

Algebra/Geometry Institute Summer 2006

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School: Grenada Middle School GRENADA, MS

Grade level: 6

Patterns

1. Teaching Objective: 1. c

The student will recognize and continue a number pattern and / or geometric representation.

2 Instructional Activity.

Distribute envelopes with numbers in it. Each envelope will contain nine cards with the numbers 0-9 on them.

Explain to the students that the envelopes hold cards with numbers on them. They are to use the numbers to try and determine what the telephone numbers will be.

Teacher will read the story "Frog Gets a Telephone". (See attachment #one)

Explain to the students that although this is a funny story that there are patterns all around us.

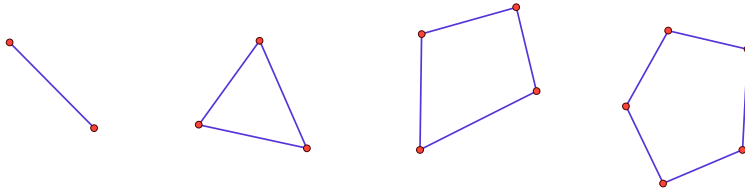
Ask the students how many patterns they can point out in the room. Do you see one on someone's clothes? As the students respond have them describe the patterns.

Tell the students that today they will work with various types of patterns.

Write the numbers 6, 11, 16, 21, ____, ____, ____, on the board. Have the students study the patterns. Ask how do you get each succeeding number? (Add 5 to each number.)

Write the numbers 36, 30, 24, 18, ____, ____, ____, on the board. Have the students study the pattern. Ask how do you get each succeeding number? (Subtract 6 from each number.)

Explain to the students that patterns are also shown in various shapes and patterns. Have the students study the various shapes. Ask what will be the next three shapes in the pattern?



Ask the students what is different about these shapes. Point out to the students that these are all called geometric shapes. Explain that the first shape is a line segment (A line segment is a connected portion of a straight line . Explain to the students that a line segment has two points or vertices.) , the second shape is a triangle (A triangle is a closed, three-sided, two-dimensional shape. Point out to the students that a triangle has three points or vertices.), the third shape is a quadrilateral (A closed, four sided, two-dimensional shape with four angles and four vertices.), the fourth shape is a pentagon (A five sided polygon. Point out that a pentagon has five points or vertices.), the fifth shape is a hexagon (A six sided polygon. Point out that a hexagon has six points or vertices.) , the sixth shape is a heptagon (A seven sided polygon. Point out that a heptagon has seven points or vertices.) The seventh shape is an octagon (An eight sided polygon. Point out that an octagon has eight points or vertices.).

Explain to the student that there are shapes all around. We will see shapes and patterns every day.

Explain to the students that they will complete two worksheets. The first worksheet will consist of 5 problems. (Attachment #2) They are to study the problems and determine the pattern used for each problem. The second sheet contains 4 word problems. Again they are to read the problem, study it and determine the answer to the pattern.(Attachment # 3)

3. Materials and Resources:

Greenburg, Dan: [30 Wild and Wonderful Math Stories](#)

Glencoe Mathematics Course 1 Glencoe McGraw – Hill 2004 ed .

Exploring Mathematics Scott Foresman 1994 ed .

handouts: Attachment # 1, Attachment # 2, Attachment #3, Attachment #4
colored markers

copy paper

envelope with numbers inside

envelope with cards inside with dot patterns on them

attribute blocks

4. Assessment:

Students will be given a work sheet with various problems to complete (See attachment #2). Upon completing the work sheet tell the students that now they are now ready to create a pattern on their own. Explain to the students that they are to use the attribute blocks and create a pattern. Distribute the attribute blocks, sheets of paper, and markers for the students to use. Tell the students to use their imagination.

Explain to the students that they now will receive a second envelope. This will be an enrichment activity. Explain to the students each envelope will contain five cards, 3 will have dots on them and 2 will be blank cards. You are to take the envelope and find the pattern in the cards and complete the following two cards in the sequence (See attachment #4).

Attachment # 1

Frog Gets a Telephone

In “Frog Gets a Telephone”, by Dan Greenburg (Scholastic Books), frog is excited about having the only telephone in the pond. As the story begins frog is trying to figure out the pattern for a telephone number to Frank’s Pizza. Frog found a paper with the first six numbers on it. Someone had torn the seventh number off.

As frog continues to try and figure out the number he has help from his friends. None of frog’s friends know what pizza is but they say it must be good because Frank delivers.

As the story continues frog receives a phone call. Frog replies the old pond, frog speaking. The speaker wants to know where the old pond is. Frog tries to explain. The speaker asks frog what is his number. Frog does not know his number. The speaker only knows nine of the digits. Another friend begins to find the pattern for frog’s phone.

Frog needed to know the number to the pizza place but the only number he had was “108-642”. Everyone in the pond knew that if you are to call you will need seven numbers to call the pizza place. Frog needed help. He must find the number.

When frog received his telephone call the person on the other end of the line knew that he called the numbers 147-126-105 but he could not remember the rest of frog’s phone number. Frog needed help again he must find out what is number is. Everyone in the pond knew that frog needed help. What will frog do?

1. What pattern do you see in the telephone number?
2. What do you predict the next number in the pattern will be? What number will frog dial?
3. If Frog dials this number, will he be certain to reach Frank’s Pizza? Why or why not?
4. How many numbers does Frog need to dial before he is sure to reach Frank’s Pizza?
5. What is the next number in the pattern?
6. Including the area code, what is Frog’s complete telephone number?
7. What are the next four numbers in the pattern?

ATTACHMENT #2

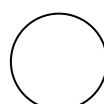
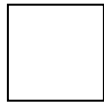
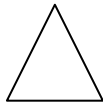
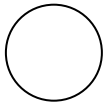
1. 7, 5, 7, 5, _____, _____, _____

2. 64, 32, 16, 8, _____, _____, _____

3. 42, 40, 38, 36, _____, _____, _____

4. 1, 2, 4, 7, _____, _____, _____

5.



ATTACHMENT #3

1. Mario hammered 48 nails in 3 rows. How many nails did he use for each row?
2. A photographer arranged students into 4 rows for a class picture. If there are 28 students in the class, how many were in each row?
3. Sue and her friends made a pyramid in the gym class by climbing onto each other's back. If there were 6 students in the pyramid, how many rows were there?
4. For the school carnival, Regan stacks milk cans in a triangle for the Softball Game. She has 10 cans. How many rows can she make in the triangle?

Attachment #4

Example of cards in envelope.

