**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
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| **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.**
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| **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.**
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| **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.**
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| **Assessments:** Project is Aligned to the Algebra Keystone |
| **Software/Resources:**  |