**Pequea Valley School District**

**STEM Department**

**Unit: Rocketry Course: STEM9 Grade: 9th**

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| **Planning the Focus Based on the Desired Result**  **What do you want all students to know, understand and do by the end of the unit?** |
| **Unit Essential Question(s)** How are rockets designed and constructed?   * Systems of Inequalities * Custom Manufacturing vs. Mass Production * Rocket Construction   + Fin Design   + Engine Assembly   + Parachute Design * Introduction to Trigonometry * Scroll Saw |
| **Keystone Eligible Content/PA Core Standard**  **3.2.10.B** Apply process knowledge and organize  **3.2.10.D** Identify and Apply the technological design process to solve problems.scientific and technological phenomena in varied ways  **3.6.10.C** Apply Physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural production, research and design to real world problems.  **3.7.10.A** Identify and safely use a variety of tools, basic machines, materials, and techniques to solve problems and answer questions |
| **Pacing: Approximate number of class sessions per unit**  11 Days |
| **Tier 3 Vocabulary (Content specific vocabulary)**  **Manufacturing**  **Systems of Inequalities**  **Cosine**  **Sine**  **Tangent**  **Nose Cone**  **Apogee** |
| **Know -** What do students need to **know** in order to be able to do and understand? ***List concepts, such as facts, formulas, key vocabulary and knowledge “nuggets”.***   * **Learners will know how rockets function.** * **Learners will know how to calculate the height of an object using basic trigonometry.** * **Learners will understand how to use inequalities to solve design problems.** |
| **Understand -** What do students need to **understand**? What is the **big idea**? ***List broad concepts or “big ideas” in a statement of enduring understanding.***   * **Learners will understand how rockets function and how math can be used to determine the highest point of the flight path.** |
| **Learning Outcome -** What do students need to be able to **accomplish** by the unit’s end? ***List skills and competencies.***   * **Learners will create a systems of inequalities to determine the most effective ratio of custom and mass produced rockets in a given time.** * **Learners will design, build, and launch a rocket to calculate the highest point reached when launched.** |
| **Assessments:** Project is Aligned to the Algebra Keystone |
| **Software/Resources:** |