

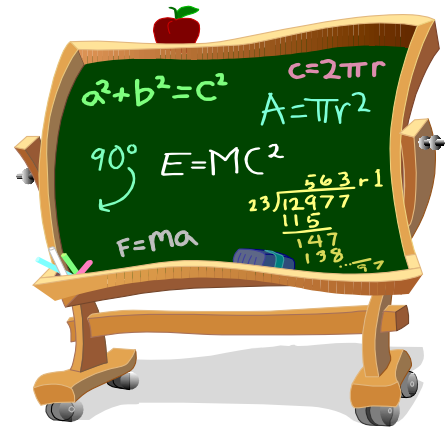
Algebra/Geometry Institute Summer 2004

Lesson Plan 1

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School: Gentry High School, Indianola, Mississippi

Grade Level: 7th – 8th



1 Teaching objective(s)

The students will explore geometric patterns and relationships.

2 Instructional Activities

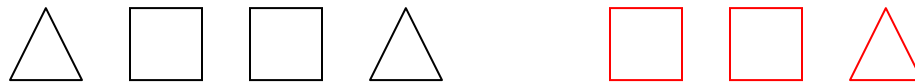
The teacher will remind the students of the previous chapter in which they identified number patterns. Ask them to try these examples at their desk. (This will refresh their memory.) Once they are finished, call on several of them to give their answers.

(3-5 minutes)

- 1, 1, 2, 3, 5, _____, _____, _____ Answer: 8, 13, 21
- 2, 4, 8, 16, _____, _____, _____ Answer: 32, 64, 128
- 3, 9, 12, 15, _____, _____, _____ Answer: 18, 21, 24
- 30, 25, 20, 15, _____, _____, _____ Answer: 10, 5, 0

Then say, “Today we are going to talk about identifying geometric patterns. Maybe *seeing* something will make finding the pattern easier for some of you. One useful strategy for solving many math problems is to look for a pattern in the information given to you. This strategy is particularly helpful when the problem involves geometric figures.”

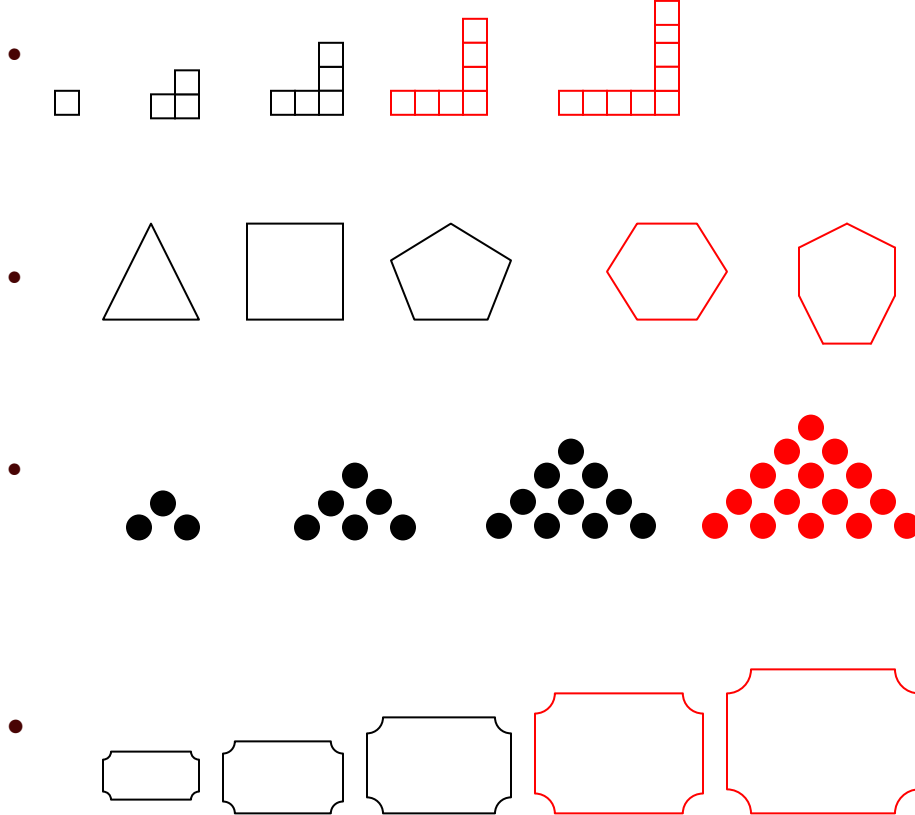
Draw the following pattern on the overhead and ask the students to look at it and think about how they would complete the pattern. (Answer in red)



After giving the students ample time to think, show them that to continue the pattern you would add two more squares and one more triangle.

(3-5 minutes)

Next, draw the following patterns on the overhead and ask them to continue the pattern by drawing it on their paper.



The teacher should walk around the classroom observing the students' progress. When everyone is finished, ask several students to put their answer on the board. For more of a challenge, ask the students to come up with their own pattern and have their neighbor complete it.

(10-15 minutes)

Divide the class into 4-5 groups. Pass out the "Make It My Way" Activity Sheets (see attached) and the Pattern Blocks to each group. (Be sure your students understand the vocabulary used on the activity sheets.) Each activity sheet will have steps to completing a geometric pattern. Have the students work cooperatively to achieve each pattern and answer the questions. When finished, each group will turn in their activity sheets. For more of a challenge, have students create their own steps and have their neighbor complete the pattern.

(20-30 minutes)

Variations of "Make It My Way" Activity:

- Copy activity sheets onto transparencies to save paper.
- Set up six centers and have the groups rotate through the centers.

3 Materials and Resources

Overhead

Markers/Chalk

Pattern Blocks

“Make It My Way” Activity Sheets

Textbook: Littell, McDougal and Houghton Mifflin; Mathematical Connections: A Bridge to Algebra and Geometry; Copyright 1997.

Resource: Creative Publications. Cooperative Problem Solving With Pattern Blocks; Copyright 1989.

4 Assessment

- As the students are working on their activity sheets, the teacher will walk around the room and observe the students. He/she will be looking for: students working together, all students are participating, and students understanding the concept.
- The activity sheets will be taken up and graded.
- The concept covered will be on the chapter test.



Name: _____

Make It My Way

Pattern #1

Using the Pattern Blocks, follow the steps below to create a geometric pattern.

Step 1: Start with one yellow hexagon.

Step 2: Add six orange square blocks around the sides of the hexagon to make a pattern.

Step 3: Add six green triangles in between the squares to complete the pattern.

Answer the following questions.

1. What patterns do you see in this geometric figure?
2. How would the pattern be different if you removed one piece? Would there still be a pattern?
3. Could this pattern continue? Explain your answer.



Name: _____

Make It My Way

Pattern #2

Using the Pattern Blocks, follow the steps below to create a geometric pattern.

Step 1: Start with one orange square.

Step 2: Add four yellow hexagons around the sides of the square to make a pattern.

Step 3: Finally, place four white rhombi in between the hexagons to complete the pattern.

Answer the following questions.

1. What patterns do you see in this geometric figure?
2. How would the pattern be different if you removed one piece? Would there still be a pattern?
3. Could this pattern continue? Explain your answer.



Name: _____

Make It My Way

Pattern #3

Using the Pattern Blocks, follow the steps below to create a geometric pattern.

- Step 1:** Start with one yellow hexagon.
- Step 2:** Add six green triangles around the hexagon to make a pattern.
- Step 3:** Next, place six blue rhombi in between the triangles.
- Step 4:** Finally, add six red trapezoids around the figure so that the longer of the two parallel sides are touching the rhombi to complete the pattern.

Answer the following questions.

1. What patterns do you see in this geometric figure?
2. How would the pattern be different if you removed one piece? Would there still be a pattern?
3. Could this pattern continue? Explain your answer.



Name: _____

Make It My Way

Pattern #4

Using the Pattern Blocks, follow the steps below to create a geometric pattern.

- Step 1:** Start with two red trapezoids so that the shorter of the two parallel sides are touching.
- Step 2:** Add one blue rhombus on the right side of the trapezoids.
- Step 3:** Add two green triangles to the sides of the rhombus, and place one blue rhombus so that it touches the two triangles.
- Step 4:** Repeat steps 1-3 to complete the repeating pattern.

Answer the following questions.

1. What patterns do you see in this geometric figure?
2. How would the pattern be different if you removed one piece? Would there still be a pattern?
3. Could this pattern continue? Explain your answer.



Name: _____

Make It My Way

Pattern #5

Using the Pattern Blocks, follow the steps below to create a geometric pattern.

Step 1: Start with twelve white rhombi. Place them in a circle so that they have one common vertex.

Step 2: Add twelve green triangles in between the rhombi to make a pattern.

Step 3: Finally, add twelve blue rhombi around the figure so that the side of a rhombus touches one side of a triangle to complete the pattern.

Answer the following questions.

1. What patterns do you see in this geometric figure?
2. How would the pattern be different if you removed one piece? Would there still be a pattern?
3. Could this pattern continue? Explain your answer.



Name: _____

Make It Your Way

Pattern: Your Own

Using the Pattern Blocks, follow the steps below to create a geometric pattern.

Step 1:

Step 2:

Step 3:

Answer the following questions.

1. What patterns do you see in this geometric figure?
2. How would the pattern be different if you removed one piece? Would there still be a pattern?
3. Could this pattern continue? Explain your answer.