



Coca-Cola Space Science Center

Columbus State University

SHOWS, EXHIBITS & ACTIVITIES FOCUSED ON GEORGIA PERFORMANCE STANDARDS

Rockets

Discovery Based Activity

Sixth Grade Earth Science

Summary

Understanding Newton's third law of motion can be quite exciting when launching rockets. Students will design an air rocket, which will be launched outside the center.

Duration of Activity: 50 minutes

Associated Web Sites

www.ccssc.org - Coca-Cola Space Science Center

<http://www.universetoday.com/> - Latest news about astronomy, great pictures.

<http://www.nineplanets.org/> - Good source for research on our Solar System.

<http://hubble.stsci.edu/gallery/> - Look no further for the best that Hubble has to offer!

<http://sse.jpl.nasa.gov/index.cfm> - This site has lesson plans/activities related to latest missions.

<http://www.jpl.nasa.gov/missions/mer/> - Latest news and pictures from the Mars rovers.

<http://www.badastronomy.com/bad/index.html> - Cool site that debunks common misconceptions and other pseudoscientific ideas.

<http://www.solarviews.com/ss.html> - Source for Solar System research and icosahedrons.

<http://www.kidsastronomy.com> - Great site for young astronomers.

<http://www.nasa.gov> - This site has it all.

<http://spacelink.msfc.nasa.gov/> - NASA site for educational resources.

<http://spacescience.nasa.gov/education/educators/links/> - Space Science Education/Public Outreach Sites

<http://www.pbs.org/wgbh/nova/mars/> - Nova website on Mars rovers.

http://www.exploratorium.edu/ronh/solar_system/ - use to make a scale model of solar system

GPS Objectives

Co-Requisite – Characteristics of Science

Habits of Mind

1S6CS1. Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

1b. Understand that hypotheses are valuable if they lead to fruitful investigations, even if the hypotheses turn out not to be completely accurate descriptions.

2S6CS2. Students will use standard safety practices for all classroom laboratory and field investigations.

1a. Follow correct procedures for use of scientific apparatus.

2b. Demonstrate appropriate techniques in all laboratory situations.

3c. Follow correct protocol for identifying and reporting safety problems and violations.

1S6CS3. Students will use computation and estimation skills necessary for analyzing data and following scientific explanations.

0d. Draw conclusions based on analyzed data.

1S6CS4. Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.

1b. Estimate the effect of making a change in one part of a system on the system as a whole.

1S6CS7. Students will question scientific claims and arguments effectively.

1b. Recognize that there may be more than one way to interpret a given set of findings.

The Nature of Science

1S6CS8. Students will investigate the characteristics of scientific knowledge and how it is achieved.

Students will apply the following to scientific concepts:

0a. When similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often requires further study. Even with similar results, scientists may wait until an investigation has been repeated many times before accepting the results as meaningful.

1b. When new experimental results are inconsistent with an existing, well-established theory, scientists may require further experimentation to decide whether the results are flawed or the theory requires modification.

2c. As prevailing theories are challenged by new information, scientific knowledge may change and grow.

1S6CS9. Students will investigate the features of the process of scientific inquiry.

Students will apply the following to inquiry learning practices:

0a. Scientific investigations are conducted for different reasons. They usually involve collecting evidence, reasoning, devising hypotheses, and formulating explanations.

1b. Scientists often collaborate to design research. To prevent bias, scientists conduct independent studies of the same questions.

2d. Scientists use technology and mathematics to enhance the process of scientific inquiry.

English/Language Arts

ELA6R1 The student demonstrates comprehension and shows evidence of a warranted and responsible explanation of a variety of literary and informational texts.

e. Follows multi-step instructions to complete or create a simple product.

ELA6RC3 The student acquires new vocabulary in each content area and uses it correctly. The student

a. Demonstrates an understanding of contextual vocabulary in various subjects.

b. Uses content vocabulary in writing and speaking.

c. Explores understanding of new words found in subject area texts.

Listening/Speaking/Viewing

ELA6LSV1 The student participates in student-to-teacher, student-to-student, and group verbal interactions. The student

a. Initiates new topics in addition to responding to adult-initiated topics.

b. Asks relevant questions.

c. Responds to questions with appropriate information.

d. Confirms understanding by paraphrasing the adult's directions or suggestions.

e. Displays appropriate turn-taking behaviors.

f. Actively solicits another person's comments or opinions.

g. Offers own opinion forcefully without being domineering.

h. Responds appropriately to comments and questions.

i. Volunteers contributions and responds when directly solicited by teacher or discussion leader.

j. Gives reasons in support of opinions expressed.

k. Clarifies, illustrates, or expands on a response when asked to do so.

l. Employs a group decision-making technique such as brainstorming or a problem-solving sequence (e.g., recognizes problem, defines problem, identifies possible solutions, selects optimal solution, implements solution, evaluates solution).

m. Writes a response to/reflection of interactions with others.

Social Studies

SS6RC1 Students will enhance reading in all curriculum areas by:

c. Building vocabulary knowledge

- Demonstrate an understanding of contextual vocabulary in various subjects.

- Use content vocabulary in writing and speaking.

d. Establishing context

- Discuss in both writing and speaking how certain words are subject area related.

- Determine strategies for finding content and contextual meaning for unknown words.

Matrices

INFORMATION PROCESSING SKILLS

Information Processing Skills

1. compare similarities and differences
3. identify issues and/or problems and alternative solutions
4. distinguish between fact and opinion
11. draw conclusions and make generalizations
14. formulate appropriate research questions

Mathematics

Measurement

M6M3 Students will determine the volume of fundamental solid figures (right rectangular prisms, cylinders, pyramids, and cones).

- d. Solve application problems involving the volume of fundamental solid figures.

M6M4 Students will determine the surface area of solid figures (right rectangular prisms and cylinders).

- d. Solve application problems involving surface area of right rectangular prisms and cylinders.

Geometry

M6G1 Students will further develop their understanding of plane figures.

- a. Determine and use lines of symmetry.
- b. Investigate rotational symmetry, including degree of rotation.

M6G2 Students will further develop their understanding of solid figures.

- b. Compare and contrast cylinders and cones.

Process Standards

M6P4 Students will make connections among mathematical ideas and to other disciplines.

- c. Recognize and apply mathematics in contexts outside of mathematics.