

Chapter 5A Student Success Sheet (SSS)

Graphing and Writing Equations of Lines

Olathe East High School – Intermediate Algebra

Name: _____
Hour: _____

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“Success is not final;
failure is not fatal. It
is the courage to
continue that
counts.”

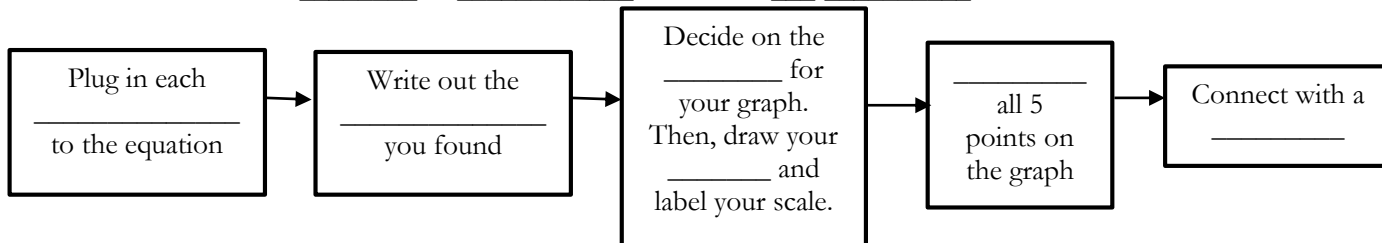
Concept #	What we will be learning...	Mandatory Practice
1	Graph with a table by plugging in points.	Practice Quiz 1
2	Verify that a point “lies on a line” or is a “solution to the equation”.	Practice Quiz 2
3	Identify parts of a line (slope and y-intercept) and put it into slope-intercept form; then write the equation of a line given slope and y-intercept	Practice Quiz 3
4	Write equation AND graph a line given point and slope (teach algebraically and on a graph)	Practice Quiz 4
5	Write equation AND graph a line given two points (teach algebraically and on a graph)	Practice Quiz 5

#1 Graph with a table by plugging in points

A L_____ always has a C_____ R_____ of C_____ (or S_____).
 This means that all the points on the line can connect with a S_____ Ruler!

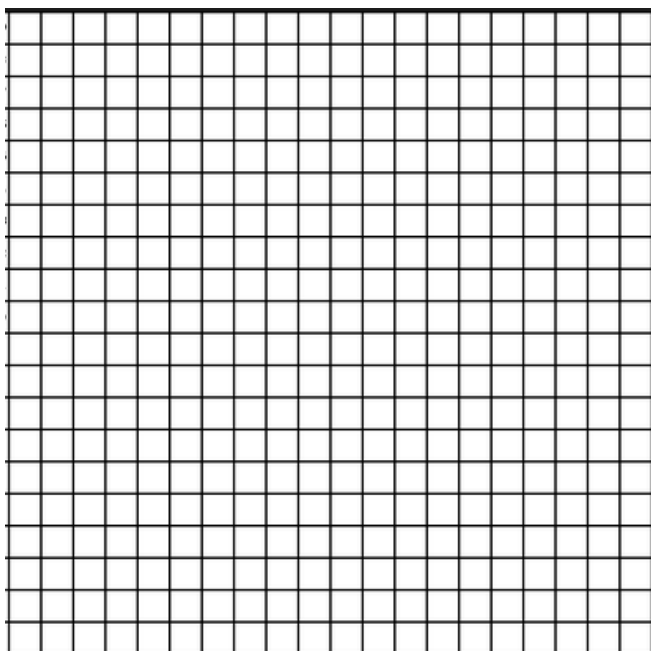
One way we can graph is by making an **X-Y Table**.

This is also known as an **I_____ - O_____ Table** or a _____



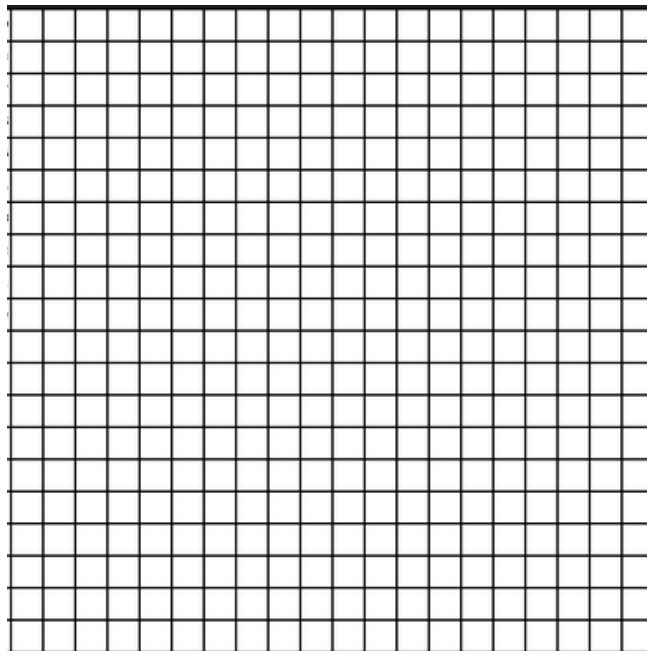
1. $y = -3x + 4$

x	Plug in	y	Ordered Pair
-2			
-1			
0			
1			
2			



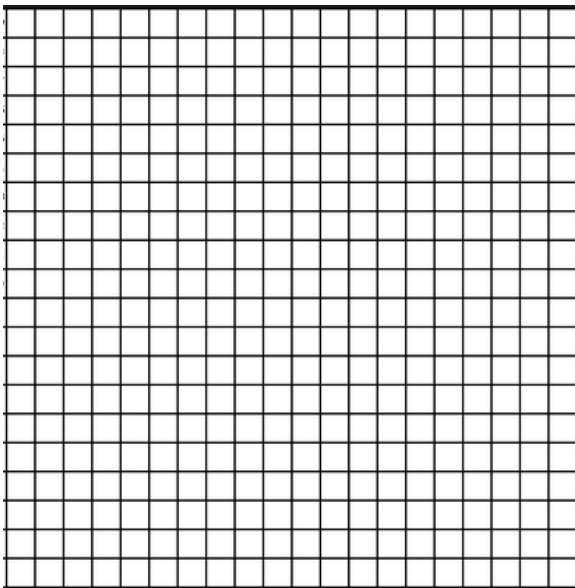
2. $y = -2x - 5$

x	Plug in	y	Ordered Pair
-2			
-1			
0			
1			
2			



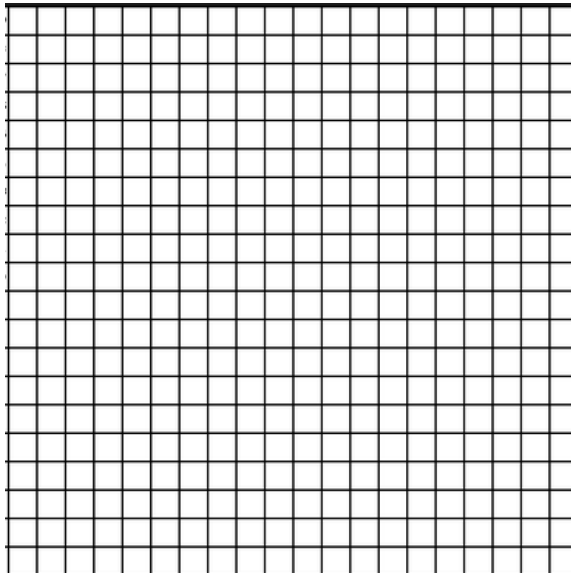
3. $y = x + 3$

x	Plug in	y	Ordered Pair
-2			
-1			
0			
1			
2			



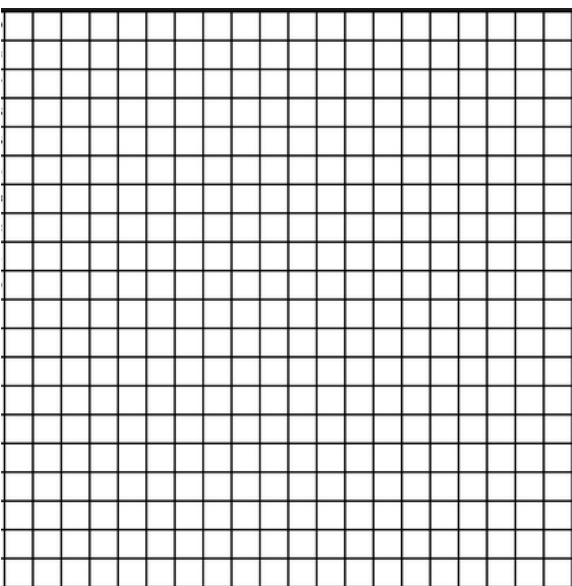
4. $y = -x + 1$

x	Plug in	y	Ordered Pair
-2			
-1			
0			
1			
2			



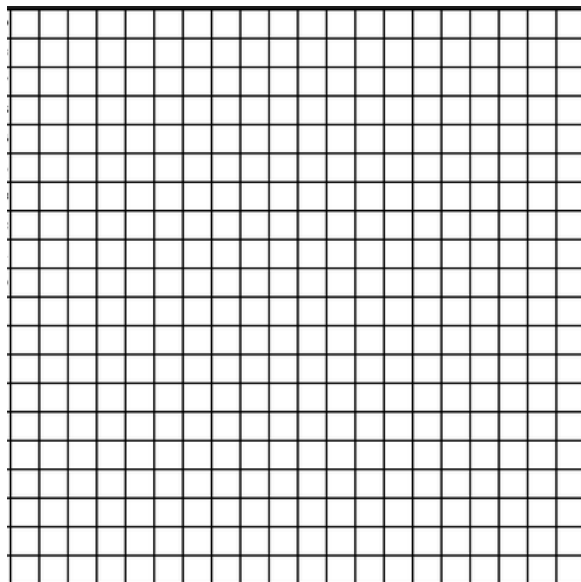
5. $y = -4x + 4$

x	Plug in	y	Ordered Pair
-2			
-1			
0			
1			
2			



6. $y = 6x - 5$

x	Plug in	y	Ordered Pair
-2			
-1			
0			
1			
2			



#2 Verifying that a point “lies on a line” or is a “solution to the equation”

<p>Determine if the point lies on the line.</p> <p>(x, y) Point: $(-15, 5)$</p> <p>Line: $y = -\frac{1}{5}x + 2$</p> $5 = -\frac{1}{5}(-15) + 2$ $5 = 3 + 2$ $5 = 5$ <p>Step 3: If the values given make a valid equation, then the point lies on the line.</p>	<p>Step 1: Substitute in the values of x and y.</p> <p>Step 2: Evaluate.</p> <p>Step 3: If the values given make a valid equation, then the point lies on the line.</p>	<p>If you plug in an O _____ P _____</p> <p>and end of with a _____ statement,</p> <p>That means the given point</p> <p>“L _____ O _____ T _____ L _____”</p> <p>if you were to graph it!</p>
<p>If the final step is not true such as $2=3$ then it does NOT lie on the line.</p>		

7. Which point lies on the line represented by the equation $2x + 3y = -6$?

A. $(2, -2)$

B. $(-1, 2)$

C. $(0, 2)$

D. $(-3, 0)$

Is the given point a solution to the equation?

8. $(-1, -1); y = -2x - 3$

9. $(-2, 5); y = 3x + 1$

10. $(6, -3); -x - 7y = 13$

11. $(-1, -3); -6x + 3y = -4$

12. $(-2, 0); 4y = -8x + 3$

13. $(8, 13); y = \frac{3}{4}x + 7$

14. $(3, -10); y = -5x - 2$

15. $(0, -4); y = -\frac{1}{2}x + 2$

16. $(9, 0.5); x - 2y = 8$

#3 Part 1 Identifying parts of a line (slope and y-intercept) and putting it into slope intercept form

Equation	Slope-Intercept Form of a Linear Equation
	The slope-intercept form of a linear equation is $y = mx + b$ <div style="display: flex; justify-content: center; gap: 50px; margin-top: -10px;"> <div style="text-align: center;"> \nearrow slope </div> <div style="text-align: center;"> \nwarrow y-intercept $(0, b)$ </div> </div>

y-intercepts are always written as an ordered pair: (0,b)

Write the equation of the line given the slope and y-intercept.

17. slope = $-\frac{2}{5}$, y - intercept $(0, 4)$

18. slope = -3 , y - intercept $(0, 5)$

19. slope = $\frac{3}{5}$, y - intercept $(0, 1)$

20. slope = $\frac{3}{2}$, y - intercept $(0, -2)$

21. slope = $-\frac{7}{3}$, y - intercept $(0, -4)$

22. slope = 2 , y - intercept $(0, 1)$

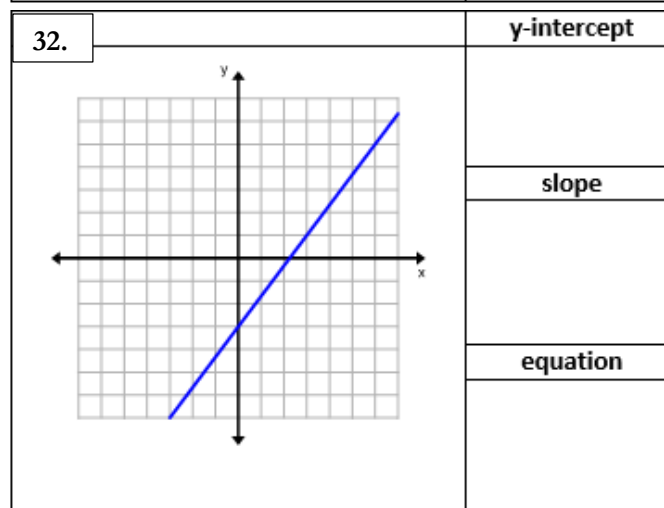
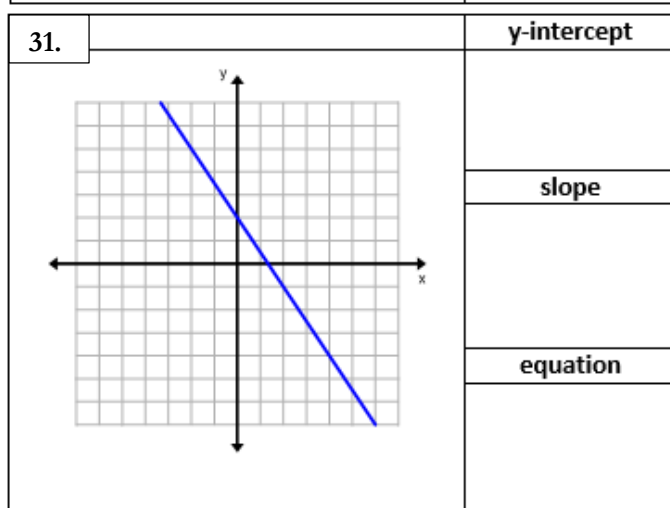
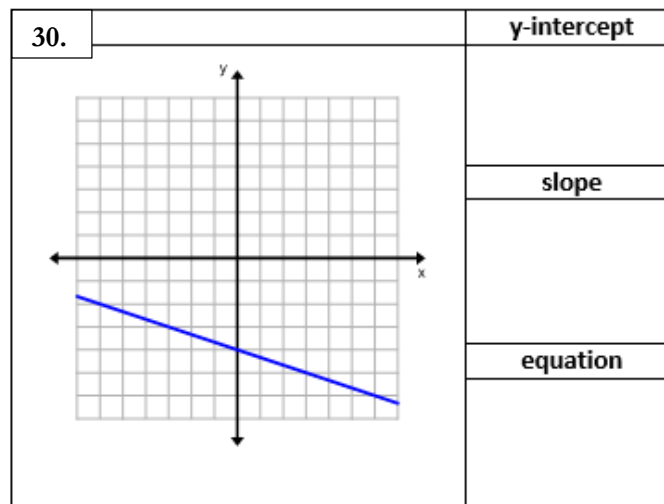
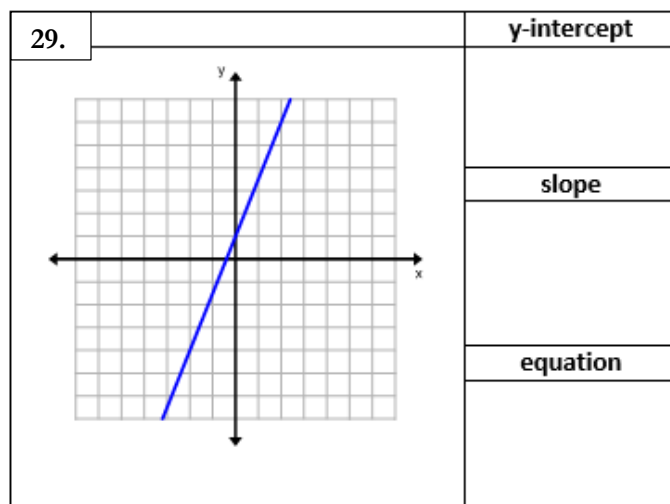
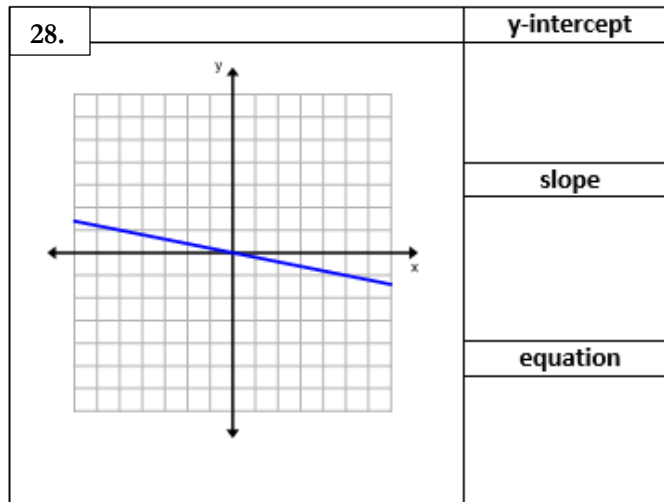
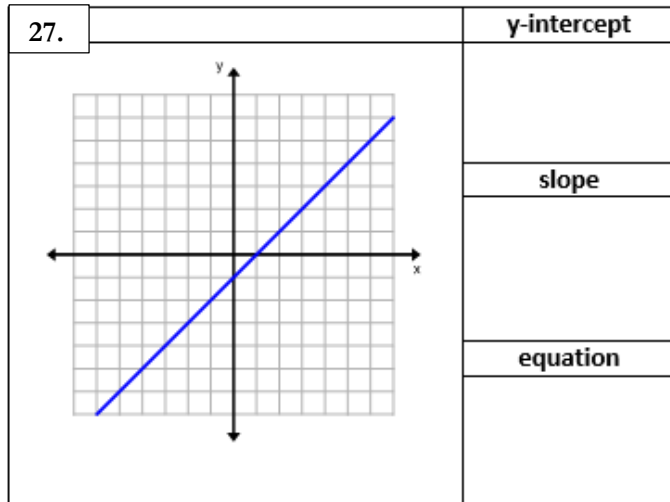
23. slope = $\frac{3}{5}$, y - intercept $(0, -1)$

24. slope = 9 , y - intercept $(0, 5)$

25. slope = $-\frac{1}{5}$, y - intercept $(0, -5)$

26. slope = $-\frac{8}{3}$, y - intercept $(0, -2)$

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#3 Part 2 Identifying parts of a line (slope and y-intercept) and putting it into slope intercept form

SLOPE-INTERCEPT FORM IS $y = \underline{\hspace{1cm}}x + \underline{\hspace{1cm}}$, where $m = \underline{\hspace{1cm}}$ and $(0, b)$ is the $\underline{\hspace{1cm}}$.

Four types of lines: Uphill $\underline{\hspace{1cm}}$; Downhill $\underline{\hspace{1cm}}$; Horizontal $\underline{\hspace{1cm}}$; Vertical $\underline{\hspace{1cm}}$

#4 Write equation AND graph a line given point and slope (teach algebraically and on a graph)**Writing equations of Lines (slope-intercept form)**

Write the equation of a line

You'll use this formula every time!

$$y = mx + b!$$

"m" is the slope, the rise over run

and "b" is the y-intercept, we're almost done

If they give you a point an "x" and a "y",

just plug the numbers in, solve for "b" and say bye!

To write the equation of a line

You'll use this formula every time!

$$y = mx + b!$$

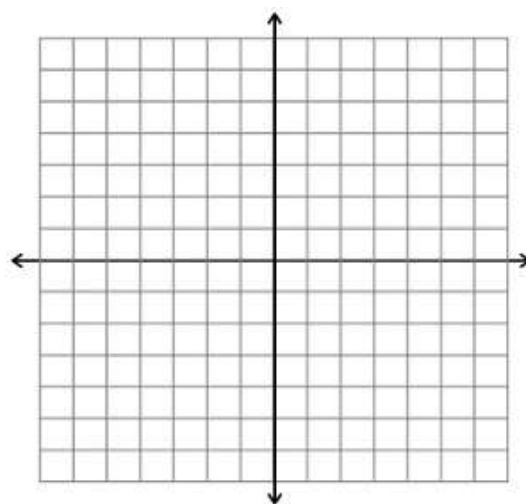
Given slope and one point

Steps:

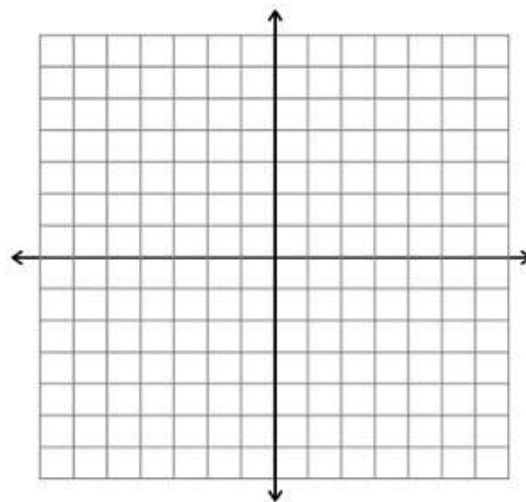
1. Identify $m = \underline{\quad}$, $x = \underline{\quad}$, $y = \underline{\quad}$
2. Write out $y = mx + b$ like $(\underline{\quad}) = (\underline{\quad})(\underline{\quad}) + b$
3. Plug in m , x , and y into the formula
4. Solve for b .
5. Plug in m and b into your equation as your final answer.

33. *through* $(-1, -2)$; *slope* = 4

1. Identify $m = \underline{\quad}$, $x = \underline{\quad}$, $y = \underline{\quad}$
2. Write out $y = mx + b$ like $(\underline{\quad}) = (\underline{\quad})(\underline{\quad}) + b$
3. Plug in m , x , and y into the formula
4. Solve for b .
5. Plug in m and b into your equation as your final answer.

34. *through* $(-5, -3)$; *slope* = -1

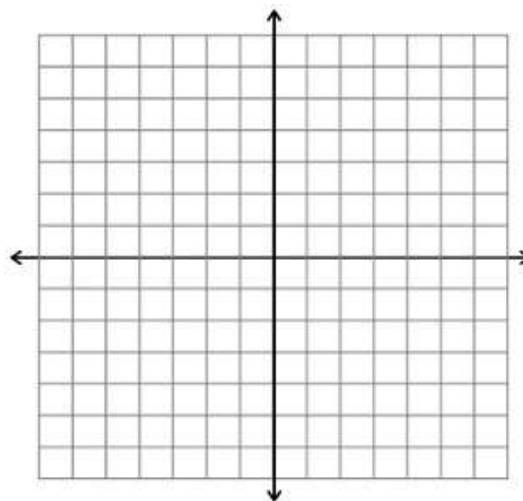
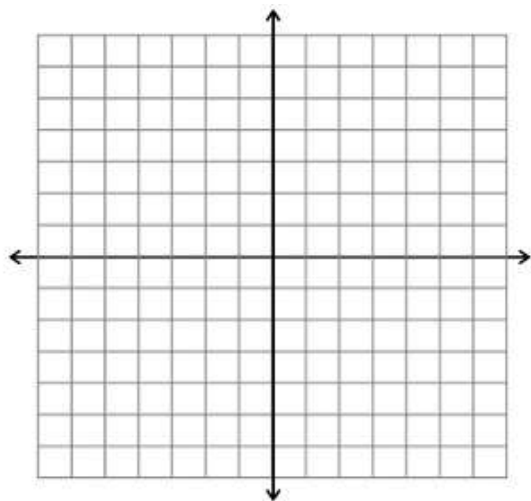
1. Identify $m = \underline{\quad}$, $x = \underline{\quad}$, $y = \underline{\quad}$
2. Write out $y = mx + b$ like $(\underline{\quad}) = (\underline{\quad})(\underline{\quad}) + b$
3. Plug in m , x , and y into the formula
4. Solve for b .
5. Plug in m and b into your equation as your final answer.



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35. *through* $(-2, -5)$; *slope* $= \frac{3}{2}$

36. *through* $(-5, -2)$; *slope* $= \frac{7}{5}$

**#5 Write equation AND graph a line given two points (teach algebraically and on a graph)****Given TWO points:**

Steps:

1. Use the slope formula to find
- m
- .

$$\frac{(\quad) - (\quad)}{(\quad) - (\quad)} =$$

2. Identify
- $m = \underline{\quad}$
- ,
- $x = \underline{\quad}$
- ,
- $y = \underline{\quad}$

(Note: Use EITHER of these points to pick x and y !)

3. Write out
- $y = mx + b$
- like
- $(\underline{\quad}) = (\underline{\quad})(\underline{\quad}) + b$

4. Plug in
- m
- ,
- x
- , and
- y
- into the formula

5. Solve for
- b
- .

6. Plug in
- m
- and
- b
- into your equation as your final answer.

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37. through (4, 0) and (3, 3)

1. Use the slope formula to find
- m
- .

$$\frac{(\quad) - (\quad)}{(\quad) - (\quad)} =$$

2. Identify
- $m = \underline{\quad}$
- ,
- $x = \underline{\quad}$
- ,
- $y = \underline{\quad}$

(Note: Use **EITHER** of these points to pick x and y !

3. Write out
- $y = mx + b$
- like
- $(\quad) = (\quad)(\quad) + b$

4. Plug in
- m
- ,
- x
- , and
- y
- into the formula

5. Solve for
- b
- .

6. Plug in
- m
- and
- b
- into your equation as your final answer.

39. through (4, 2) and (0, -1)

1. Use the slope formula to find
- m
- .

$$\frac{(\quad) - (\quad)}{(\quad) - (\quad)} =$$

2. Identify
- $m = \underline{\quad}$
- ,
- $x = \underline{\quad}$
- ,
- $y = \underline{\quad}$

(Note: Use **EITHER** of these points to pick x and y !

3. Write out
- $y = mx + b$
- like
- $(\quad) = (\quad)(\quad) + b$

4. Plug in
- m
- ,
- x
- , and
- y
- into the formula

5. Solve for
- b
- .

6. Plug in
- m
- and
- b
- into your equation as your final answer.

41. through (-4, -2) and (-5, -5)

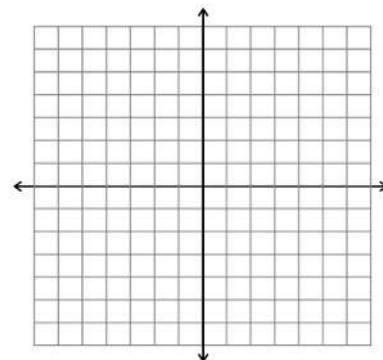
$$\frac{(\quad) - (\quad)}{(\quad) - (\quad)} =$$

Equation: _____

38. through (-3, 1) and (-4, -1)

- 1.
- $rise = \underline{\quad}$
- $run = \underline{\quad}$
- $slope = \underline{\quad}$

- 2.
- $y - intercept = \underline{\quad}$

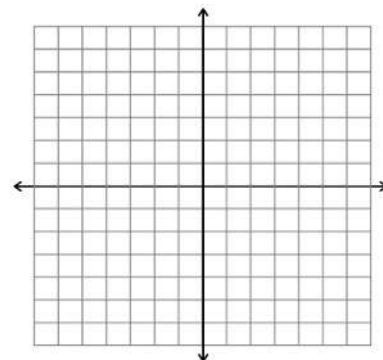


3. Equation: _____

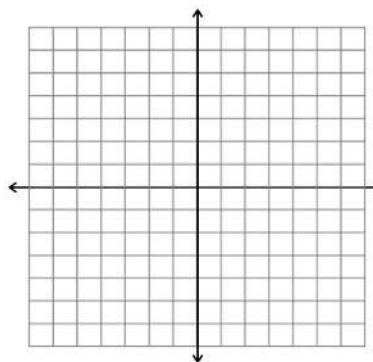
40. through (-1, 0) and (3, 5)

- 1.
- $rise = \underline{\quad}$
- $run = \underline{\quad}$
- $slope = \underline{\quad}$

- 2.
- $y - intercept = \underline{\quad}$



3. Equation: _____

42. through (3, 3) and (2, -4)

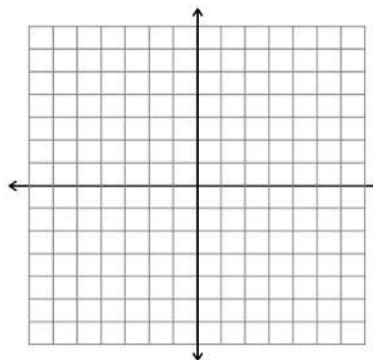
Equation: _____

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43. **through (4, 1) and (0, 3)**

$$\frac{(\quad) - (\quad)}{(\quad) - (\quad)} =$$

Equation: _____

44. **through (2, 0) and (-3, -3)**

Equation: _____