

Introduction to Slope and Equation of a Line

Key

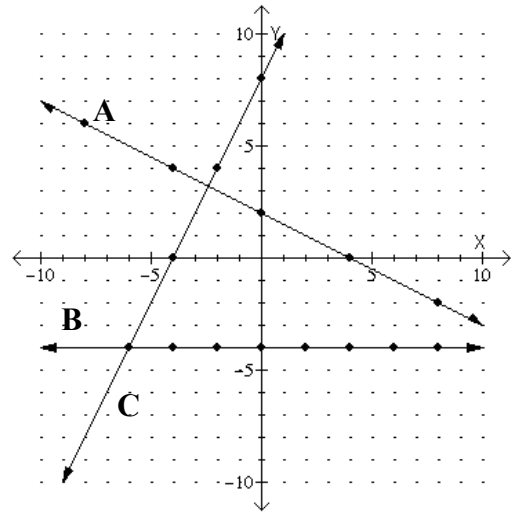
1. Find the x-intercept, the y-intercept and the slope of each line. Then find the equation of each line.

A	(4, 0)	(0, 2)	$-\frac{1}{2}$
B	None	(0, -4)	0
C	(-4, 0)	(0, 8)	2

Equation line A: $y = -\frac{1}{2}x + 2$

Equation line B: $y = -4$

Equation line C: $y = 2x + 8$



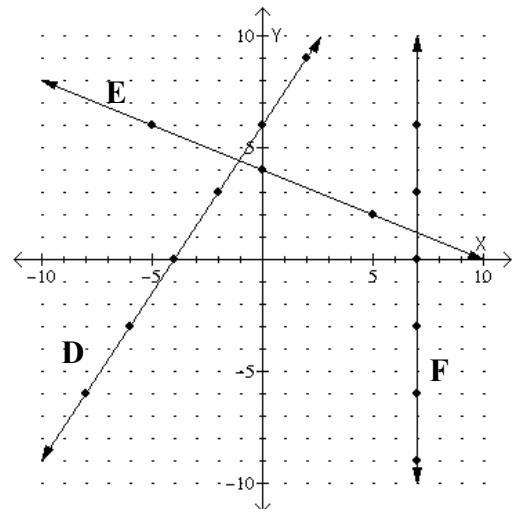
2. Find the x-intercept, the y-intercept and the slope of each line. Then find the equation of each line

Line	x-intercept	y-intercept	Slope
D	(-4, 0)	(0, 6)	$\frac{3}{2}$
E	(10, 0)	(0, 4)	$-\frac{2}{5}$
F	(7, 0)	None	Undefined

Equation line D: $y = \frac{3}{2}x + 6$

Equation line E: $y = -\frac{2}{5}x + 4$

Equation line F: $x = 7$



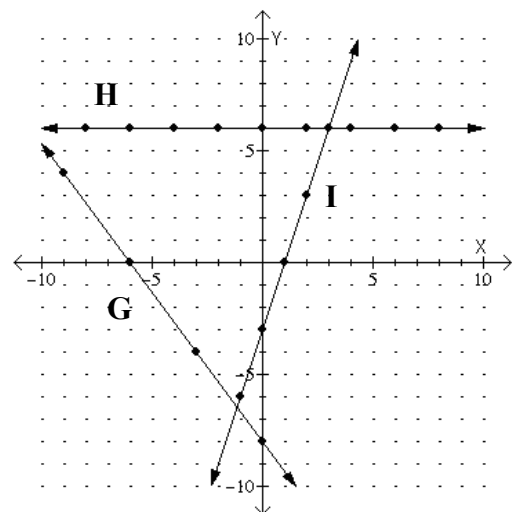
3. Find the x-intercept, the y-intercept and the slope of each line. Then find the equation of each line.

Line	x-intercept	y-intercept	Slope
G	(-6, 0)	(0, -8)	$-\frac{4}{3}$
H	None	(0, 6)	0
I	(1, 0)	(0, -3)	3

Equation line G: $y = -\frac{4}{3}x - 8$

Equation line H: $y = 6$

Equation line I: $y = 3x - 3$



4. From the description of the line, draw and label the line on the axes provided. Then find the equation of each line.

- a) A line that has a slope equal to zero and passes through the point $(-7, 6)$. Label the line **A**.

Equation: $y = 6$

- b) A line that has an undefined slope and passes through the point $(7, -2)$. Label the line **B**.

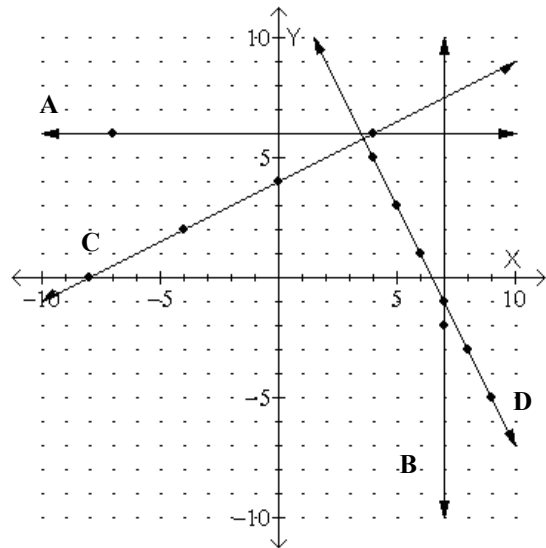
Equation: $x = 7$

- c) A line that has a slope equal to $1/2$ and passes through the point $(-8, 0)$. Label the line **C**.

Equation: $y = \frac{1}{2}x + 4$

- d) A line that has a slope equal to -2 and passes through the point $(6, 1)$. Label the line **D**.

Equation: $y = -2x + 13$



5. From the description of the line, draw and label the line on the axes provided.

- a) A line that has a slope equal to zero and a y-intercept of $(0, -8)$. Label the line **A**.

Equation: $y = -8$

- b) A line that has an undefined slope and an x-intercept of $(-4, 0)$. Label the line **B**.

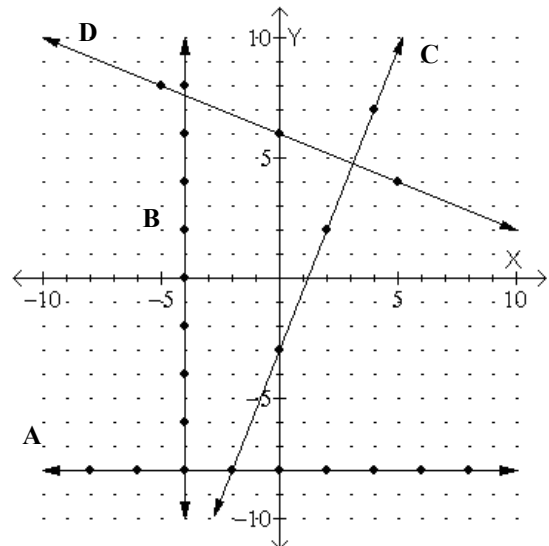
Equation: $x = -4$

- c) A line that has a slope equal to $5/2$ and a y-intercept of $(0, -3)$. Label the line **C**.

Equation: $y = \frac{5}{2}x - 3$

- d) A line that has a slope equal to $-2/5$ and a y-intercept of $(0, 6)$. Label the line **D**.

Equation: $y = -\frac{2}{5}x + 6$



6. From the description of the line, draw and label the line on the axes provided.

- a) A line that has a slope equal to $3/4$ and a y-intercept of $(0, 5)$. Label the line **A**.

Equation: $y = \frac{3}{4}x + 5$

- b) A line that has a slope equal to $3/2$ and a y-intercept of $(0, 5)$. Label the line **B**.

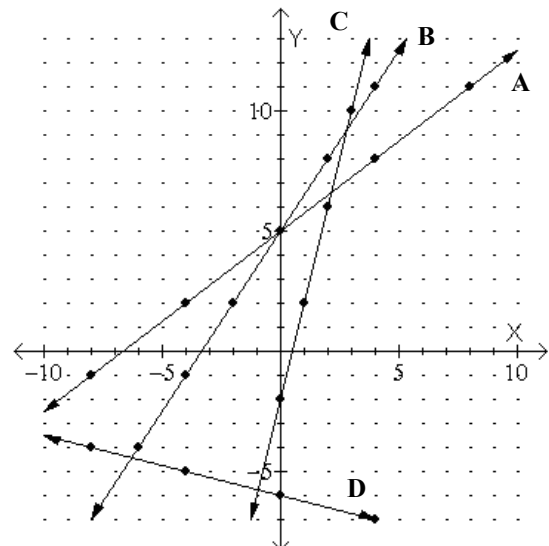
Equation: $y = \frac{3}{2}x + 5$

- c) A line that has a slope equal to 4 and a y-intercept of $(0, -2)$. Label the line **C**.

Equation: $y = 4x - 2$

- d) A line that has a slope equal to $-1/4$ and a y-intercept of $(0, -6)$. Label the line **D**.

Equation: $y = -\frac{1}{4}x - 6$



Teaching Points

1. The purpose of this activity is to introduce the concepts of slope of a line, x-intercept and y-intercept.
2. All students should have a pencil and 6 inch ruler so that they can draw a slope triangle and properly draw the graph of a line.
3. Students and teachers should work a few of each type of problem together. Teachers should emphasize that students are to use an ordered pair of real numbers to describe an x-intercept or y-intercept because intercepts represent locations. Examples: $(0, 5)$, $(9, -3.5)$, $(-4, 0)$ and $(6,0)$.
4. Students should describe a defined slopes with a single real number.
5. Students should describe the slope of a vertical line as “undefined” or “no slope.” Remind students that zero slope lines are not the same as no slope lines.
6. For graphs A and C, teachers should ask students if they see how graphs A and C are related and if they see how the slopes of these graphs are related.
7. For parts 4, 5 and 6, students should be able to draw the graph of the line from the description of the line.
8. On first use of this handout, students should not be required to find the equation of any line. Teachers can collect the handout and check for student understanding. After students are taught how to find the equation of a line, teachers can redistribute the handout and have students find the equation of the lines.