



GRACE Education Curriculum Intro - SHAPES	
Teachers	Grades K-2
Science & Math	

GRACE in Shapes

Background Information: A satellite is any object that orbits or revolves around another object. For example, the Moon is a satellite of Earth, and Earth is a satellite of the Sun. Man-made satellites that orbit Earth and the Sun have highly specialized tools that do thousands of tasks every day. As scientists design a satellite they must include all instruments necessary to accomplish the job the satellite is required to do. Satellites are built in all shapes and sizes. Paper models of various satellites can be made. A paper model is available from: http://mars.jpl.nasa.gov/kids/pdfs/M01_AeroBoxColor.pdf. To view satellite photos, visit: http://vraptor.jpl.nasa.gov/voyager/I_voyager.html, <http://galileo.jpl.nasa.gov/>, or <http://ulysses.jpl.nasa.gov/>. Topy the satellite explains all about satellites at: <http://www.tsgc.utexas.edu/topex/>. A tangram is a Chinese puzzle made by cutting a piece of thin material into five triangles, a square, and a rhomboid or triangle (7 pieces) which is then capable of being recombined into many different shapes.

- Objectives:** At the end of the lesson, students will be able to:
- Understand how to use tangrams (shapes) as manipulatives.
 - Follow important directions.
 - Work cooperatively in a group setting.
 - Describe what GRACE (object in space) looks like.

Standards: Science: unifying concepts and processes; earth and space science; and science as inquiry
 Math: problem solving; measurement

Vocabulary:

tangram	satellite	manipulate
square	triangle	rhombus
trapezoid	hexagon	circle
oval		

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- Materials:**
- Shapes All Around Us Ditto
 - Tangram/shape cut-outs
 - GRACE outline
 - Glue
 - Scissors
 - Crayons
 - Stock/construction paper

Directions to the Teacher:

1. Introduce background information about GRACE and tangrams.
2. Review various shapes and their names.
3. Students will work in groups to complete "Shapes All Around Us" hand-out. Discuss how all objects have shapes.
4. Pass out tangram shapes. Students will copy these shapes on cover stock or construction paper. They should make several copies of each shape. Color each shape. The students will use original Chinese shapes or all different shapes.
5. Have students cut out the shapes. Remind them that the original Chinese tangram was 7 pieces only.
6. Pass out the GRACE outline and have students work together to use tangram/shapes to fill in the GRACE outline. Once the outline is filled in, the students will glue the shapes/tangrams to the outline for display.

Extensions:

- Encourage students to make another shape with the tangram pieces.
- Students will create new tangrams from the ditto – enlarge shapes, add different shapes, etc. and make the GRACE satellite again with new shapes.
- Build a satellite at: http://www.thetech.org/exhibits_events/online/satellite/

References/Resources:

Gonzalez-Granat, Olga. Pattern Block Patterns and Shapes. Learning Resources Inc., Vernon Hills: IL, 1997.

Complete a tangram on-line at: <http://www.kidsdomain.com/down/mac/tangram.html>

Shapes All Around Us

Directions: Answer each question below.

The whole object can be made of the shape, or the shape can be a part of the object.

Draw a picture of the object or write the word to describe it.

- Find two items that are shaped like a square in the classroom.

1. _____

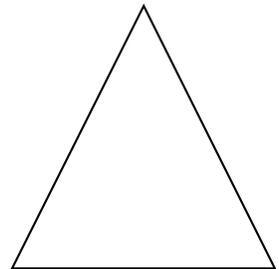
2. _____



- Find two items that are shaped like a triangle in the classroom.

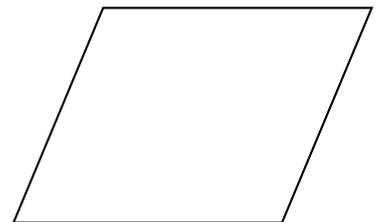
1. _____

2. _____



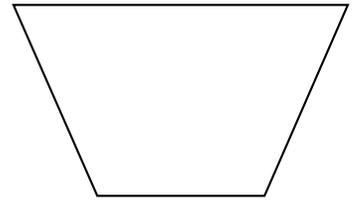
- Find one item that is shaped like a rhombus in the classroom.

1. _____



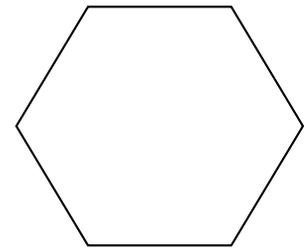
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- Find one item shaped like a trapezoid in the classroom.

1. _____



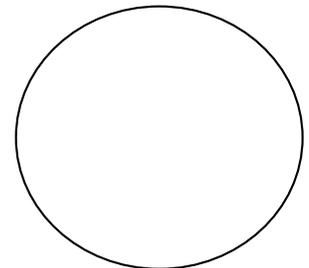
- Find one item shaped like a hexagon in the classroom.

1. _____



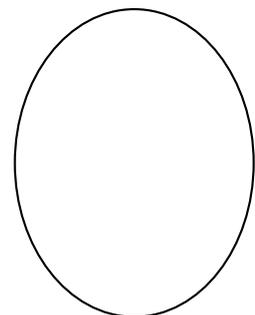
- Find one item shaped like a circle in the classroom.

1. _____

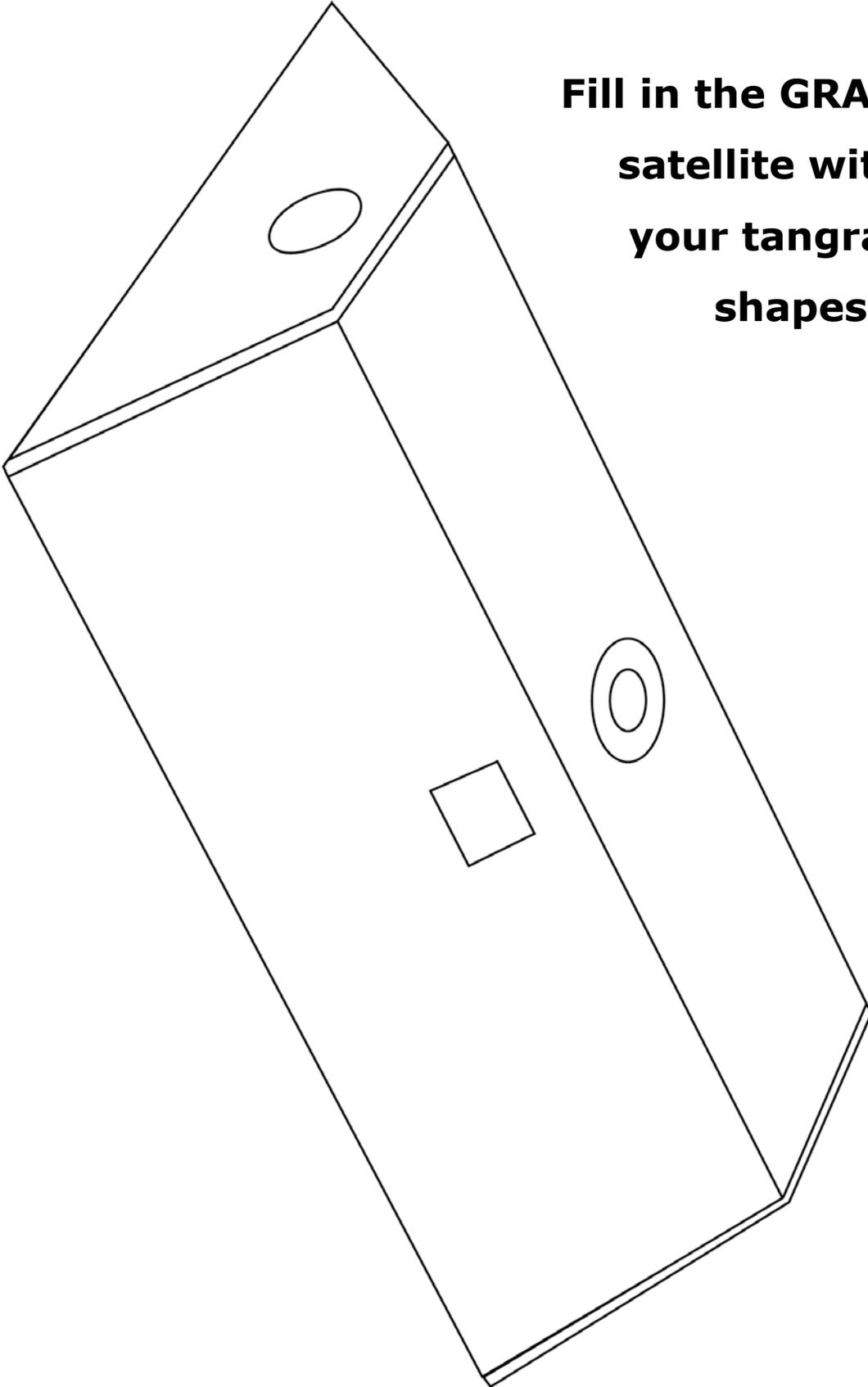


- Find one item shaped like an oval in the classroom.

1. _____



**Fill in the GRACE
satellite with
your tangram
shapes.**



Tangram Ditto Sheet

