

Curricular Unit: Rocket Out! Exploring Thrust, Acceleration, Velocity, and Flight Performance with Sensors

Contributed by: Kansas State University, Computing and Information Systems Department, National Science Foundation GK12 INSIGHT Program

Prepared for <http://www.teachengineering.org/>

***Grade:** 6 (5-7)

Time Required

Please see individual lessons and activities. Generally, the unit spans about 4 weeks.

*Summary

This rocket unit provides the students with a chance to explore a variety of rocket types and to evaluate the impacts of size, shape, weight, and propulsion methods on flight characteristics.

*Engineering Connection

Engineers are needed to design rockets for a variety of purposes. From space flight to warfare, and from atmospheric research to entertainment, engineers are involved in designing rockets achieve their purpose efficiently and effectively. Engineers must balance the materials to be propelled along with the materials needed to provide the necessary thrust. Aerodynamics, safety, and efficiency in design are crucial.

Engineering Category

1. Relating science and/or math concept(s) to engineering
2. Engineering analysis or partial design

*Subject Area(s)

Earth and Space

Physical Science

Science and Technology

***Keywords:** rocket, propulsion, thrust, force, mass, acceleration, accelerometer, trajectory, speed.

Educational Standards

Shawnee School District Grade 6 (2010) from Kansas Science Standards -

- Objective 4006.01 - Identify a problem statement that can be answered through science investigation.
- Objective 4006.02 - Design and conduct investigations safely using appropriate tools, mathematics, technology, and techniques to gather, analyze and interpret data.
- Objective 4006.03 - Identify relationships between evidence and logical conclusions.
- Objective 4006.13- Evaluate the work of others to determine evidence which scientifically supports or contradicts the results, identifying faulty reasoning or conclusions that go beyond the evidence and/or are not supported by the data.

***Related Lessons**

- Scientific Method
- Newton's Laws
- Aerodynamics

***Related Activities**

- [Hands On Activity: Strawkets and Thrust](#) (existing Teach Engineering Lesson)
- Hands on Activity: Estimating Performance of a Water Rocket

Unit Overview (Return to Contents)

Overview of topics: (1)

Unit Schedule

See individual lessons and activities.

Summary Assessment

To evaluate the effectiveness of this unit, a pre-test is available that can be administered prior to beginning any of the activities or lessons. The same test can be taken as a post-test, after completion of the unit activities and lessons, and the results compared to assess the learning progress.

Attachments

Other

Redirect URL

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***Supporting Program**

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