



LESSON

Ozobot Quadratics Project

CREATED BY

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TOPICS

Robotics, Programming,
Mathematics

AGES

Grades 9-12

METHOD

Color Codes

DURATION

2-3 Class Periods

Ozobot Quadratics Project – Teacher Notes

Prerequisites: students have already had the lesson over Quadratics and their attributes as well as graphing Quadratic functions. Students also need to be able to free hand code the Ozobots.

Activity: Students will get a quadratic equations from the teacher of the selected problems. The problems were based on a standard piece of chart paper. In order to utilize the most paper, I had some groups scale the x and y axis differently. The more 'spread' out the graph, the better to get the vertex coding correct.

Students completed a rough draft.

All students did the same codes and had to do it free hand. You could provide blank coding templates as well. Students who needed to correct their code were given a small piece of white paper to correct it and tape over. They were encouraged to practice their codes before putting it on the chart paper.

Objective: You will create a poster on grid paper of a quadratic equation coded for Ozobot to travel. You will use your knowledge of Quadratics to identify and code the following attributes of a quadratic function:

1. You will pick one set of reflected points that Ozobot will change his speed at.
2. At the solution point(s) he will perform a tornado.
3. At the vertex he will need to flash red.

You may include any other code(s) you wish but it must include the ones listed above.

****Remember that we read the graphs from left to right. Pay attention to order of operations****

Materials: Ozobot, markers, rubric per student, equations, chart paper, graph paper for rough draft, pencil, graphing calculator (if necessary), blank white paper for correction, blank Ozobot code templates (available here for free:

<https://www.teacherspayteachers.com/Product/Ozobot-Practice-Sheets-3128004>)

Additional Project Tips: More specifics about the project and some videos of the completed work can be found here:

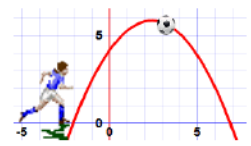
<http://mrsrichmath.blogspot.com/2018/02/ozobotting-quadratics.html>

Absent Students: For these students, they completed an individual project on graph paper and had to write the correct coding on it in the correct places including accounting for time to execute the code.

Student Rubric and Equations:



Ozobot Quadratics Project – Major Grade



Your Name _____

Group Member Name(s) _____

Your equation: _____

Objective: You will create a poster on grid paper of a quadratic equation coded for Ozobot to travel. You will use your knowledge of Quadratics to identify and code the following attributes of a quadratic function:

1. You will pick one set of reflected points that Ozobot will change his speed at. Make the first one a slower code so he does not mess up the rest of your coding.
2. At the solution point(s) he will perform a tornado.
3. At the vertex he will need to flash red (you will need to make this about an inch long).

You may include any other code(s) you wish but it must include the ones listed above.

****Remember that we read the graphs from left to right so Ozobot will follow this direction. Pay attention to order of operations in your coding****

Points Scored:

On the poster you need the following items:

Quadratic Function you were assigned (5 points) _____

Quadratic Function graphed accurately and drawn neatly (20 points) _____
(minimum of 7 points graphed, appropriate axis scaling, curved at vertex, etc.)

Axis marked, labeled, and scaled **in pencil** (5 points) _____

Axis of symmetry labeled with equation **in pencil** (5 points) _____

Table of coordinate points (10 points) _____

Solutions (both written and graphed) (10 points) _____

Ozobot Coding (30 points)
(Is it in correct place/accurately execute code, does it work consistently, did it need corrections, etc.)

1. Reflected points where Ozobot changed speed _____

2. At the solution point(s) he will perform a tornado _____

3. At the vertex he will need to flash red _____

Individual Participation in Group (15 points) _____

Total Score: _____

Ozobot Quadratics Project – Equations

$$y = x^2 - 2x$$

$$y = -\frac{1}{4}x^2 - 2x$$

$$y = -x^2 + 4x - 3$$

$$y = -x^2 - 2x + 3$$

$$y = \frac{1}{4}x^2 - 4$$

$$y = x^2 - 8x + 12$$

$$y = -\frac{1}{2}x^2 - 2x$$

$$y = x^2 + 6x + 5$$

$$y = -x^2 + 8x - 12$$

$$y = \frac{1}{2}x^2 - 8$$

$$y = \frac{1}{4}x^2 - x - 3$$

$$y = 2x^2 - 4x - 6$$