



# Graphing Linear Equations

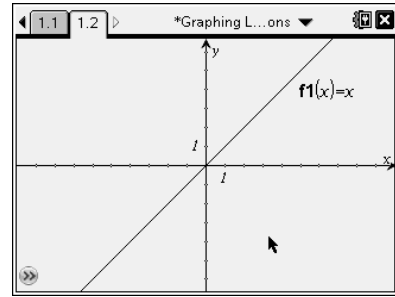
## Student Activity

Name \_\_\_\_\_

Class \_\_\_\_\_

Open the TI-Nspire document *Graphing\_Linear\_Equations.tns*.

What happens to the equation of a line if you change the line's position or direction? In this activity, you will explore the answer to that question.



Your teacher might have you create the TI-Nspire document. If so, you will receive a document entitled *Graphing\_Linear\_Functions\_Create*. Follow the instructions to create the TI-Nspire document.

Press (ctrl) ▶ and (ctrl) ◀ to navigate through the lesson.

Otherwise, use the TI-Nspire document entitled *Graphing\_Linear\_Functions.tns*, which has already been created.

**Move to page 1.2.**

- Grab the line near the middle of the graph, and move it vertically up and down. Shift the line vertically to three different locations and record the equation, slope, and y-intercept for each location in the table below.

equation:	slope:	y-intercept:
equation:	slope:	y-intercept:
equation:	slope:	y-intercept:

Note: See the document *Graphing\_Linear\_Functions\_Create* for more directions.

- What do you notice about the slopes and about the y-intercepts?
  - What is the relationship between the y-intercept and the equation? Explain your thinking.



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## Student Activity

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Class \_\_\_\_\_

Perform the “undo” feature until the graph is  $f1(x) = x$ . Do this by pressing  $\text{ctrl}$   $\text{esc}$  one or more times.

If you “undo” too many times, “redo” is  $\text{ctrl}$   $\text{Y}$ .

3. Move the line to  $f1(x)=2x+1$ . Grab the line near either “end” of the graph where you see the circular arrows, and move the graph to three different positions. Write the equation, slope, and y-intercept of the line for each position.

1. equation:	slope:	y-intercept:
2. equation:	slope:	y-intercept:
3. equation:	slope:	y-intercept:

4. a. What do you notice about the slopes and y-intercepts?

b. Why does only one part of the equation change?

5. Suppose you have the graph of  $f1(x)=2x+3$ . Describe how you think each graph below will compare to  $f(x) = 2x+3$ . Explain your reasoning. Check your prediction using the .tns file.

a.  $f1(x)= 2x-4$

b.  $f1(x) = -4x+3$

6. How would you explain to someone who was not in class the connection between the y-intercept and slope of the graph of a line and the equation of the line?