Odd Parabola Out

Lesson Overview

In this lesson, students will use knowledge learned about the coefficients of a quadratic equation to predict which of three equations' graphs would be the "odd one out" and then explain why.

Standards Addressed

F.BF.3   Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.

Disciplinary Literacy Best Practices

Give Me 5
Odd One Out

Lesson Plan

Time Required: One 60-minute Class Period

Disciplinary Vocabulary: Parabola, Coefficient, Quadratic Equation

Materials Needed:

- Odd One Out Parabola Sheet (1 Per Student)
- Pencil (1 Per Student)

Assessment: Finished product of "odd one out "sheet, group dialogue

Engage

- o *Prior to this lesson students will need an introduction of how coefficients of a quadratic equation affect the look of a parabola. This lesson, therefore, would be a follow-up lesson prior to sketching graphs of parabolas.*
- o Focus Question: "Give me five things that we have learned about parabolas so far."
- o Students will use what they have learned about parabolas from previous lessons to respond to "Give Me Five".

Explore

- o For the main lesson, divide the class into groups of 4 and have them complete an odd one out sheet.
- o First, individually each student should select which of the 3 equations does not go with the others.
- o Second, they should discuss with the group the different possibilities and come up with a final decision.
- o Finally, they will put a justification response as to why they chose that particular one.

Explain

- o Each student group will explain their choices for the "Odd One Out" during whole group discussion.

Extend:

- o Students will revisit their charts and identify which other equation might have been chosen as the "Odd One Out" and why. (Any of the three equations may be selected depending on the justification.) This gives the opportunity not only to share within their groups but compare it to what other groups did as well.

Teacher Reflections and Biographical Information

The lesson went extremely well. I was very pleased with all of the positive dialogue among students. Since the activity had many abstract ideas to it, it gave the students lots of choices which they enjoyed debating about with one another. The outcome was that this class remembered and could recall the material afterwards far better than any previous class.

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Name: _____   **Date:** _____

Odd One Out: Parabolas

Directions: For each of the following sets of equations, determine which one is not like the rest. Justify your choice in the final column.

1.	$y = x^2$	$y = 2x^2$	$y = -5x^2$	
2.	$y = 5x^2$	$y = 3x^2$	$y = \dfrac{1}{2}x^2$	
3.	$y = 2x^2 + x + 3$	$y = 3x^2 - x + 4$	$y = 9x^2 - x + 7$	
4.	$y = -5x^2 - 10$	$y = -x^2 - 1$	$y = -x^2 + 2$	
5.	$y = \dfrac{1}{3}x^2 + 7$	$y = \dfrac{1}{4}x^2 - 8$	$y = 5x^2 - 7$	
6.	$y = 9x^2 + 2$	$y = 3x^2 - 3$	$y = 2x^2 + 4x$	