Student directions *Equation Grapher* activity 1: Linear graphs
20-30 minutes untested

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.

Work with a partner on this activity to share ideas and paper. Remember that talking about your learning helps you understand and recall what you learn. Use one part of your graph paper for each number.

1. Sketch the line y=0 on your graph paper.
    a. Use a different color to draw what you think y=1x will look like.
    b. Use the *Equation Grapher* simulation to check your idea. Make corrections if necessary.
    c. Design and do experiments to test how changing the number in front of x changes the look of lines.

2. Your friend, Joe, asked you to help them with his graphing homework. What would you tell Joe to help him use the number in front of x? Draw graphs that would help you explain the idea to Joe.

3. Use a new part of your graph paper to sketch y=0 in black again.
    a. Use another color to predict what y=1 will look like.
    b. Use the *Equation Grapher* simulation to check your ideas. Make corrections if necessary.
    c. Design and do experiments using the simulation to test how changing the last number changes the look of lines.

4. Your friend, Mary, heard that you helped Joe understand graphing so she asked to you to help her. What would you tell Mary to help her use the number at the end of the equation? Draw graphs that would help you explain the idea to Mary.

5. Bob is trying to graph the line y = 2 + 1/2x. He can't understand how this problem fits with the lesson because the x isn't at the beginning of the equation.
    a. What could you tell Bob to help him?
    b. Sketch what you think the graph will look like.
    c. Use the sim to check your graph and then make any corrections.

6. Practice what you have learned by sketching these graphs. Check each using the simulation.
    a. y = 3x-2
    b. y = 2x+3
    c. y = -1 + 1/3x
    d. y= 2x + 4
    e. y=1/4x-2