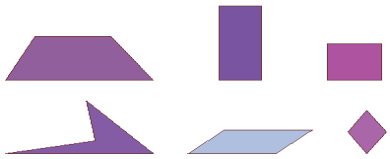
Algebra/Geometry Institute Summer 2008



Faculty Name: Bertha Tucker

School: Carver Upper Elementary School, Indianola Ms

Grade Level: 4th and 5th

Roping Quadrilaterals

1 Teaching objective: Identify, describe, compare and classify quadrilaterals.

2 Instructional Activities: The teacher will use a transparency and pattern blocks to introduce quadrilaterals. In order to familiarize students with quadrilaterals, students will play the guessing game "Question, please!" Each group of students should have a set of quadrilateral pieces spread out in front of them. The teacher will select one piece from a set of quadrilaterals, and hide it. In a clockwise manner, the teacher will call on a student in each group to ask a question. In order to determine which piece is hidden, the groups take turns asking questions that can be answered with "yes" or "no," (e.g., Does the figure has four sides?) or make an actual guess by naming a particular quadrilateral. The teams are limited to one question per turn. The team that holds up and names the hidden piece on its turn is the winner. The game can be won only by actually naming the piece. As the game proceeds, students must decide whether to risk naming a piece or asking a more general "yes" or "no" question.

Activity

The teacher will divide the class into 4 teams with 3-4 students in each team. Assign a team leader. Give each team a copy of the directions for the activity (attachment 4), read instructions with students aloud to clear up misconceptions. Continue by giving teams three pieces of yarn or plastic hoops, a set of quadrilaterals pieces (see attachment 1) in zip-lock bags, ring label (see attachment 2) in zip-lock bags, markers, and protractors to test for

right angles. Instruct students to work in teams and read the directions for the activity aloud again. The teacher will model Task 1 for students. During Tasks 2-4 the teacher circulates among the groups and asks students to defend their placement of different pieces. To facilitate this discussion, ask questions such as:

1. Why did you place that shape in that location? What characteristics does it have?
2. What do all the shapes in one ring have in common?
3. How might the shapes in one ring be different?
4. What different labels would eliminate one or more of the shapes from a ring?
5. What different label for one of the rings would allow you to include a new shape?

3 Materials and Resources

Materials

- "Quadrilaterals Pieces" (Attachment 1) 1 per team
- "Ring Labels" (Attachment 2) 1 per team
- markers (1 pack per team)
- measuring tools (1 set per team)
- chart paper (1 sheet per team)
- Pattern blocks (one set per team)
- Transparency marker
- Transparency
- Chart paper
- Attachments #3 (Answer sheet for Ring Labels)
- Attachment #4 (Directions for Attachment 1-2)
- Attachment #5 (Assessment Test)

Resources

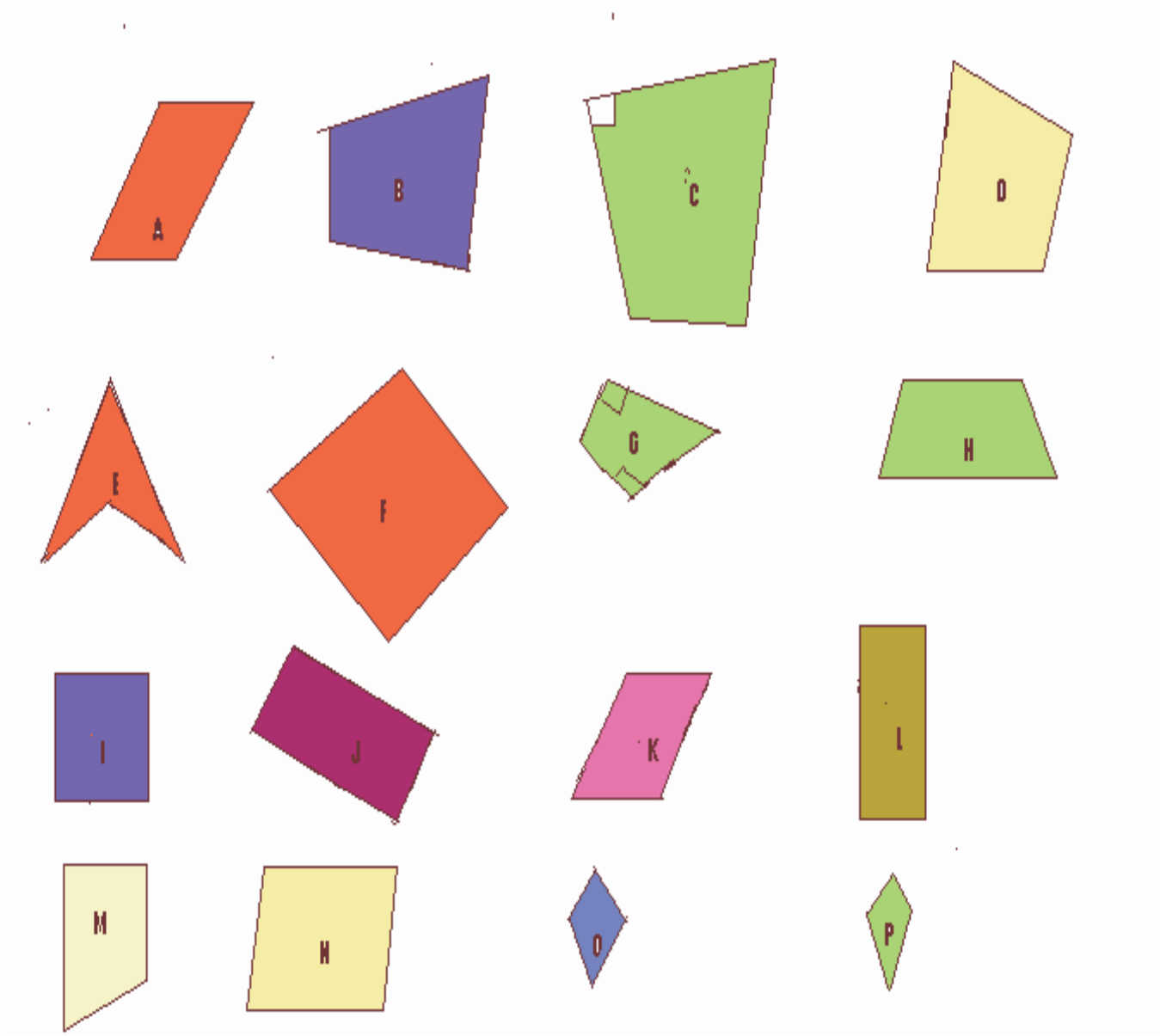
Navigating through Geometry in Grades 3-5, Reston, VA:
The National Council of Teacher of Mathematics, Inc., 2001.
pp. 22-25.

Elementary and Middle School Mathematics, Boston, MA:
Pearson Education, Inc., 2004. pp. 35-38.

4 **Assessment**

- Observe student participation and work during the activity and question, and answer time.
- Student completion of Attachment #5 for a grade.

Attachment I



Attachment 2

Task 1

At least one right angle

No right angles

Task 2

All sides the same length

At least one acute angle

Task 3

At least one set of parallel sides

At least one obtuse angle

Task 4

At least to pairs of adjacent sides equal

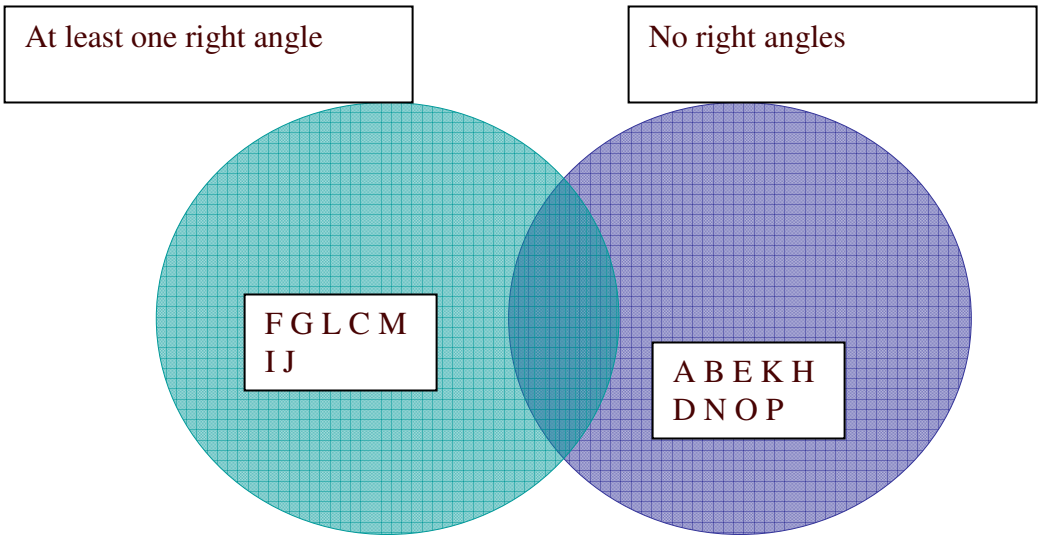
All pairs of opposite angles equal

All adjacent angles equal

Attachment #3

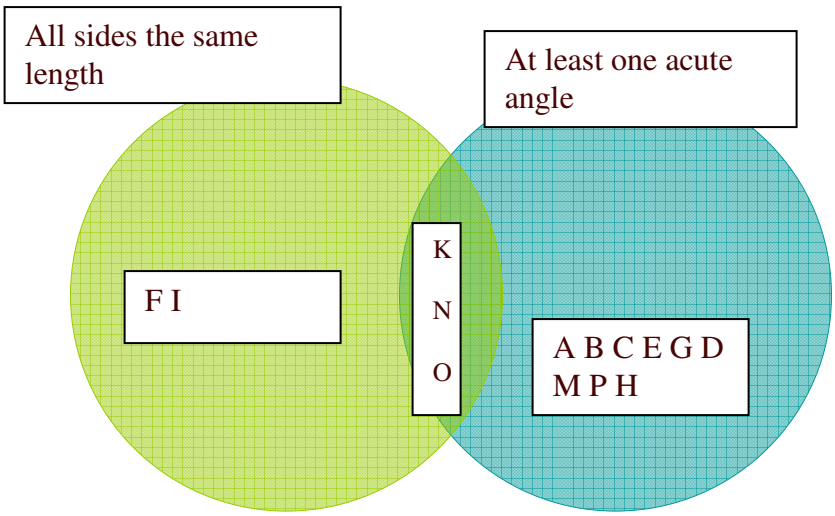
Answer sheet for Ring Labels

Task 1



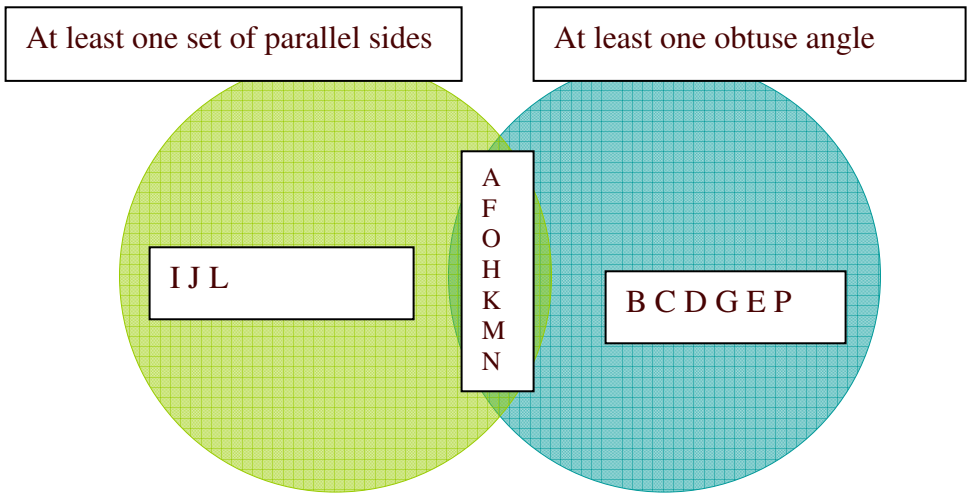
Answer sheet for Ring Labels

Task 2



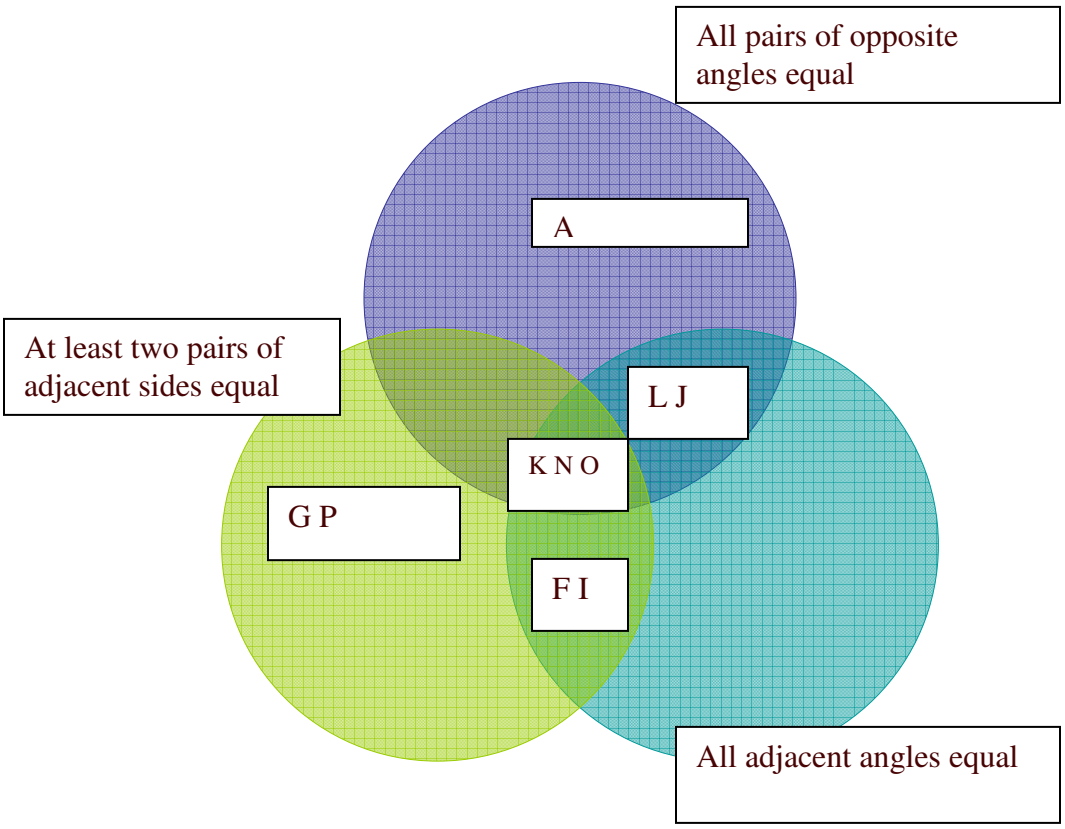
Answer sheet for Ring Labels

Task 3

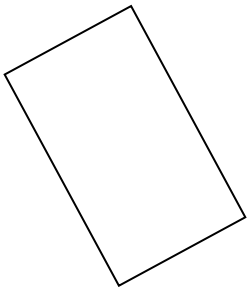


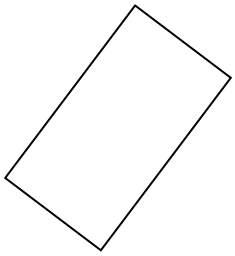
Answer sheet for Ring Labels

Task 4



Attachment 4

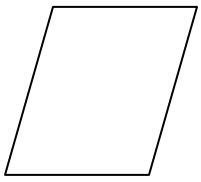


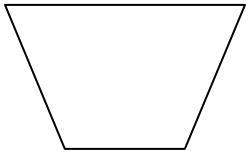


Directions for Tasks 1-4

Each team will use hoops, yarn or strings to make rings.

- Take out zip lock bags with label rings identifying the categories for tasks 1-4 (Attachment #2).
- Then take out zip lock bags with quadrilateral pieces (Attachment #1).
- Place quadrilaterals pieces in each string, yarn, or hoop according to the label.
- You may need to overlap some rings to form intersections.





Attachment 5

Assessment Test

Name_____
Date_____

Directions: Identify the figures by drawing a circle around each quadrilateral, and then write the number of angles for each.