GRADE 4– Unit 3 - Constraints and the Design Process - Rockets

Mission Statement
The primary goal of the Swedesboro-Woolwich School District is to prepare each student with the real life skills needed to compete in a highly competitive global economy. This will be achieved by providing a comprehensive curriculum, the integration of technology, and the professional services of a competent and dedicated faculty, administration, and support staff. Guiding this mission will be Federal mandates, including No Child Left Behind, the New Jersey Core Curriculum Content Standards, and local initiatives addressing the individual needs of our students as determined by the Board of Education. The diverse resources of the school district, which includes a caring PTO and active adult community, contribute to a quality school system. They serve an integral role in supporting positive learning experiences that motivate, challenge and inspire children to learn.

Unit/Module Overview
In unit 3, students will learn to: ● utilize the design process to engineer, design and test a working air rocket within specific constraints.

Standards Covered in Current Unit/Module
Related Standards and Learning Goals
CS.3-5.8.2.5.ED.4 - Explain factors that influence the development and function of products and systems (e.g., resources, criteria, desired features, constraints). **CS.3-5.8.2.5.ED.6 -** Evaluate and test alternative solutions to a problem using the constraints and trade-offs identified in the design process.

Unit/Module Weekly Learning Activities and Pacing Guide			
Topic & # Days	**NJ Standards**	**Critical Knowledge & Skills**	**Possible Resources & Activities**
Introduction to Rocket Project (1)	• **CS.3-5.8.2.5.ED.4**	**Obj. We are learning to**: • explain and discuss the scope and goals of the rocket project. **Suggested Formative Assessment(s)**: • Rocket Mission Proposal	• Activity ○ Introduction to rocket project ○ Begin mission proposal • Videos ○ GoPro Awards: On a Rocket Launch to S… ○ Weekend Project: Compressed Air Rocket • Materials ○ Rocket Launcher ○ Rocket Example
Mission Report and Prototype (1)	• **CS.3-5.8.2.5.ED.4**	**Obj. We are learning to**: • develop a mission proposal, budget and objective based off of information and resources provided **Suggested Formative Assessment(s)**: • Rocket Mission Proposal	• Activity ○ Continue mission proposal for approval ○ Begin construction and project management (with a partner) • Materials ○ Cardstock, paper, scissors, masking tape, brass fastener, staples, coffee filter, string, ruler, washers, hole punch ○ Rocket Launcher, pvc pipe (for fitting)
Project Management / Construction of Rocket (5)	• **CS.3-5.8.2.5.ED.6**	**Obj. We are learning to**: • manage, time, resources, and peer interaction to construct a rocket. **Suggested Summative Assessment(s)**: • Scale Tracking Sheet Gr 4 Unit 3 • Rocket Rubric	• Activity ○ Construction of an air powered rocket with project management (partners) within constraints • Materials ○ Cardstock, paper, scissors, masking tape, brass fastener, staples, coffee filter, string, ruler, washers, hole punch ○ Rocket Launcher, pvc pipe (for fitting)
Predict / Launch / Reflect (1)	• **CS.3-5.8.2.5.ED.4**	**Obj. We are learning to**: • predict and reflect on the outcomes of their rocket launch. **Suggested Formative Assessment(s)**:	• Activity ○ Launch rockets ○ Complete rocket prediction and reflection and

		● Rocket Prediction and Result	partner review. ● Materials ○ Partner Reflection Google Form ○ Rocket Launcher

Link to Additional Components including Cross Curricular Connections, Accommodations, Assessments, Etc

ELA Enduring Understanding Statements