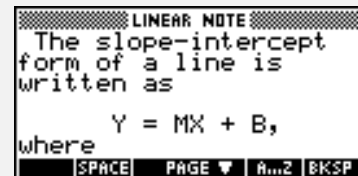


**Objectives:**

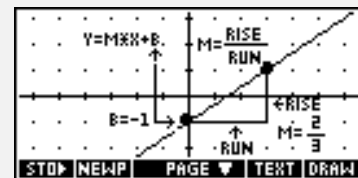
Using the **LINEAR** applet, the student will identify the slope and the y-intercept given a linear equation, and will describe the various effects positive, negative and zero values have on the graph.

**Functionality:**

When the student selects **START**, the **LINEAR NOTE** will be displayed.



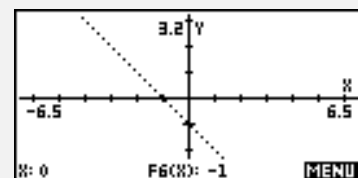
The student should then go to the **SKETCH** for a visual explanation.



In order to adjust the values for *slope*, **M**, and the *y-intercept*, **B**, or to enter other values, the student should press **VIEWS** and make appropriate choices. The basic function **y = x** will appear in dot mode for comparison to the “adjusted” graph.



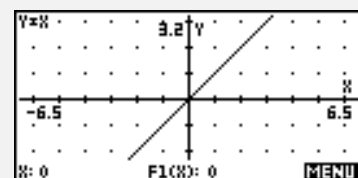
After the students have explored how M and B effect the graph, then they should select a **Target**. The calculator will display the graph of a line. The student should match the line by choosing values for M and B.



The students may also enter any value for M and B by selecting **Enter M, B** from the views menu. Input boxes will prompt the student to enter a value. The equation of the line will be shown at the top of the plot screen.



**Reset** will return the values for M and B to the default values (M = 1, B = 0) and will plot the line.

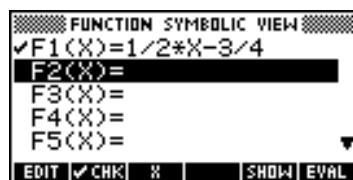


**Additional Exploration:**

Use the **Build Your Own** feature in the numeric setup of the Function applet to have students create a table of x and y values for a given line. An example would be:

Complete the table for  $y = \frac{1}{2}x - \frac{3}{4}$ .

x	y
-5	
-2	
-1	
2	
7	
8	



X	F1		
-5	-3.25		
-2	-1.75		
-1	-1.25		
2	.25		
7	3.25		
8	3.75		
1/2*X-3/4			
EDIT INS SORT BIG DEF			

Ideas can be applied to:

Prealgebra, Algebra I, Algebra II

Programs associated with this applet:

.LIN.M, .LIN.B, .LIN.E, .LIN.T, .LIN.R, .LIN.S, .LIN.P, .LIN.SV

# Get In Line

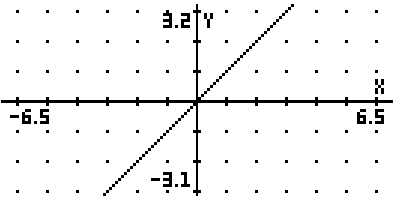
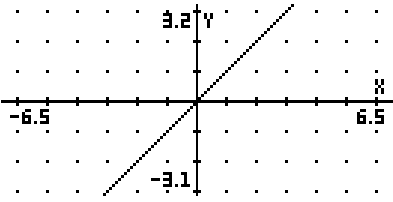
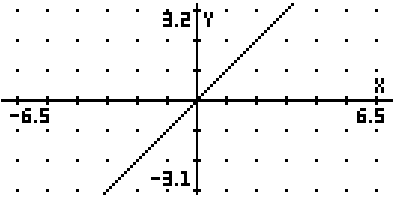
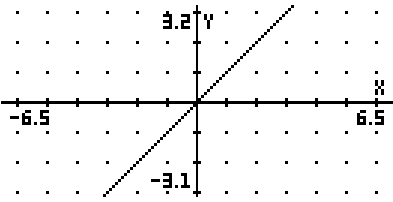
Name \_\_\_\_\_

Exploring Linear Functions \_\_\_\_\_

Date \_\_\_\_\_

Directions: Using the **LINEAR** applet, **Reset**, then return to **VIEWS** to adjust M and B in order to complete the activity. Complete the table, based upon different values for M.

*Note: Line slant options are L = left, R = right, H = horizontal, V = vertical.  
Slope options are VS = very steep, S = steep, NS = not steep.*

If M value is...	the line slants ...	the slope is ...	graph relative to $y = x$
1. $-\frac{5}{2}$			
2. -1			
3. $\frac{1}{2}$			
4. 2			

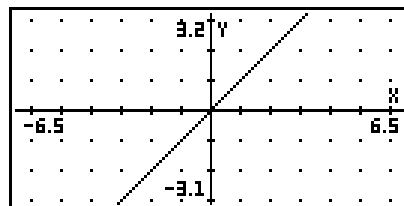
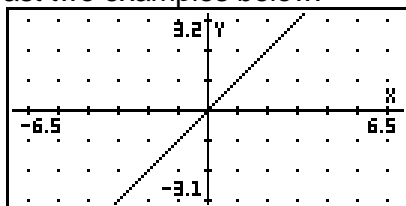
5. For values of M that are positive, the line slants \_\_\_\_\_.  
 For negative values of M, the line slants \_\_\_\_\_.  
 Predict what will happen if M is zero. The line is \_\_\_\_\_.

Complete the table based upon different values for B.

Note: Line move options are L = left, R = right, U = up, D = down.

If B value is ...	the line moves ...	graph sketch relative to $y = x$
5. $-\frac{5}{2}$		
6. -1		
7. $\frac{1}{2}$		
8. 2		

9. For positive values of B, the line is shifted \_\_\_\_\_.  
 For negative values of B, the line is shifted \_\_\_\_\_.  
 The line is not shifted when the value of B is \_\_\_\_\_.
10. Describe what would happen if you put in a value for both M and B. Sketch at least two examples below.



# What's My Line

Exploring Linear Functions

Name \_\_\_\_\_

Date \_\_\_\_\_

Directions: Using the **LINEAR** applet, **Reset**, then return to **VIEWS** to enter M and B.  
For this matching activity, write the number of the graph that matches the equation in the space provided.

\_\_\_\_ A.  $y = 3x + 2$

\_\_\_\_ B.  $y = -\frac{1}{3}x - 1$

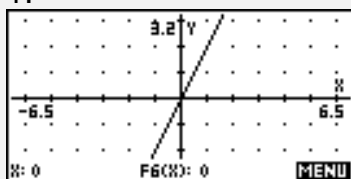
\_\_\_\_ C.  $y = -x$

\_\_\_\_ D.  $y = \frac{1}{5}x + 1$

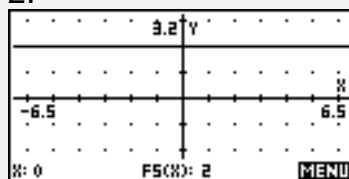
\_\_\_\_ E.  $y = 2$

\_\_\_\_ F.  $y = 2x$

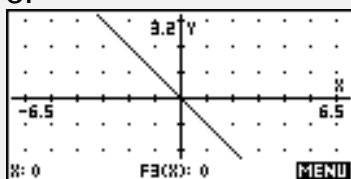
1.



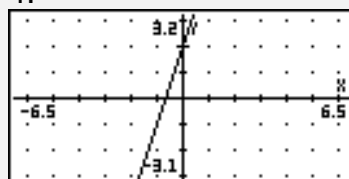
2.



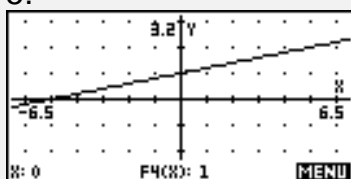
3.



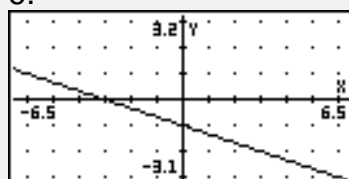
4.



5.



6.



7. Using A - F, state the values for the slope and the y-intercept. Fill in the values in the table. Describe the shift of the line compared to  $y = x$ .

Equation	slope (M)	y-intercept (B)	Describe shift
A			
B			
C			
D			
E			
F			

8. Write an equation for the line having the given slope and y-intercepts.

slope	y-intercept	equation of the line
3	-2	
-2/5	0	
-5	1/2	