



GRACE Education Curriculum Satellites	
Teachers	Grades K-2
Science & Lang Arts	

Shapely Satellites

Background Information: A satellite is an object that orbits, or travels around, a planet. Satellites are manmade or manufactured or they can be natural. The Moon is Earth’s natural satellite. Manufactured or artificial satellites are machines sent into space by people. They orbit a planet and report back to humans. These satellites help scientists, engineers, physicists, meteorologists, oceanographers and mathematicians collect information that increases knowledge about the planet. Satellites let people talk to friends across the continents and watch world-wide television. There are many different types of satellites. Types of natural satellites or manufactured satellites are: Science Satellites, Military Satellites, Communication Satellites, and Weather Satellites. GRACE is a pair of science satellites that we are learning about. We are going to follow GRACE and learn more about gravity and climate.

- Objectives:** At the end of the lesson, the students will:
- Define satellites and distinguish between manufactured and natural satellites.
 - Identify satellites in picture books.

Standards: Science: unifying concepts and processes; earth and space science; science and technology; science in personal & social perspectives.
 Language Arts: visual language for communication

Vocabulary:

Satellites	Weather Satellites
Natural Satellites	Artificial /manufactured Satellites
Military Satellites	Science Satellites

Materials:

Pre-printed pictures/images from the Internet	GRACE outline		
Picture books	Scissors	Pencils	Tracing paper
Markers	Tape	Oak tag	Stapler

Directions to the Teacher:

1. Read a picture book about satellites and space. Niki Walker's book, Satellites and Space Probes, from Eye on the Universe, is an excellent book. Go over background information and add any additional information about satellites that you feel is important, such as the way satellites are used in our daily lives, who built the first satellite, etc. Pictures are helpful so use images from websites, if available, or pictures from books.
2. After reading picture books, explain to the students that they are going to make picture books about satellites. Their picture books will be a little different because the book they make will be the shape of the GRACE satellite. Each page of the book will be shaped like the GRACE satellite [see attached outline].
3. Give each student a pencil, a GRACE outline and tracing paper. Have them trace GRACE onto the tracing paper.
4. Students will cut out the shape and tape the tracing paper shape to the oaktag.
5. Trace the outline of the shape onto the oaktag. Cut out the shape. Repeat this several times until approximately 5 GRACE shapes are made.
6. Find pictures in magazines, newspapers, or from the Internet that are related to satellites. If you cannot find pictures, draw pictures. Place them on each GRACE satellite shape. Suggestions for inclusion would be: a person talking on a cell phone and a satellite in space relaying the message, a satellite in space taking pictures for the military, a satellite in space flying over the ocean or mountains.
7. Once all pages have pictures, and a cover or title page is complete, put the pages in order and staple them on one side. The shape book is complete. Have student's display and share books with other classmates.

Suggested Reference Materials / Resources:

Write All About It: Activities for the Writing Process. Teacher Created Materials, Inc.

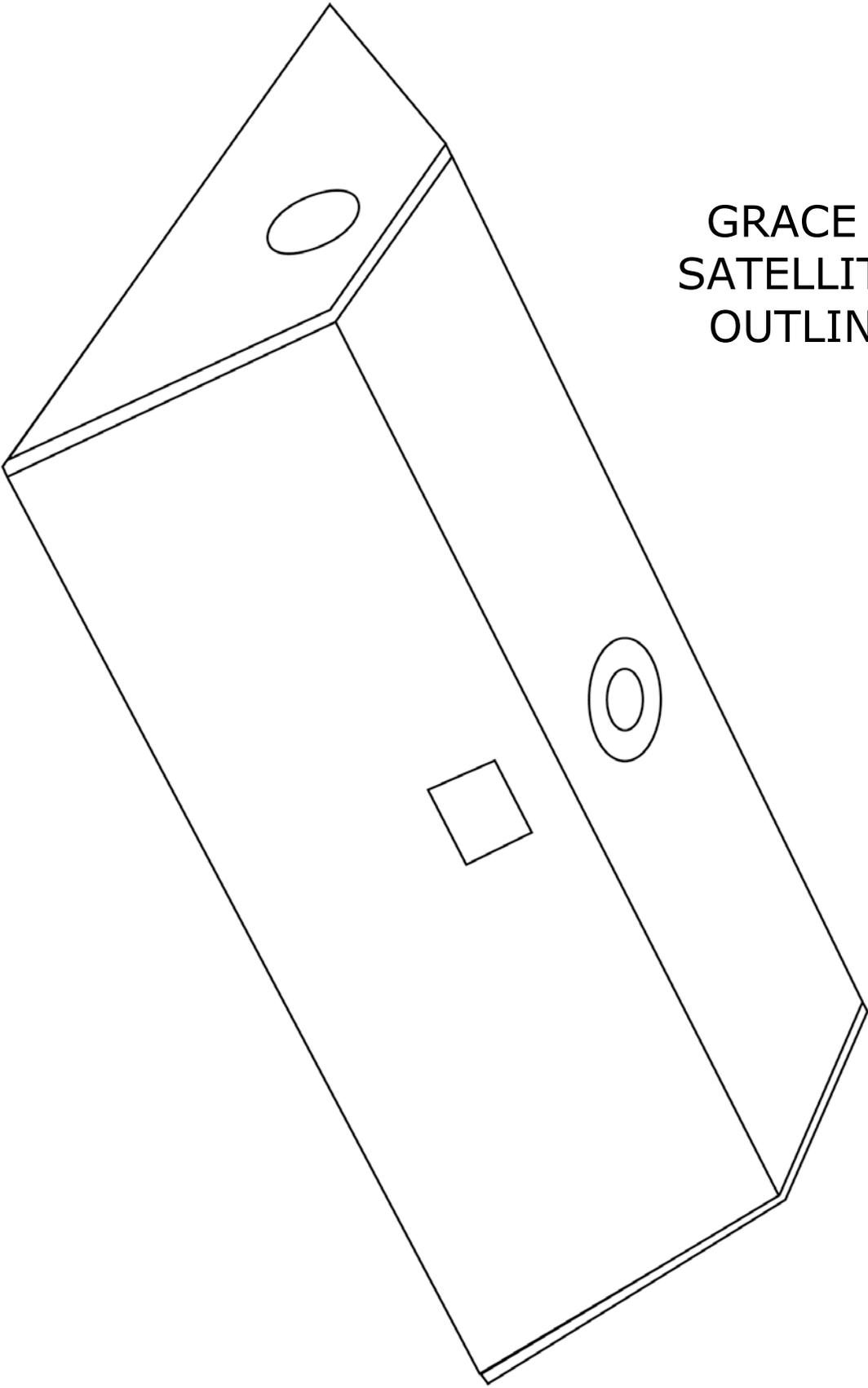
Cole, Joanna. The Magic School Bus Lost in the Solar System. Scholastic, 1990.

Hirst, Robin and Sally. My Place in Space. Orchard Books: NY, 1988.

Walker, Niki. Satellites and Space Probes. Crabtree: NY, 1998.

Websites:

- <http://www.csr.utexas.edu/grace>
- <http://www.tsgc.utexas.edu/tsgc/topex/>
- <http://athena.wednet.edu/curric/oceans/index.html>
- <http://www.EXPLORESCIENCE.com>
- <http://www.stsci.edu/EPA/Pictures.html>
- <http://earth.jsc.nasa.gov/>
- <http://nix.nasa.gov/> or <http://www.nasa.gov/gallery/photo/index.html>
- <http://octopus.gma.org/surfing/satellites/index.html>



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