

**Do Now:** Find the value of the expression if  $x = 2$  and  $y = -1$

1)  $2x - 3y = 7$

2)  $y - 2x = -5$

3)  $x + y = 1$

4)  $4y - x = -2$

$4(-1) - (2)$   
 $-4 - 2$   
 $-6$

17a) Yes, because the problem implies that the height is measured ONCE a year; therefore you only turn one age every year, so you can only have one height for the year.

17b) No, because (height/age)

### 8.2 Linear Equations in Two Variables

8.F

answers  $(x, y)$

- SWBAT find solutions of equations in two variables.
- SWBAT create representations to communicate mathematical ideas.

Calculators: No

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

Example: Tell whether the ordered pair is a solution of  $2x - y = 5$

$(x, y)$

a)  $(1, -3)$   
 $x = 1 \quad y = -3$   
 $2x - y = 5$   
 $2(1) - (-3)$   
 $2 + 3$   
 $5$   
 Yes  
 $(1, -3)$  is a solution

b)  $(4, 7)$   
 $x = 4 \quad y = 7$   
 $2x - y = 5$   
 $2(4) - 7$   
 $8 - 7$   
 $1$   
 NO  
 $(4, 7)$  is not a solution

Tell whether the ordered pair is a solution of  $x - 3y = -1$

a)  $(4, 2)$   
 $4 - 3(2)$   
 $4 - 6$   
 $-2$  NO

b)  $(2, 1)$   
 $2 - (3)(1)$   
 $2 - 3$   
 $-1$  Yes

Find the value of  $a$  that makes the ordered pair a solution of the equation.

1.)  $y = 2x + 5; (-1, a)$

$x = -1 \quad y = a$

$y = 2x + 5$   
 $a = 2(-1) + 5$   
 $a = -2 + 5$   
 $a = 3$

$(-1, 3)$

Find the value of a that makes the ordered pair a solution of the equation.

2.  $3x + y = -1$ ; (a, 5)

$3a + 5 = -1$   
 $-5$   
 $\hline$   
 $3a = -6$   
 $\div 3$   
 $a = -2$

(-2, 5)

Find the value of a that makes the ordered pair a solution of the equation.

1.  $6x + 5y = 21$ ; (a + 2, -3)

$6x + 5(-3) = 21$   
 $6x - 15 = 21$   
 $+15$   
 $\hline$   
 $6x = 36$   
 $\div 6$   
 $x = 6$

$6(4+2) + 5(-3) = 21$   
 $6(6) + (-15) = 21$   
 $36 - 15 = 21$   
 $+15$   
 $\hline$   
 $36 = 36$

$a + 2 = 6$   
 $a = 4$

$4 + 2 = 6$   
 (4 + 2, -3)  
 (or) (6, -3)

The Hawaiian volcano Mauna Loa has erupted many times. In 1859, lava from the volcano traveled 32 miles to the Pacific Ocean at an average speed of 4 miles per hour. The lava's distance d (in miles) from the ocean t hours after it left the volcano can be approximated by the equation  $d = 32 - 4t$

a. Make a table of solutions for the equation.  
 b. How long did it take the lava to reach the ocean?

a. Make a table of solutions for the equation.

t	d
0	32
1	28
2	24
3	20
4	16

$d = 32 - 4t$   
 $y = 32 - 4x$   
 $d = 32 - 4(0) = 32 - 0 = 32$   
 $d = 32 - 4(1) = 32 - 4 = 28$

b. How long did it take the lava to reach the ocean?  
 distance = 0

$d = 32 - 4t$   
 $0 = 32 - 4t$   
 $-32$   
 $\hline$   
 $-32 = -4t$   
 $-4$   
 $\div -4$   
 $8 = t$

$32 - 4t = 0$   
 $+4t$   
 $\hline$   
 $32 = 4t$   
 $\div 4$   
 $8 = t$

8 = t  
 8 hours

How can we solve this problem using a graph?

t	d

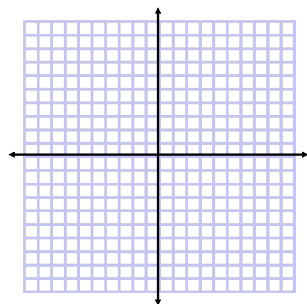
Graph:  $y = 3x - 1$

x	y

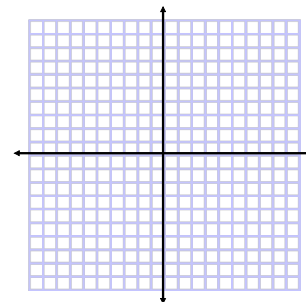
Graph:  $y = \frac{1}{2}x + 1$ 

x	y

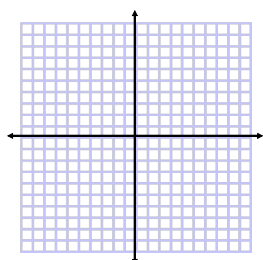
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Graph:  $y = -x$ 

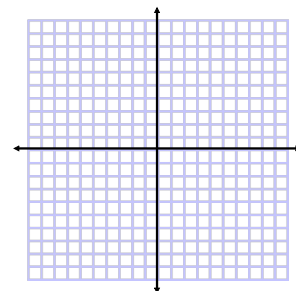
x	y

**Horizontal and Vertical Lines**

- Horizontal Lines  
 $y = b$  is the horizontal line through  $(0, b)$

Ex.)  $y = 3$ 

- Vertical Lines  
 $x = a$  is the vertical line through  $(a, 0)$

Ex.)  $x = -2$ 

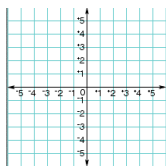
Write the equation in function form (slope-intercept form):

a.)  $x + 2y = 6$ b.)  $-4x + 3y = -3$

**Exit Pass 8.2**

Write the equation in function form. Then graph the equation.

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



"Don't blame the sea if you cannot catch a fish."

Working individually or with a partner, complete the workbook.

**Workbook pg.**



### Reflection of Today's Lesson

#### 8.2 Linear Equations in Two Variables

8.F

- SWBAT find solutions of equations in two variables.
- SWBAT create representations to communicate mathematical ideas.

**Calculators: No**

### Homework

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