

# Hitting the Slopes

TI-Nspire Investigation from MathBits.com

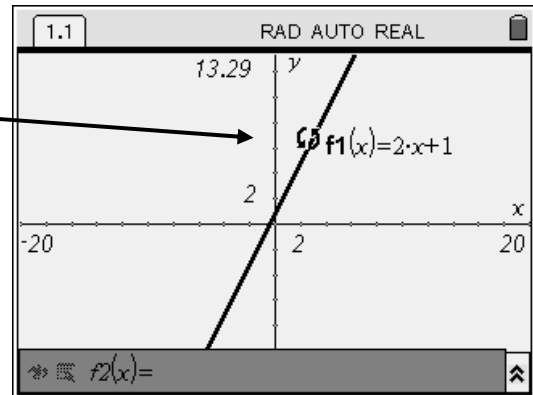


Name \_\_\_\_\_

## Investigation: Slope

Enter  $y = 2x + 1$ . Move your pointer toward the line until the rotating arrows appear. Hit CTRL and “grab hand” (in the middle of the NAV pad). Release. Now, use the NAV pad arrows to rotate the line.

Discuss your observations with your group and record your findings.



## Now let's focus in on our observations:

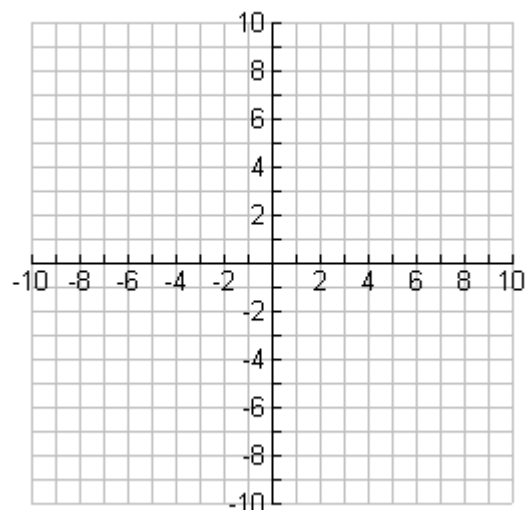
1. On the graph screen, graph two additional lines. You now have these three lines with positive slopes.

$$y = 2x + 1$$

$$y = x + 1$$

$$y = 0.5x + 1$$

Sketch the graphs on the grid at the right.



What do you notice about lines with positive slopes?

What happens to the lines as these positive slopes increase (get bigger)?

2. On a new graph screen, graph these lines that have negative slopes.

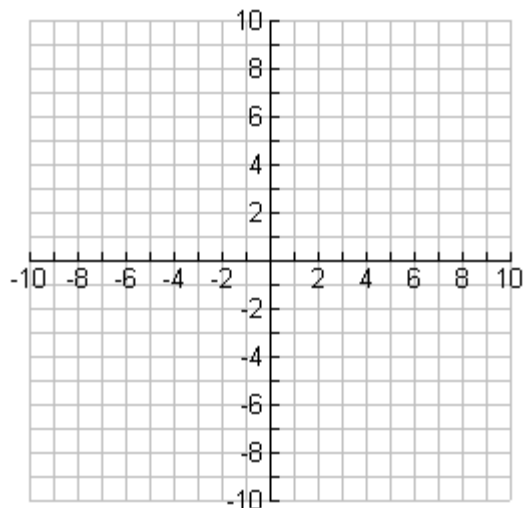
$$y = -2x + 3$$

$$y = -x + 3$$

$$y = -0.5x + 3$$

What do you notice about lines with negative slopes?

What happens to the lines as these negative slopes decrease (get smaller)?



3. On a new graph screen, graph these lines that have zero slopes.

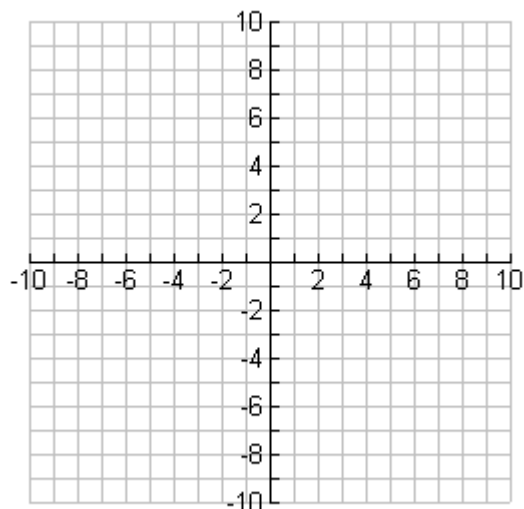
$$y = 0x + 5$$

$$y = 2$$

$$y = -5$$

What do you notice about lines with a zero slope?

How are all of these lines related to one another?



4. On a new graph screen, graph these lines that have the same slopes.

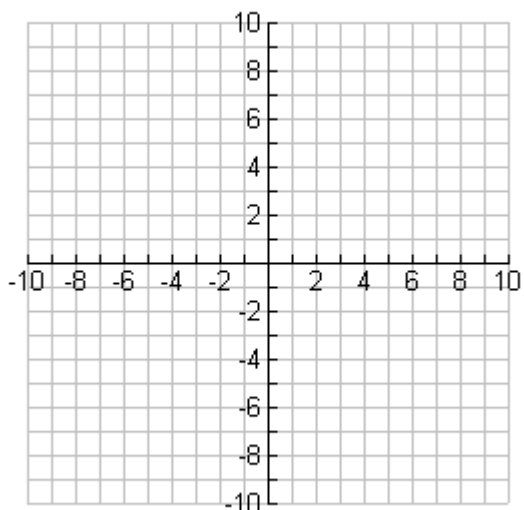
$$y = 2x + 5$$

$$y = 2x$$

$$y = 2x - 5$$

What do you notice about lines with the same slope?

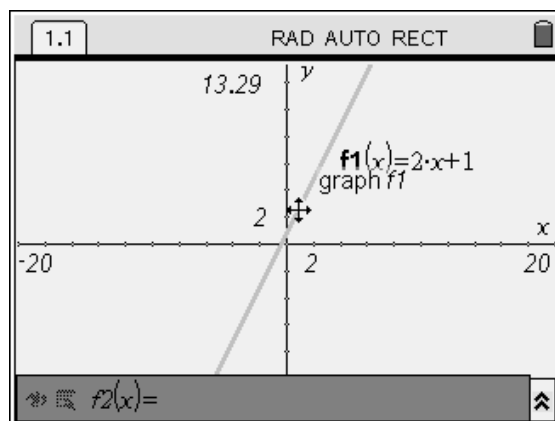
State a rule based on your observations about lines having the same slopes.



### Investigation: Y-intercept

Enter  $y = 2x + 1$ . Move your pointer toward the line until the translating symbol (cross-hairs) appears. Hit CTRL and “grab hand” (in the middle of the NAV pad).

Release. Now, use the NAV pad arrows to move the line. Discuss your observations with your group and record your findings.



**Now let's focus in on our observations:**

**5.** On the graph screen, graph two additional lines. You now have these three lines with the same slopes but differing y-intercepts.

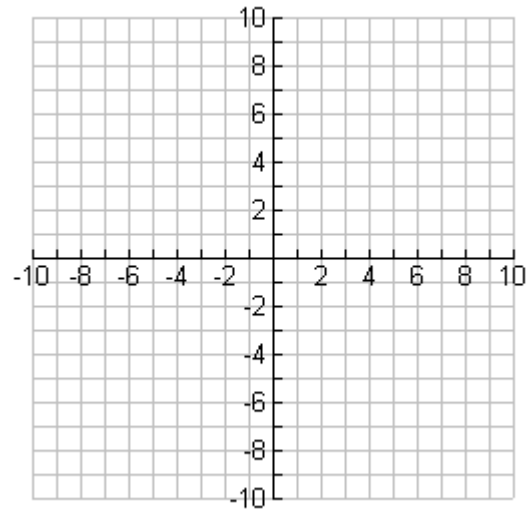
$$y = 2x + 1$$

$$y = 2x + 7$$

$$y = 2x - 5$$

Sketch the graphs on the grid at the right.

What happens to the lines as their y-intercepts are changed?



**6.** Using your observations regarding slopes and y-intercepts, describe what the graph of  $y = 4x - 5$  will look like (do not use your calculator).

Now, use your calculator to graph the line and transfer your sketch to the grid at the right.

