PITTER, PATTER WITH PATTERNS (GEOMETRY, PATTERNS, AND CLASSIFICATION)

Grade Level: Kindergarten
Presented by: Carla Jennings, Marked Tree Elementary, Marked Tree, AR
Claudette Jennings, Marked Tree Elementary, Marked Tree, AR
Debbie Rye, Marked Tree Elementary, Marked Tree, AR
Length of Unit: 10 days

I. ABSTRACT
This unit will expose students to basic shapes and a variety of geometric shapes, patterns, and classifications. Students will be involved in cooperative learning groups using manipulatives and games. They will be involved in, hands-on graphing and sorting. As a culminating activity students will be making a class quilt. Students will be given white cutout shapes of material to take home and design. They will write their name and age and draw a picture of themselves. When the students return their quilt pieces, parent volunteers will begin to sew them together. When the quilt is finished, it will be displayed in the entrance of our school on Parent/Teacher conference night.

II. OVERVIEW
A. Concept Objectives
1. Students will understand that patterns are all around us.
2. Students will gain an awareness of shapes in their environment.
3. Students will have an understanding of the geometric shapes: oval, heart, diamond, star, hexagon, trapezoid, and octagon.
4. Students will gain an understanding of patterns and shapes.
B. Content from Core Knowledge
1. Square, circle, rectangle, triangle.
2. Basic shapes in a variety of common objects and artifacts (windows, pictures, books, buildings, cars, etc.)
C. Skills will be addressed in individual lessons.

III. BACKGROUND KNOWLEDGE
A. Background Knowledge for teachers
1. What Your Kindergartner Needs To Know
B. Background Knowledge to students
1. Previous knowledge of basic plane shapes will have been taught before this unit.
2. Previous knowledge of colors, numbers, and positional words will have already been taught.
3. Previous knowledge of basic addition and subtraction facts will have been acquired.

IV. RESOURCES
A. Teacher Resources
B. Student Resources
LESSON ONE: A WORLD OF SHAPES

A. DAILY OBJECTIVE
1. CONTENT OBJECTIVE
   a. Review with students the basic plane figures: square, circle, rectangle, and triangle.
2. CONCEPT OBJECTIVE
   a. Students will gain an awareness of shapes in their environment.
3. SKILL OBJECTIVES
   a. Students will recognize and name the basic plane figures.
   b. Students will identify shapes in their environment.

B. MATERIALS
1. flash cards of basic shapes
2. Teacher-made magnetic shapes (App. A)
3. Teacher-drawn bar graph (chalk board).
4. What Every Kindergartner Needs To Know
5. The Greedy Triangle

C. KEY VOCABULARY
1. square
2. circle
3. rectangle
4. triangle
5. graph
6. more, less, equal

D. PROCEDURES/ACTIVITIES
1. Read from What Your Kindergartner Needs To Know. (pp. 236-237) Review and discuss the basic plane shapes.
2. Compare and contrast the number of sides on basic shapes.
3. Discuss "Are the sides straight or round?"
4. Read and discuss The Greedy Triangle.
5. Game: "Shape Search". Dismiss students to the hall while the teacher hides magnetic shapes around the room. Upon returning to the room students will be allowed to find one shape and go quietly to his or her seat. Once all shapes have been found, the teacher will call on students to recognize shapes and identify the number of sides. With teacher assistance, the students will place their magnetic shape in the correct space of the bar graph displayed on the board. Discuss with students, more, less and equal.

E. EVALUATION
1. Students will orally name the basic plane shapes.
Lesson Two: Can You Name That Shape?

A. Daily Objective
   1. Content Objective
      a. Introduce other geometric shapes to the students.
   2. Concept Objective
      a. Students will have an understanding of the geometric shapes: oval, heart, diamond, star, hexagon, trapezoid, and octagon.
   3. Skill Objective
      a. Students will recognize and identify a variety of different shapes.

B. Materials
   1. file folders
   2. paper
   3. tag board
   4. plastic bag
   5. colored paper
   6. paper clip
   7. brad fastener
   8. Shapes, Shapes, Shapes
   9. Appendices B and C
   10. giant shape floor puzzles

C. Key Vocabulary
   1. oval
   2. diamond
   3. heart
   4. star
   5. hexagon
   6. octagon
   7. trapezoid

D. Procedures/Activities
   1. Allow free exploration with giant shape floor puzzles.
   b. Discuss with students and show visuals of non-basic shapes; similarities & differences.
   c. Call upon students to identify the non-basic shapes within the classroom.
   d. Present to the class Shapes, Shapes, Shapes by Tana Hoban.
   1. Have students search for and identify the shapes from Shapes, Shapes, Shapes.
   2. Discuss with students how to play "The Search for Shapes!" (App. B)
   3. Assign students to groups and play "The Search for Shapes!"

E. Evaluation
   1. Assess students' understanding of the variety of different shapes through "Shaping Up The Facts." (Appendix C)

Lesson Three: Make and Create Patterns

A. Daily Objective
   1. Content Objective
      a. AB patterns
   2. Concept Objective
      a. The students will gain an understanding of patterns and shapes.
   3. Skill Objective
      a. The students will create patterns by using the shapes that have been taught.
B. Materials
1. shape cutouts
2. pattern blocks
3. pattern block cutouts
4. a quilt
5. The Quilt
6. Appendix D
7. glue

C. Key Vocabulary
1. pattern
2. mathematical names for shapes; triangle, circle, square, rectangle, hexagon, octagon, trapezoid, heart, star, diamond, oval

D. Procedures/Activities
1. Allow students to have free exploration with pattern blocks. b. Discuss with students what they have discovered they can do with the pattern blocks. "Can you fit them together? Can you stack them? Can you make a wall? Can you make a pattern?"
2. Show the students a real quilt and allow them to touch it. Discuss the colors, shapes, and patterns in the quilt.
3. Read The Quilt by Ann Jonas
4. Provide students with pattern block cutouts and a blank quilt pattern. (App. D) Using the cutouts instruct students to create their own quilts by gluing on the cutout pieces.

E. Evaluation
Provide students with a variety of objects from which they can make patterns. Examples: pattern blocks, shapes, everyday objects, etc. Assign students to select two objects (with a minimum of five from each selection) from which they will create an AB pattern. Students will read their patterns aloud. Examples: Read your color pattern, (red, blue, red, blue) read your shape pattern, (circle, square, circle, square) read your object pattern, (sock, shoe, sock, shoe) etc.

Lesson Four: Patterns And Shapes To Classify

A. Daily Objectives
1. Content Objective
   a. Continuation of a pattern.
2. Concept Objective
   a. Students will gain an understanding of patterns and shapes.
3. Skill Objective
   a. Group and classify according to physical attributes.
   b. Create number patterns.

B. Materials
1. floor graph
2. individual sorting graphs
3. What’s That?

C. Key Vocabulary
1. classifying
2. sorting
3. collection
4. graph
5. similarities
6. differences
D. **Procedures/Activities**

1. Take a nature walk around the neighborhood. Instruct students to collect small rocks, leaves, pine cones, feathers, seeds, flowers, etc., and take back to the classroom. Sort and classify collected objects on the floor graph. Discuss the similarities and differences within each group. Order the sorted groups according to their attributes. (size, shape, color, etc.)

2. Compare the number of objects in each group.

3. Form groups of two to four students. Using objects from the nature walk, have students form a pattern on the classroom floor. Example: stick, rock, leaf, stick, rock, leaf, etc. Specify a specific area of the classroom for each group to make their pattern.

4. Read and discuss *What's That?* Instruct students to take two handfuls of assorted pattern blocks and sort them by shape.

5. Students place pattern blocks on individual graphs (App. E). Discuss the results of each completed graph and ask questions. Example questions: "How many blocks are green triangles? Which shape has the most pieces? How many more triangles than squares?"

6. Students may color scarecrow shape picture. (App. F)

7. Students may use blocks to fill in the block design sheets. (Appendix G)

E. **Evaluations**

1. Teacher observation and large group interaction. Record on observation checklist. (App. H)

VI. **CULMINATING ACTIVITY**

Students will be given cutout shapes of material to take home and design. They will write their name and age and draw a picture of themselves. Students will make a homemade quilt with the assistance of parent volunteers.

VII. **BIBLIOGRAPHY**

A. **Teacher Resources**


B. **Student Literature**


Magnetic Shapes

* Enlarge patterns and put on tagboard

Appendix A
The Search For Shapes!

Game Includes: Two large pages that form a game board, a spinner, and four markers.

How to Make

1. Color, cut out, and mount the two large pages that form a game board on the inside of the folder.

2. Color, cut out, and mount spinner and game markers on tag board. Attach a paper clip to the center of the spinner board with a brad fastener and use it as the pointer.

3. Cut out the game label and mount on file folder tab. Color cut out, and mount game title on front of folder. Cut out “How to Play” and mount on outside of folder. For durability, laminate the folder and game pieces. Store the game pieces in a plastic bag.

Appendix B
The Search for Shapes!

* Mount on file folder tab

How to Play: Take turns spinning the spinner and moving to the first picture on the game trail that matches the shape from the spinner. The player moves to "Finish" when there are no more spinner matches.

* Mount on outside of folder

Appendix B cont
THE SEARCH FOR SHAPES!

Appendix B cont.....
The Search For Shapes

Appendix B cont.
Shaping Up The Facts

Have a variety of colored shapes cut out of paper. Give the students the math sheet and a sheet of paper. The students will follow the directions to make their own design out of the colored shapes.

Example:
1+2 green triangles
5-2 orange circles
9-8 pink squares

Appendix C
Shaping Up The Facts

To make your design, you will need:
1+2 red ovals
1+1 blue stars
1+3 green trapezoids
2-1 yellow diamonds
3-2 orange hexagons
1+4 purple hearts
4-1 brown octagons

Assemble your shapes and see what kind of picture you can make.

Appendix C cont....
Append x F

Green  Red  Yellow  Blue
Append x G
Ability to Solve Problems

The following are criteria to consider when evaluating students

- Student understands the problem.
- Student plans and solves the problem.
- Student explains how the solution was obtained.
- Student demonstrates confidence/persistence.
- Student properly displays the results.
- Student creates similar problems.

Problem Solving

Key:
F-Fair
G-Good
V-Very Good
E- Excellent

Do Students show awareness in the following categories of Problem Solving development:

1. Understanding
   - Use Manipulatives
   - Act Out
   - Interpret Pictures
   - Ask Questions

2. Plan and Execute
   - Act Out
   - Use Manipulatives
   - Data
   - Types

3. Reflecting
   - Explain (Orally)
   - Create Problem

4. Processes
   - Suitable Solution
   - Demonstrates Confidence
   - Systematic Approaches
   - Mathematical Language

Appendix H