.1.1.1.1 A1.1.1.1.2

		mathematical problems. **CC.2.1.HS.F.3** Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays. **CC.2.1.HS.F.4** Use units as a way to understand problems and to guide the solution of multi-step problems **CC.2.1.HS.F.5** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	A1.1.1.3.1 A1.1.1.2.1

Standards Legend: Essential Important Supplementary