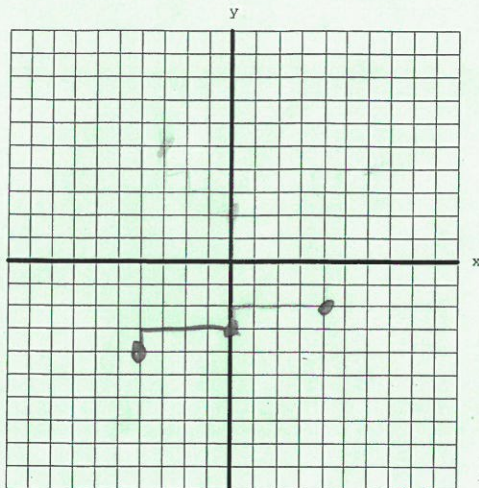


Writing Linear Equations from Two Ordered Pairs Notes

Objective: Find the slope of the line by plotting both points. Then understand how to use slope-intercept form to find the y-intercept.

1. $(4, -2)$ $(-4, -4)$

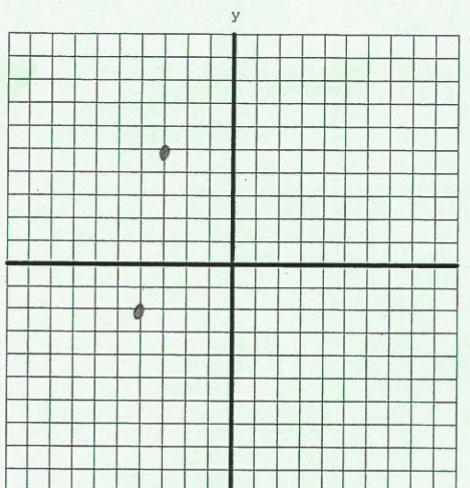


$m = \frac{-2/8} = 1/4$

$y - \text{int} = -3$

slope - int. form: $y = \frac{1}{4}x - 3$

2. $(-4, -2)$ $(-3, 5)$



$m = \frac{7/1} = 7$

$y - \text{int} = 26$

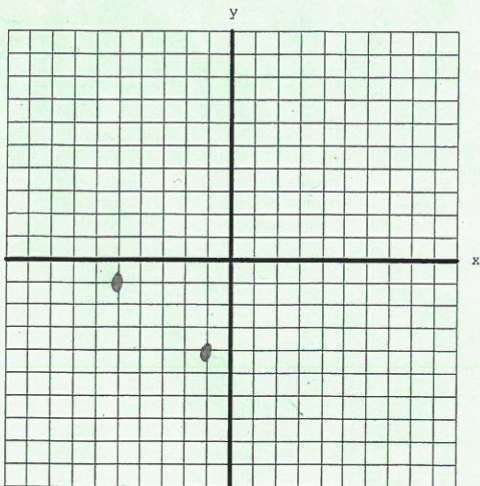
slope - int. form: $y = 7x + 26$

1. Find slope from formula or from graph. $\frac{5 - (-2)}{-3 - (-4)} = \frac{7}{1} = 7$

2. Use the slope and ONE of the ordered pairs, along with the slope-int. form to find b.
 $y = mx + b$
 Use $m = 7$ and $(-3, 5)$
 $5 = (7)(-3) + b$
 $5 = (-21) + b$
 $26 = b$

$y - 5 = 7(x + 3)$
 $y = 7x + 26$

3. $(-5, -1)$ $(1, -4)$

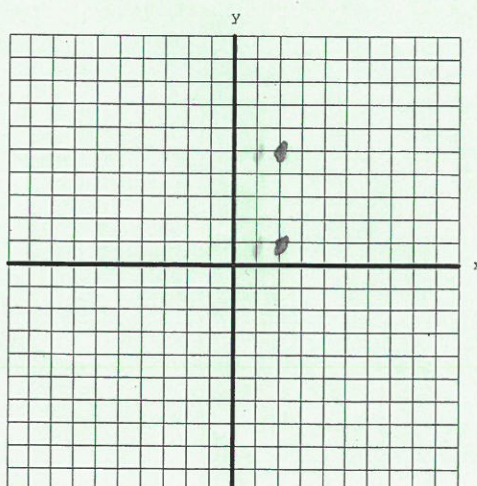


$m = -3/6 = -1/2$

$y - \text{int} = -3 1/2$

slope - int. form: $y = -1/2x - 3 1/2$
 $y + 4 = -1/2(x - 1)$

4. $(2, 1)$ $(2, 5)$



$m = \frac{4/0} = \emptyset$

$y - \text{int} = \emptyset$

slope - int. form: NA $x = 2$

Write an equation in slope intercept form:

1. Find the Slope first by using the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$.
2. Fill in the slope, also known as letter m.
3. Choose one of the points and substitute in values for x and y.
4. Solve for b.
5. Write the equation using the slope and the y-intercept.
5. $(-2, -2)$ $(2, -5)$ 6. $(-9, 9)$ $(4, 5)$

$$1. \frac{-5 - (-2)}{2 - (-2)} = \frac{-3}{4} = m$$

$$2. y = -3/4x + b$$

$$3. -5 = -3/4(2) + b$$

$$4. -5 = -3/2 + b$$

$$b = -3\frac{1}{2}$$

$$5. \boxed{y = -3/4x - 3\frac{1}{2}}$$

$$1. m = \frac{9 - 5}{-9 - 4} = \frac{4}{-13}$$

$$2. y - 5 = -\frac{4}{13}(x - 4)$$

$$3. y - 5 = -\frac{4}{13}x + \frac{16}{13}$$

$$y - \frac{65}{13} = -\frac{4}{13}x + \frac{16}{13}$$

$$\boxed{y = -\frac{4}{13}x + \frac{81}{13}}$$

7. $(3, 3)$ $(1, -5)$

$$m = \frac{-5 - 3}{1 - 3} = \frac{-8}{-2} = 4$$

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

$$-9 = b$$

$$\boxed{y = 4x - 9}$$

8. $(-2, -3)$ $(-5, -4)$

$$m = \frac{-4 - (-3)}{-5 - (-2)} = \frac{-1}{-3} = \frac{1}{3}$$

$$\boxed{y + 3 = \frac{1}{3}(x + 2)}$$

9. $(-3, 4)$ $(-2, -6)$

$$m = \frac{-6 - 4}{-2 - (-3)} = \frac{-10}{1}$$

$$4 = -10(-3) + b$$

$$-26 = b$$

$$\boxed{y = -10x - 26}$$

10. $(\frac{1}{2}, 0)$ $(\frac{7}{2}, -5)$

$$m = \frac{-5 - 0}{7\frac{1}{2} - \frac{1}{2}} = \frac{-5}{3}$$

$$\boxed{y - 0 = -\frac{5}{3}(x - \frac{1}{2})}$$

Write an equation in slope intercept form from a table:

1st: find the slope

x	y
-2	-3
-1	-1
0	1
1	3
2	5

$m = 2$

2nd: find the y-intercept

The y-intercept is when $x = 0$

Example:

x	y
-2	-3
-1	-1
0	1
1	3
2	5

y-intercept
 $b = 1$

Example:

x	y
-2	4
-1	3.5
0	3
1	2.5
2	2

y-intercept
 $b = 3$

What should you do if 0 is not in the table?

x	y
1	11
2	15
3	19
4	23
5	27

$m = 4$
 $b = 7$

Use the substitution method

1. Find the slope $m = 4$
2. Fill in the m (slope) into $y = m x + b$ $y = 4 x + b$
3. Choose an ordered pair, then substitute in the x and y ... now you have to solve for b (y-intercept), so get your b alone.

$y = 4x + b$
 $11 = 4(1) + b$
 $b = 7$

3rd: put it all together

x	y
-1	-6
0	-4
1	-2
2	0
3	2

Write a linear equation for the tables shown. $y = m x + b$

1. Find the m slope
2. Find the b y-intercept
3. Plug the m and b into your slope intercept form.... $y = m x + b$
Plug in the m and b $y = 2 x + -4$

Equation $y = 2x - 4$

Write an equation in slope-intercept form from a table.

11.

Weeks After Planting, x	Height (in.), y
0	8
1	11
2	14
3	17

1 < 1 < 1 < } 3 } 3 } 3

$$y = 3x + 8$$

12.

Time (min), x	5	20	30	35
Elevation (ft), y	4	10	14	16

15 10 5

6 4 2

$$y = \frac{5}{2}x + b$$

$$4 = \frac{5}{2}(5) + b$$

$$4 = \frac{25}{2} + b$$

$$b = -8\frac{1}{2}$$

$$y = \frac{5}{2}x - 8\frac{1}{2}$$

13.

x	y
2	5
4	13
7	25
9	33
12	45

2 < 3 < 2 < 3 < } 8 } 12 } 8 } 12

$$m = 4$$

$$y - 5 = 4(x - 2)$$

14.

x	y
-3	10
-1	4
1	-2
3	-8

2 < 2 < 2 < } -6 } -6 } -6

$$m = -3$$

$$y - 10 = -3(x + 3)$$

Put the equations in slope-intercept form, then in standard form:

15. $y - 3 = 4(x + 2)$

$$y = 4x + 8 + 3$$

$$y = 4x + 11$$

$$(-1)(-4x + y) = 11(-1)$$

$$4x - y = -11$$

slope-intercepts form: $y = 4x + 11$

standard form: $4x - y = -11$

16. $y + 5 = \frac{2}{3}(x - 12)$

$$y + 5 = \frac{2}{3}x - 8$$

$$y = \frac{2}{3}x - 13$$

$$(-3)\left(-\frac{2}{3}x - y\right) = (-13)(-3)$$

$$2x + 3y = -39$$

Slope-intercepts form: $y = \frac{2}{3}x - 13$

standard form: $2x + 3y = -39$