

5.3

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Graph Linear Equations and Functions

Standard Form of a linear equation:

$$Ax + By = C$$

where A, B, and C are real numbers and A and B are not both zero. (and $A \neq 0$)

A solution of an equation in two variables an ordered pair (x, y) that produces a true statement when the values of x and y are substituted into the equation.

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Decide if (1, -4) is a solution of

$$3x - y = 7$$

$$3(1) - (-4) = 7$$

$$3 + 4 = 7$$

yes - it is a solution

Decide if (-1, -2) is a solution of

$$3x - y = 7$$

$$3(-1) - (-2) = 7$$

$$-3 + 2 = 7$$

-1 \neq 7 not a solution

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Guided Practice:

Tell whether the point lies on the line:

$$-2x + y = -3$$

a) (4,7)

not on the line

$$-2(4) + 7 = -3$$

$$-8 + 7 = -3$$

$$-1 = -3$$

b) (6,9)

$$-2(6) + 9 = -3$$

$$-12 + 9 = -3$$

$$-3 = -3$$

on the line

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Example:

Graph the equation.

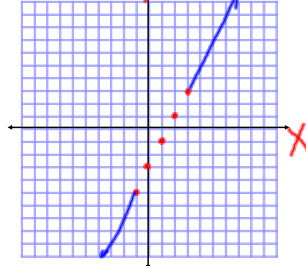
$$-2x + y = -3$$

- Step 1: Solve for y
- Step 2: Make a table and choose values for "x"
- Step 3: Solve for the corresponding "y"
- Step 4: Plot the points

X	-1	0	1	2	3
Y	-5	-3	-1	1	3

$$y = 2x - 3$$

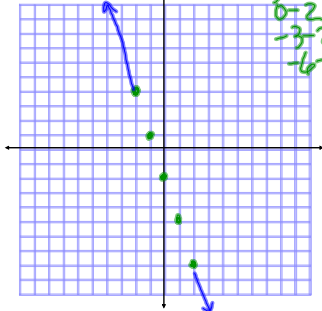
Choose some values for "x" (any values)



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Guided Practice:

Graph the equation, $y + 3x = -2$



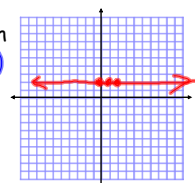
X	-2	-1	0	1	2
Y	4	1	-2	-5	-8

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Graph

$$y = 2$$

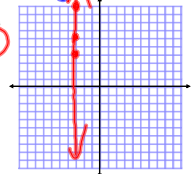
X	0	1	2
Y	2	2	2



Graph

$$x = -3$$

X	-3	-3	-3
Y	4	6	10

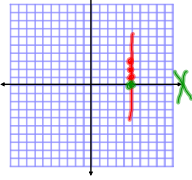


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Guided Practice:

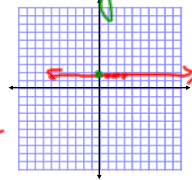
Graph $x = 5$

X	Y
5	1
5	2
5	3



Graph $y = 1.5$

X	Y
1	1.5
2	1.5
3	1.5

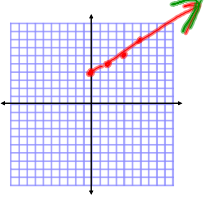


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The graph of $y = b$ is a horizontal line. The line passes through the point $(0, b)$

The graph of $x = a$ is a vertical line. The line passes through the point $(a, 0)$

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X	Y
0	4
2	5
4	6

Graph the function of $y = \frac{1}{2}x + 4$ with domain $x \geq 0$.

Then identify the range of the function.

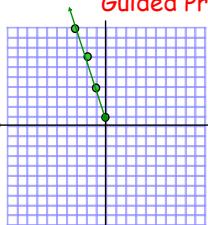
Step 1: Make table
Step 2: Plot points
Step 3: Connect points
Step 4: Identify the range

1+4
2+4
3+4

Range $y \geq 4$

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Guided Practice:



X	Y
0	1
-1	4
-2	7
-3	10
-4	13

Graph the function $y = -3x + 1$ with domain $x \leq 0$.

Then identify the range of the function.

Range: $y \geq 1$


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Assignment:

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COLUMN

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

Rows



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