The College at Brockport: State University of New York
Digital Commons @Brockport

Lesson Plans | CMST Institute

8-6-2006

Quadratics using Stella

Sandy Zalewski
The College at Brockport

Follow this and additional works at: http://digitalcommons.brockport.edu/cmst_lessonplans

 Part of the Physical Sciences and Mathematics Commons, and the Science and Mathematics Education Commons

Repository Citation
Zalewski, Sandy, "Quadratics using Stella" (2006). *Lesson Plans*. 201.
http://digitalcommons.brockport.edu/cmst_lessonplans/201

This Lesson Plan is brought to you for free and open access by the CMST Institute at Digital Commons @Brockport. It has been accepted for inclusion in Lesson Plans by an authorized administrator of Digital Commons @Brockport. For more information, please contact kmyers@brockport.edu.

Lesson Plan Template

Name: Sandy Zalewski

Grade level(s)/Subject taught: Math 8

Objectives:

Students will be able to identify points on the graph and explain what they represent
Students will be able to find the maximum area, dimensions of specific rectangle and the perimeter using the graph and a table

Mathematical Concept:

8.A.15 Understand that numerical information can be represented in multiple ways: arithmetically, algebraically and graphically
8.R.7 Investigate relationships between different representations and their impact on a given problem.

Materials:
LCD Projector
Laptops or hold class in Computer Lab
Powerpoint - Graphing Quadratics using Stella
Warm Up - Quadratics using Stella Warm Up
Classwork Sheet – Quadratics using Stella Classwork
Homework – Quadratics using Stella Homework

Warm Up:
Review evaluating equations and graphing

Launch:
Demonstrate how to used the Stella model

Explore:
Students will work in pairs to complete the class work and follow up

Summary:
Have students share solutions and explain how they found them.
Review what is meant by the maximum area and how it is shown in the table and the graph
Review what how to find the dimensions of a rectangle given the length and area
Review two ways to find the perimeter from the length and area

The main objective of this lesson is to understand how to read the graph and understand what each point on the graph represents. In the previous lessons we have created tables and graphs for rectangles with a fixed perimeter. In this lesson we will have Stella create the graph and table and then students can answer questions about the graph. In the follow up they will look at a table to answer questions and use Stella to check their answers.

The lesson will start with a warm up. The warm up is a review on how to evaluate an equation, create a table and graph the data from a table. This should take 5 -10 minutes. I will ask for student volunteers to come to white board (I use the LCD to project my PowerPoint on the white board) to share the solution to the table and the graph of the data.

Next, I will introduce the Stella tool and explain how to use it. The tool is very simple, so this will only take a couple of minutes. We will review the variables (length and area) in the problem to make sure students understand the data that is being graphed..

During the explore time, students will follow the class work sheet and use the table and the graph from the Stella model to complete the assignment. Students will work with a partner or two depending on availability of computers. As students are working, I will be walking around to help struggling students, keep students focused and assess student learning. I will also listen for confusion or discoveries that should be discussed in the summary. This should take about 20 minutes.

In the summary, I will ask for student volunteers to share the special features and shape of the graph. If no one mention I will make sure to emphasize the symmetry of the graph. We will also discuss how these features show up in the table. Next, I will display the Stella model using a perimeter of 80 and ask questions to check for understanding of the point on the graph. For example, if the area is 300 square meters what is the length of the side? What are the dimensions of a rectangle with an area of 400 square meters? This should take about 10 – 15 minutes. A homework assignment will be given to further reinforcement the lesson.

Rubric:

10 points Individual Grade

10 – All questions are complete and all answers are reasonable
9 – 90% of the questions are complete and reasonably answered
8 – 80% of the questions are complete and reasonably answered
7 – 70% of the questions are complete and reasonably answered
6.5 – 60% of the questions are complete and reasonably answered
5 – 50% or less of the questions are complete and reasonably answered
0 – No attempt was made to answer any questions