

Lesson plan for *Equation Grapher*: Linear and Parabolic Graphing

Time for activity 20-30 for each of the two lessons

Learning Goals: Students will be able to:

- Sketch how the graph of a line changes as b and c vary ($y=bx + c$)
- Predict how a line graph will look given an equation in other forms.

Learning Goals for the second lesson: Students will be able to:

- Sketch how a parabola changes as a , b , and c vary ($y=ax^2 + bx + c$)
- Predict how a parabolic graph will look given equations in other forms.

Background:

This could be used in many levels. The lesson could be used to help the students construct understanding of the coefficients (I am calling the constant a coefficient to help simplify the vocabulary) or reinforce the concepts as part of a review. Since students don't know the vocabulary well, the lesson uses the a,b,c notation and then has questions to help them generalize to other common forms of linear equations. I didn't put any problems where the equation needs to be rearranged.

Equation Grapher Introduction:

Depending on whether or not the students have used any of the simulations, I might show them the save feature.

Lesson:

The students will need graph paper, straight edge and colored pencils (crayons or markers). I would have the students fold their graph paper in fourths so that they have 8 parts to work on. I insist in my class that every time the students draw a graph that they write the equation next to it and I would remind them when they start. (So I haven't written in the directions to write the equation next to the lines.)

I wrote this for the students to work in pairs so that they can talk about their understanding.

Sometime during the lesson or afterwards, students should be introduced to the vocabulary used by mathematicians. The numbers in front of variables are called coefficients and the number with no variable is the constant. In an introductory class, calling the numbers all coefficients would be appropriate until the students understand what the values do.

The learning goals and lessons have divided into 2 days. I would assign book problems for individual practice after each activity. The level of the class would determine the amount of practice between the first and second lesson.