Date: March 31, 2010 – April 1, 2010 **Subject:** Algebra
Grade: 7

Unit: Nonlinear Functions and Polynomials

Lesson: Applying Quadratic Functions in Geometry: "The Birthday Party Table"

Source: www.illuminations.nctm.org

Student Teacher: Irma Crespo

Objective (Purpose):
Apply the concept of quadratic function in geometry.

Michigan Curriculum Framework: Content Standard 1 and 2 for Middle School
***GLCE*:** A.PA.07.04; A.PA.07.05

Materials:
pens, pencils, papers, activity and practice worksheets, graph papers, calculators

Procedure:

Anticipatory Set

- The routine of homework checking is implemented.
- The teacher talks about birthdays and asks students how they celebrate them.
- A connection is made to the current lesson, which has the "birthday" theme.

Questions to Check for Understanding
The lesson is accentuated on making students realize the difference between linear and quadratic functions by incorporating the concepts of perimeter and area in geometry.

Questions involve identifying the patterns of linear and quadratic functions in problem solving involving perimeter and area.

Modeling/Guided and Independent Practice

- The activity worksheets (grid paper, Patterns As Birthday Tables, and Birthday Party Table examples) are distributed to students.
- The teacher asks a student to read the problem on "Patterns As Birthday Tables."
- Students are then, advised to look at the "Birthday Party Table" examples. The teacher explains the illustrations and even goes further by demonstrating the same ideas on grid paper.
- After the modeling, the teacher poses the question on how many students can be seated on a 1 by 1 table? 2 by 1? 1 by 2?
- Then, the teacher raises the question to "What is the area of a rectangle with a perimeter of 18?"
- The teacher gives several examples to find the area given the perimeter 18.

- Students are instructed to complete the table individually for 15 minutes. Afterwards, they are to compare their tables to students next to them.
- A whole class discussion follows: which rectangles used the most number of tiles? The least number of tiles? How many tables does Tanya need for 18 children?
- The teacher also inquires on what patterns the students observe on the table they completed.
- Graphing papers are distributed.
- Students graph "Area vs. Length" and "Length vs. Width." A description of each graph is required.
- A recitation follows graphing.
- The activity worksheets are turned in for grading.

Closure Activity

- The teacher provides a summation of the lesson by reiterating the differences between the linear and the quadratic features of the tables and the graphs.

Extension and Application

The students respond to the exit slip questions: Is the graph of "Area vs. Length" linear or quadratic? Is the graph of "Length vs. Width" linear or quadratic? This is turned in for assessment.

Behavior Management Strategy

- Mix of lecture, interactive discussion, and grouping for differentiated instruction.
- The guided practice reinforces the concept during the interactive lecture.

Assessment of Objectives

1. Evaluation of Student Learning

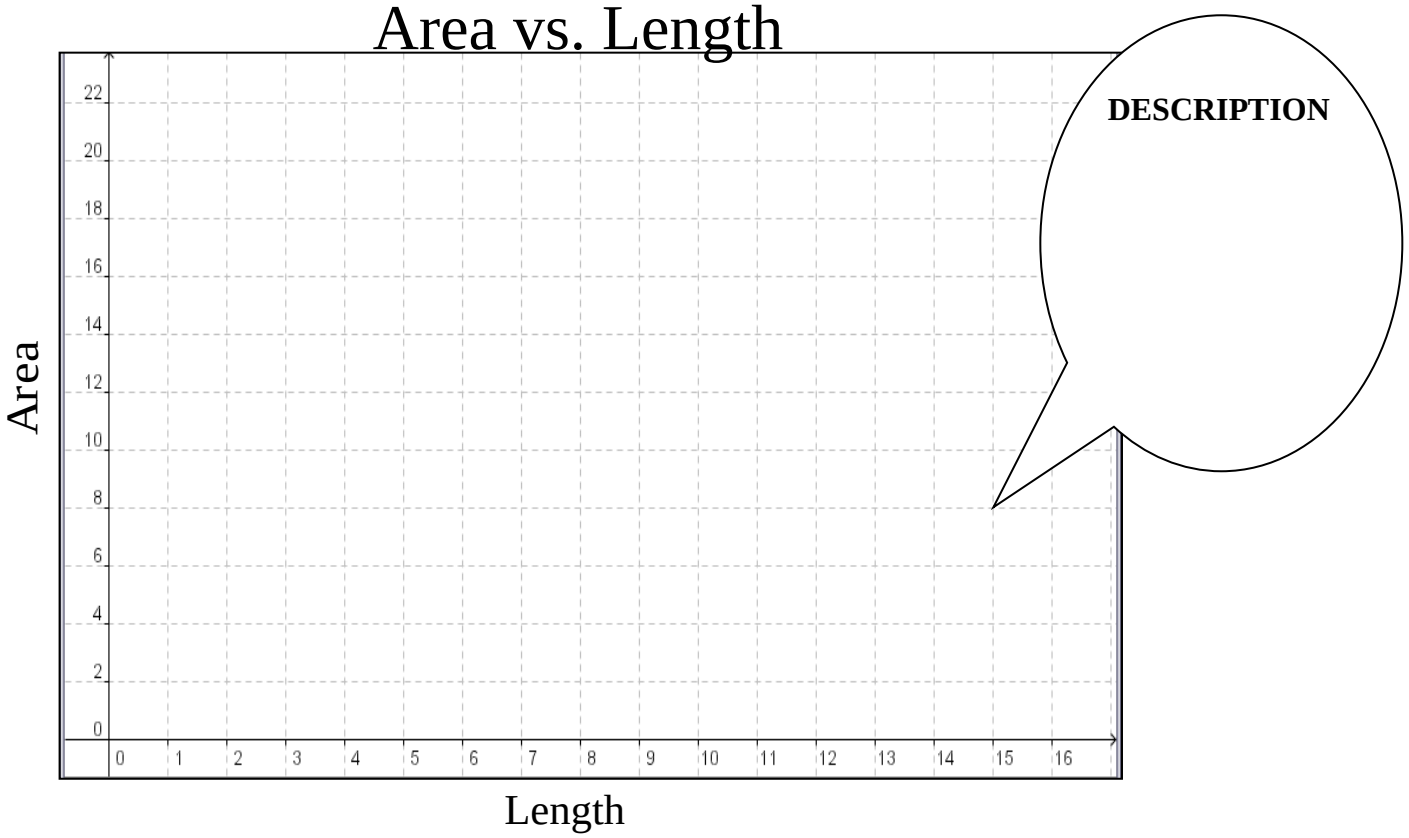
The teacher evaluates how much the students learned through the exit slip and the practice worksheets, which fulfill the GLCE and MCF standards on nonlinear functions.

Attachments: Activity and practice worksheets

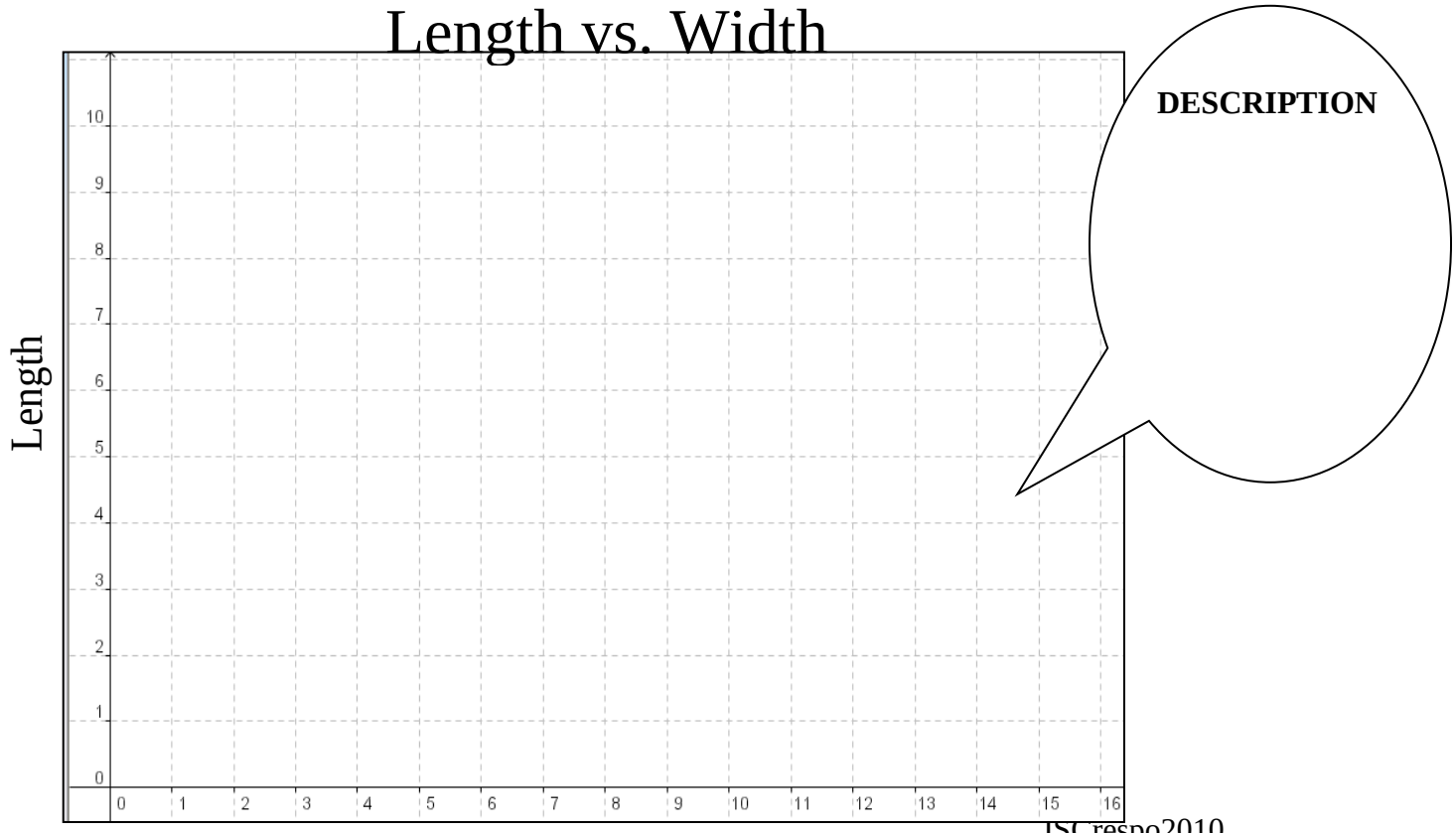
*

Name_____ Date_____ Hour_____

Area vs. Length



Length vs. Width



Birthday Party Tables

EXAMPLES

Card Table

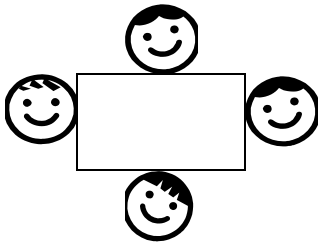
AREA

Child

PERIMETER

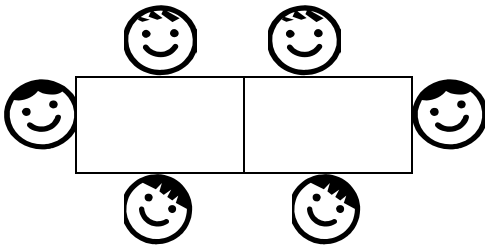
RULE: Only one child could sit on each side of the table.

1 x 1



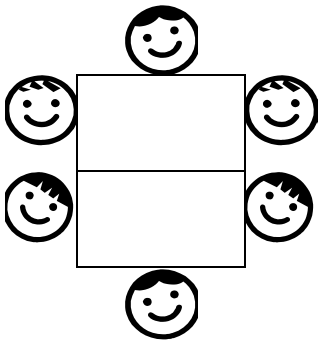
One card table sits 4 children.
AREA = 1 unit; PERIMETER = 4 units

2 x 1



Two card tables sit 6 children.
AREA = 2 units; PERIMETER = 6 units

1 x 2



Two card tables sit 6 children.
AREA = 2 units; PERIMETER = 6 units

Grid Paper

NAME _____