

8.A Slope-Intercept Form

HORIZONTAL AND VERTICAL LINES

1. **REVIEW** What is the equation of:
- a horizontal line through $(2, 3)$?
 - a vertical line through $(2, 3)$?
 - the x -axis?
 - the y -axis?

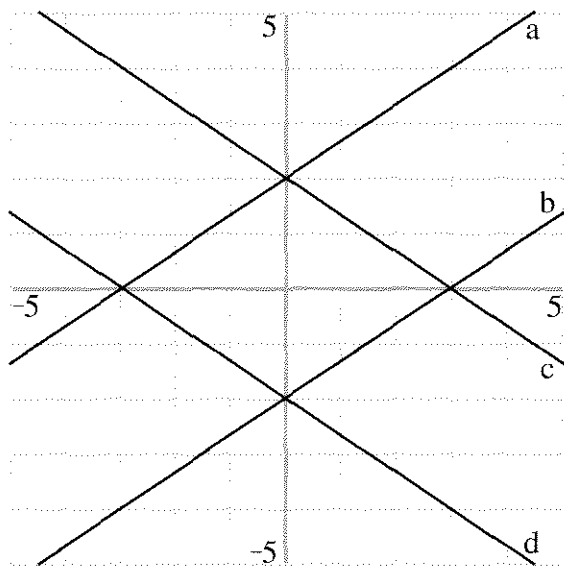
2. What is the slope of a horizontal line?

To find the slope of a vertical line, notice that the run is 0 for any rise. For example, for a run of 1, the slope should be $1/0$, which is not defined. For this reason, vertical lines do not have a slope.

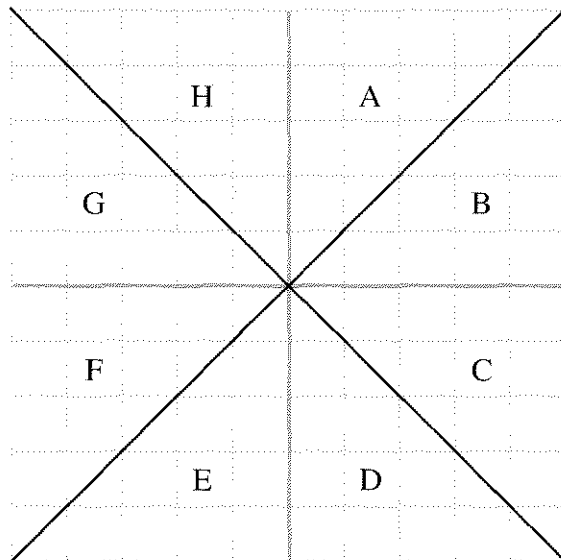
3. a. Explain why vertical lines do not have a y -intercept.
 b. Explain why the equations of vertical lines cannot be written in slope-intercept form.
 c. How does one write the equation of a vertical line?

FINDING m AND b

4. What are the equations of these lines, (a-d)?



5. a. What are the equations of the two lines in the graph below?
 b. What can you say about the equations of lines that pass through the origin and each of the regions A-H? (Your answers should be in the form: For lines in regions A and E, $b = \underline{\hspace{1cm}}$ and m is between $\underline{\hspace{1cm}}$ and $\underline{\hspace{1cm}}$.)



6. What can you say about m if the graph is a very steep line, nearly vertical?
 7. This table lists three points that all lie on one line. Find m and b without graphing.

x	y
-3	7
0	6
3	5

8.A

8. a. One of these tables lists three points which do not all lie on the same line. Which table is it? Explain how you can tell without graphing, by thinking about slope.
- b. Find m and b for the other two tables.

x	y
-1	-7
1	1
3	9

x	y
-1	2
1	4
3	5

x	y
-1	8
1	0
3	-8

9. For equations (a-e), find m and b without graphing. (You may use graphing to check your answers.)
- a. $y = -2$ b. $y = 9x$
 c. $y = 2 - 3x$ d. $y = 4(5x - 6)$
 e. $y = \frac{7x + 8}{9}$

10. **Report** Summarize what you know about slope-intercept form for linear functions. Illustrate your report with graphs and function diagrams. Use the words: equation, fixed point, focus, function, grade, graph, horizontal, linear, magnification, negative, parallel, parameters, positive, rate of change, ratio, slope, table, vertical, y-intercept.