Algebra/Geometry Institute Summer 2008

Patterns Patterns Everywhere

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Robinsonville Elementary

Grades 3 - 4

1 Teaching objective(s)

-Recognize and continue a number pattern.
-State a rule to explain a number pattern.

2 Instructional Activities

-The teacher will see what prior knowledge students have about patterns by asking the following questions:

1. What is a pattern?
2. Where do you see patterns?
3. Do you think patterns are important, why or why not?

-The teacher will then discuss with students what a pattern is and talk with students about how patterns are used. The teacher will bring in a quilt to use as an example and allow students to find different patterns on the quilt. (see figure below)

-Write the following number pattern on the board: 2, 4, __, __, 10, 12, __ discuss the pattern with students. Talk with students about what was done each time to get to the next number. Some responses may be add 2, count by 2, skip 1, etc.

-Explain to students that add 2, count by 2, and skip 1 are some examples of different rules for patterns. Tell students that every pattern has a rule and that knowing the rule helps you to extend the pattern. For example in the pattern 2, 5,

8, 11, and 14 the rule is add 3 or skip 2. Explain to students that because we know the rule is add 3 we can extend the pattern, meaning we know that 17, 20, and 23 will be the next three numbers in the pattern sequence.

- Review with students the information discussed previously about patterns to see if students understand what patterns are and how to find the rules. Line up students and take them on a pattern walk throughout the school. Students will identify the different patterns they see throughout the school.

-When students come back to the classroom from their pattern walk, the teacher will divide students into groups of four. The teacher will provide students with a sample of the activity that they are getting ready to do. Each group will be given chart paper. Tell students to write the patterns they saw throughout the school and some of their own on the chart paper. Tell students to write a rule for each one of the patterns they created. The teacher will monitor as they complete the group activity and assist when needed. After students have completed their patterns allow students to rotate to each group to figure out the rule for each pattern in each group. The teacher will collect the chart paper from each group and grade it.

- After completing the group activity, the teacher will assess students independently using a teacher made test on patterns.

3 Materials and Resources

Overhead Projector
Quilt
Chart Paper
Markers
Whiteboard

Resources

Bassarear, Tom. *Mathematics for Elementary School Teachers:* New York: Houghton Mifflin Company, 1997.

Grober, Keith. *Mississippi MCT2 Coach Gold Edition Grade 4:* New York: Triumph Learning 2008, Pages 124-126.

4 Assessment

*Students will be assessed using teacher made test.
*During group work the teacher will walk around the room and observe what students are doing to see if they have an understanding of patterns.
*Grading patterns from pattern walk

Name_____ Date_____

Number Patterns

1.

Number of Squares	Number of Line Segments
6	24
7	28
8	32
9	36

The chart above shows the number of line segments needed to draw a number of squares. How many line segments do you need to draw 11 squares?

A. 44
B. 41
C. 42
D. 46

2. What is the missing number in the sequence?

73, 67, 61, ____, 49

A. 56
B. 55
C. 54
D. 53

3. Suppose 36 is the output of a function table with a function rule of (x6). What was the input?

A. 216
B. 7
C. 36
D. 6

4. What is the next number in this sequence?

93, 90, 87, 84, 81, 78, _____

A. 72
B. 74
C. 76
D. 75

5. What rule completes the input-output table?

INPUT	FUNCTION RULE	OUTPUT
6	?	12
10	?	20
15	?	30

A. + 4
B. ÷ 3
C. – 2
D. x 2

6. What is the missing number in this sequence?
83, 183, 283, 383, ____, 583

A. 533
B. 683
C. 483
D. 484

7. What is the missing output in the following table?

INPUT	OUTPUT
34	31
26	23
25	22
17	?
15	12
9	6

A. 51
B. 28
C. 14
D. 20

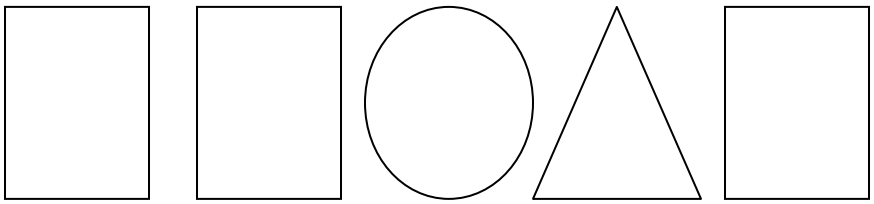
8. Which pattern follows the same rule as the pattern below?
36, 28, 20, 12, 4

A. 38, 31, 24, 17, 10
B. 50, 41, 32, 23, 15
C. 79, 47, 31, 23, 15
D. 47, 39, 31, 23, 15

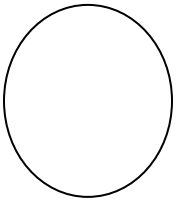
9. What is the missing input in the following table?

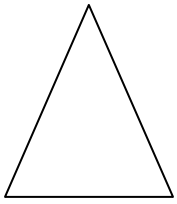
INPUT	OUTPUT
2	12
?	30
8	48
13	78
15	90
19	114

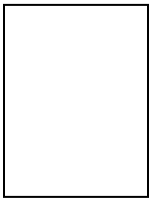
A. 6
B. 11
C. 4
D. 5

10. 

What is the next shape in the pattern?

A. 

B. 

C. 

Answer Key

1. A
2. B
3. D
4. D
5. D
6. C
7. C
8. D
9. A
10. C