Investigating the Geometry around Us

Susan Troutman  
Rice University School Mathematics Project  
Director of Secondary Programs  
troutman@rice.edu

Carolyn White  
Rice University School Mathematics Project  
Director of Elementary Programs  
clwhite@rice.edu
Write your name in capital letters across a large sheet of paper. Identify the geometry terms or shapes located in your name. Possible vocabulary words that can be used:

- Parallel lines
- Perpendicular lines
- Square
- Rectangle
- Triangle
- Trapezoid
- Congruent
- Obtuse angle
- Acute angle
- Right angle
- Circle
- Line segment
- Translation
- Supplementary angles
- Edges
- Vertices

EXAMPLE:
Geometry
Connections in
Art and Literature
You Will Need the Following Supplies:

- A square piece of paper
- Scissors
- Paper
- Glue stick
What are all of the possible names for this shape?

Where do you see this shape in the real world?
• Fold the sheet in half along a diagonal
• Make a sharp crease in the paper
• Unfold and cut along the crease
• Take one of the halves
• Fold it in half and cut along the crease
• How many pieces do you have?
• What fractional part is each piece of the original square?
• What can you tell me about the triangles?
• Take the remaining half and fold it so that the vertex of the right angle touches the midpoint of the opposite side

• Cut along the crease

• What shapes do you now have?
• Take the trapezoid and fold it in half

• Cut along the crease to produce two congruent trapezoids
• Take one of the trapezoids
• Fold the “toe” to the “heel”
• Cut
• What shapes do you now have?
• Fold the other trapezoid from the “heel” to the top of the “shoe strings”

• Cut

• What shapes do you now have?
• How many shapes do you now have?

• Can you put them back together to form the original square?
List some of the geometric terms we discussed while making our tangrams.
• *Grandfather Tang’s Story*
  A tale told with tangrams by Ann Tompert

• Create your own design

• Write a poem or a story to describe your design
Animal Art from a 4th level class at Mosman Public School
Exploring Polygons
How can you find the sum of the interior angles of your polygons without using a protractor?
Geometry Big Square

Arrange the smaller squares into a large 4x4 square by matching the pictures of the geometric shapes with the most appropriate terms.
Investigating Volume
Popcorn Prisms

Predict which prism will have a greater volume.
Popcorn Cylinders

Predict which cylinder will have a greater volume.
# Geometry and Measurement Scavenger Hunt

## Geometric Terms/Figures

**Examples:**
- Line segment
- Ray
- Acute angle
- Obtuse angle
- Right angle
- Parallel lines
- Perpendicular lines
- Transversal

## Two-dimensional figures

**Examples:**
- Circle
- Triangle
- Quadrilateral
- Square
- Rectangle
- Parallelogram
- Trapezoid
- Pentagon
- Hexagon
- Heptagon
- Octagon
- Nonagon
- Decagon

## Three-dimensional figures

**Examples:**
- Cube
- Rectangular prism
- Triangular prism
- Prisms
- Pyramids
- Cylinder
- Cone

## Comparing Perimeter and Area

**Examples:**
- Perimeter = Area
- Perimeter > Area
- Perimeter < Area
Geometric Terms

- Parallel lines
- Acute angle

3-D Shapes
- Rectangular prism
- Cylinder

Your Choice
- Translation

2-D Shapes
- Trapezoid
- Circle
- Rectangle
- Decagon

Comparing Perimeter and Area
- \( P = 13.0 \text{ cm} \)
- \( A = \frac{13}{2} \text{ cm}^2 \)
- \( P < A \)
- \( 40.6 < 94.9 \)
- \( P > A \)
- \( 9.2 > 5.2 \)
This presentation is based in part on a project partially funded by the Teacher Quality Grants program at the Texas Higher Education Coordinating Board (grant #531).

The Teacher Quality Grants Program is supported through federal funds under NCLB Title II, Part A.
Rice University School Mathematics Project
Houston, Texas
Website: www.rusmp.rice.edu

Susan Troutman
troutman@rice.edu
Director of Secondary Programs

Carolyn L. White
clwhite@rice.edu
Director of Elementary Programs

Session # 273