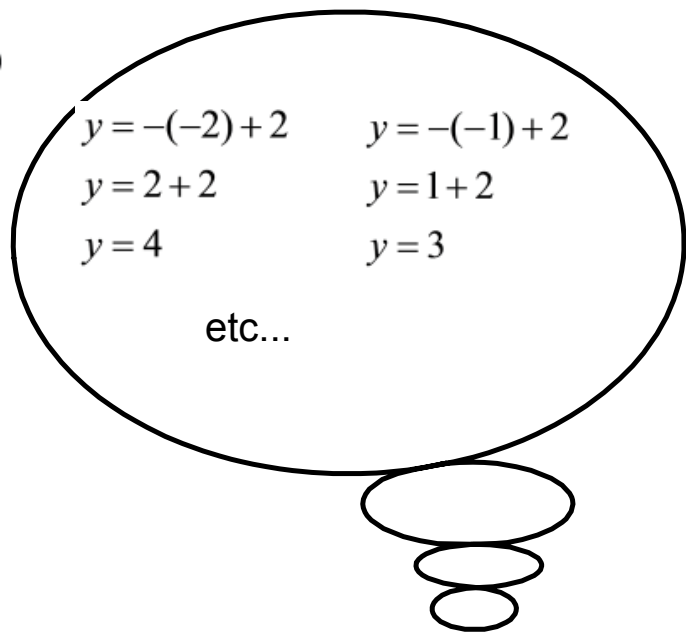


## Sec 4.3 Another Form of the Equation for a Linear Relation

- (i) Complete each table of values.  
(ii) Graph each line on the coordinate grid provided.  
(iii) Describe each relation.

$$y = -x + 2 \text{ (or } y = -1x + 2)$$

X	Y
-2	•
-1	•
0	•
1	•
2	•



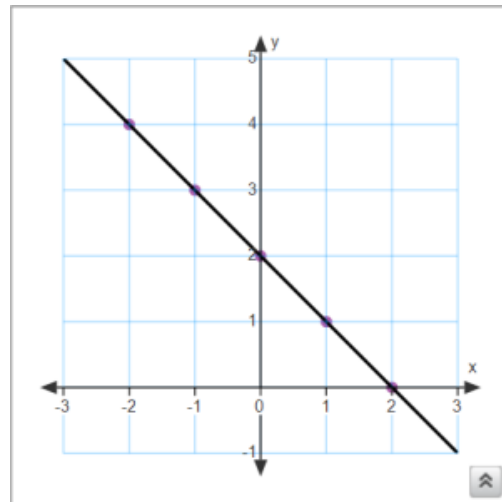
X	Y
-2	4
-1	3
0	2
1	1
2	0

$$3 - 4 = -1$$

$$2 - 3 = -1$$

$$1 - 2 = -1$$

$$0 - 1 = -1$$



### Describe:

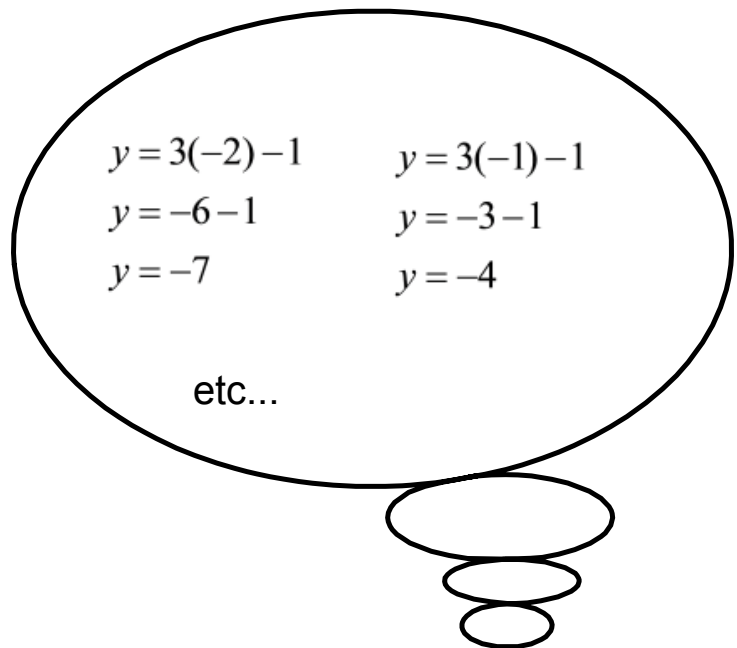
- straight line
- slants down
- dependent decreased by **1** as independent increased by **1**.

$$\frac{-1}{1}$$

.... Look at how this is shown in the graph. The line goes down one and over one.

$$y = 3x - 1$$

X	Y
-2	•
-1	•
0	•
1	•
2	•



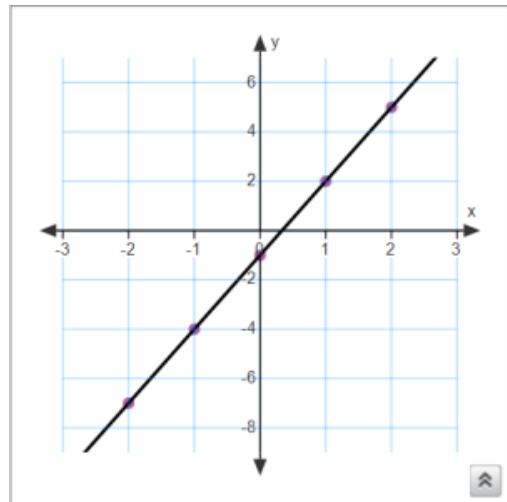
X	Y
-2	-7
-1	-4
0	-1
1	2
2	5

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

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

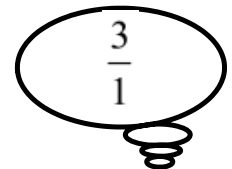
$$(2) - (-1) = 3$$

$$(5) - (2) = 3$$



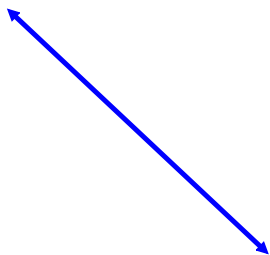
### Describe:

- straight line
- slants up
- dependent increased by **3** as independent increased by **1**.



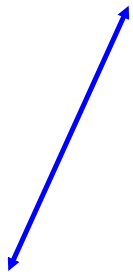
.... Look at how this is shown in the graph. The line goes up three and over one.

- These lines are called **oblique lines**. This means they are **slanted**.
- They can slant in either direction and can have different steepness.
- They will always contain two variables.
- When the independent **increases** by 1.....



and the dependent decreases the line will slant down. This is represented in the equation  $y = -1x + 2$ , with the negative number in front of  $x$ .

- When the independent increases by 1.....



And the dependent increases the line will slant up. This is represented in the equation  $y = 3x - 1$ , with the positive number in front of  $x$ .

Which of these lines is steeper?

The line  $y = 3x - 1$  is steeper.

You can also determine this from the equation because  $3 > 1$ .

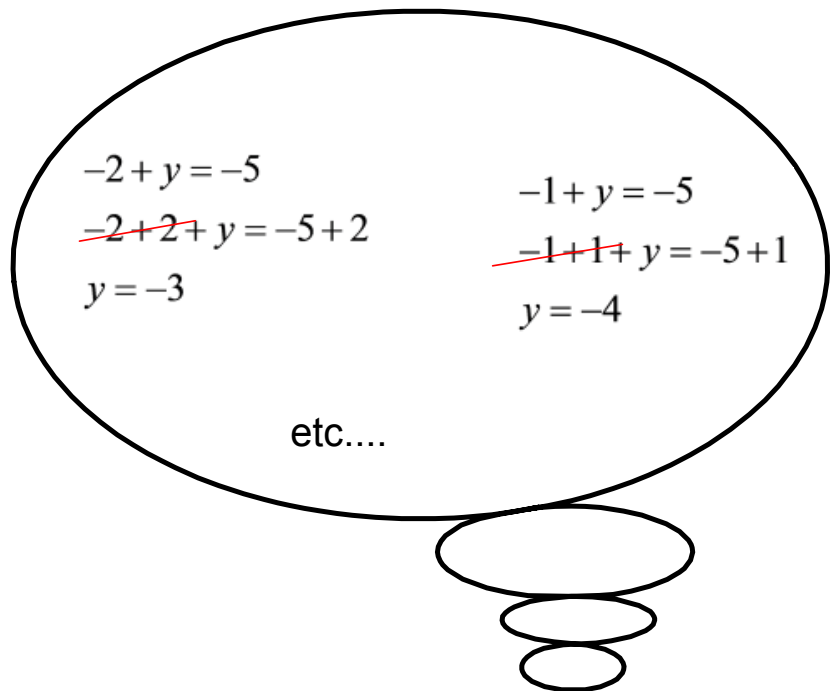
Notice these two lines are in the same form.  $y = ax + b$   
( ex:  $y = 2x + 3$  or  $y = -3x - 1$  )

We can also represent lines in other forms. Refer to the following examples.

2. (i) Complete each table of values.
- (ii) Describe each relation.
- (iii) Which way will the graph slant?
- (iv) Graph the relation.

$$x + y = -5$$

X	Y
-2	•
-1	•
0	•
1	•
2	•



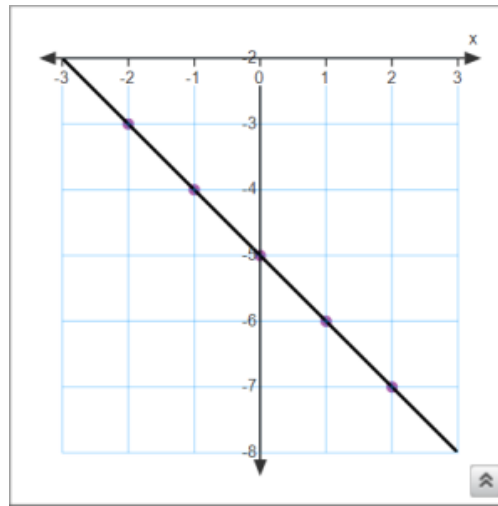
X	Y
-2	-3
-1	-4
0	-5
1	-6
2	-7

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

$$(-5) - (-4) = -1$$

$$(-6) - (-5) = -1$$

$$(-7) - (-6) = -1$$



$$\frac{-1}{1}$$

### Describe:

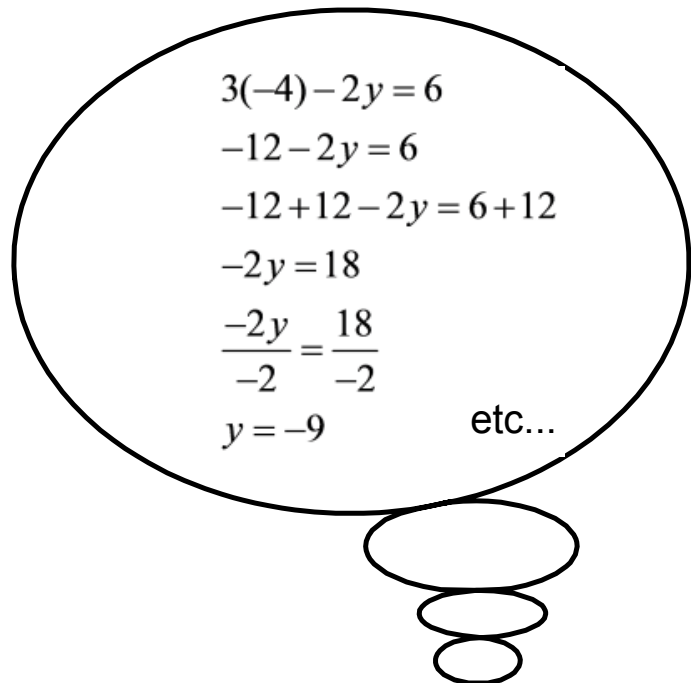
- dependent **decreased** by **1** as independent **increased** by **1**.
- since there is a **constant** change in both variables the graph will be a straight line

### Slant:

- Since the independent is **increasing** and the dependent is **decreasing** the line should slant **down**.

$$3x - 2y = 6$$

X	Y
-4	.
0	.
4	.

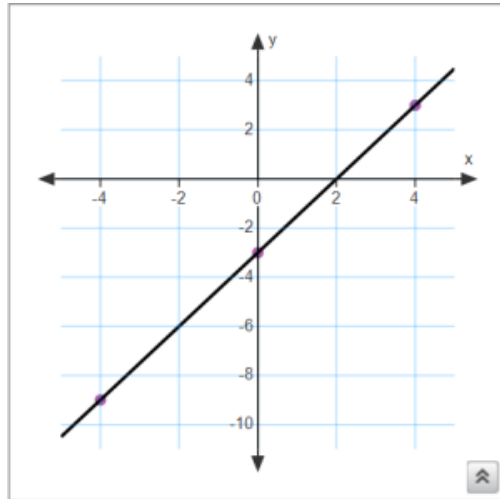


$$3(-4) - 2y = 6$$
$$-12 - 2y = 6$$
$$-12 + 12 - 2y = 6 + 12$$
$$-2y = 18$$
$$\frac{-2y}{-2} = \frac{18}{-2}$$
$$y = -9 \quad \text{etc...}$$

X	Y
-4	-9
0	-3
4	3

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

$$(3) - (-3) = 6$$



$$\frac{6}{4}$$

### Describe:

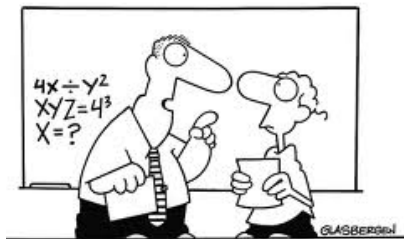
- dependent **increased** by 4 as independent **increased** by 6.
- since there is a **constant** change in both variables the graph will be a straight line.

### Slant:

- Since the independent is **increasing** and the dependent is **increasing** the line should slant **up**.

Complete  
Page 179 #10  
Page 180 #15

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**"Algebra class will be important to you later in life because there's going to be a test six weeks from now."**