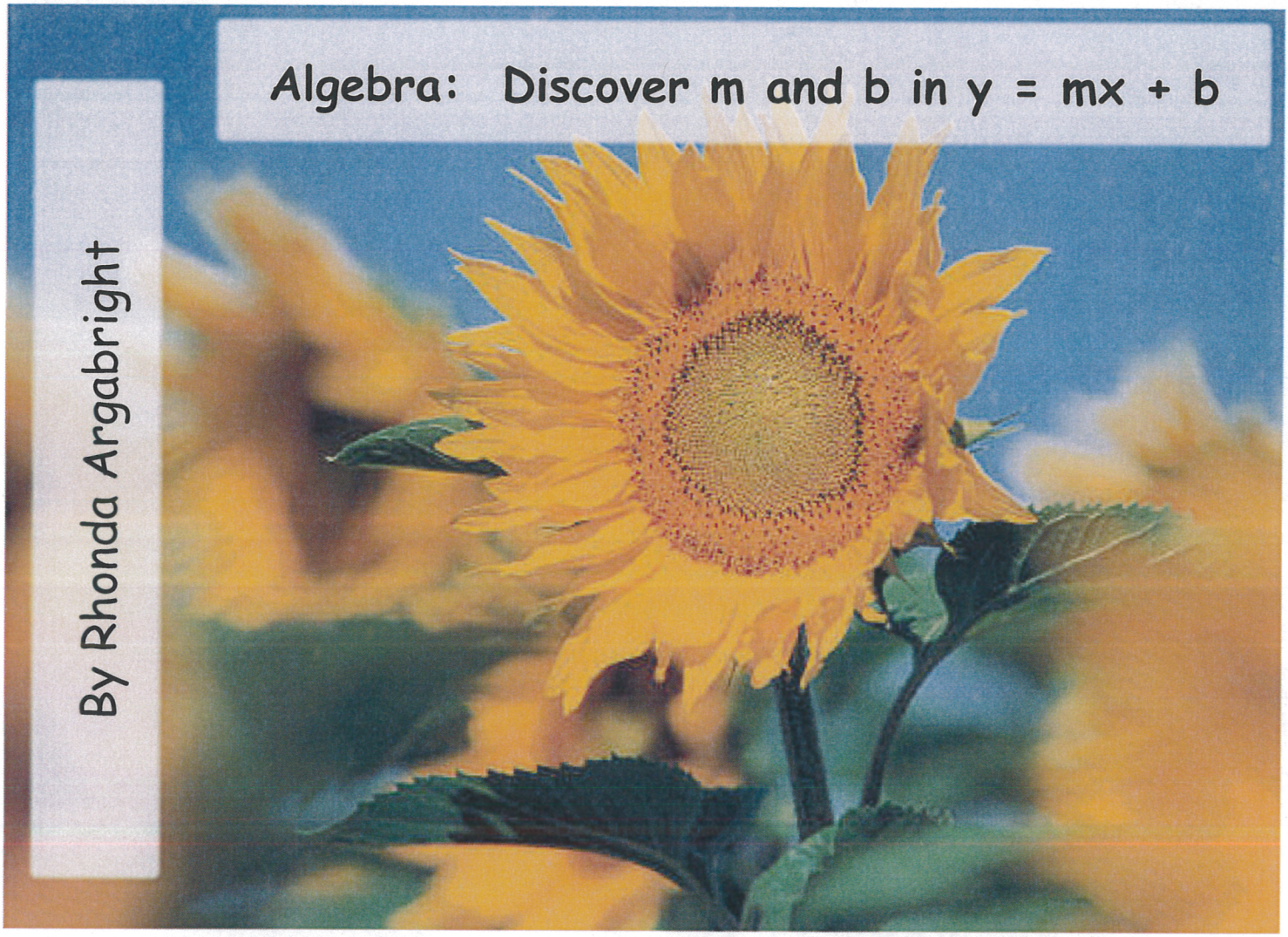
Algebra: Discover m and b in y = mx + b



By Rhonda Argabright

Course: Pre-Alg/Algebra

Objective: The student will graph a line when given the equation y = mx + b; will graph a line when given m and b, and will write y = mx + b when given

Students enjoy using graphing calculators! In this lesson, they discover the role of m and b in the equation y = mx + b. Don't give it away by saying "slope-intercept form" too soon! Retention is improved when they "discover" concepts on their own, and share what they have discovered. Let them teach each other!

Algebra Discovery
$y = mx + b$

When an equation is in the form, $y = mx + b$, we will discover that m represents...

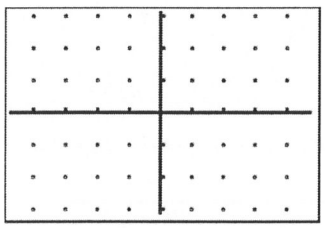
and "b" represents...

Use a TI graphing calculator

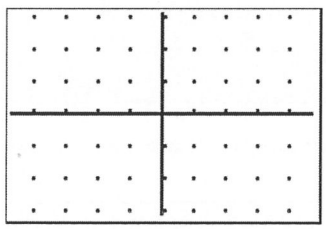
- select [ZOOM] 4
- Press 2nd [ZOOM] [FORMAT] ↓ GridOn.

Enter each equation in [Y=]. Press [GRAPH]. Look closely to locate two points on the line. Sketch.

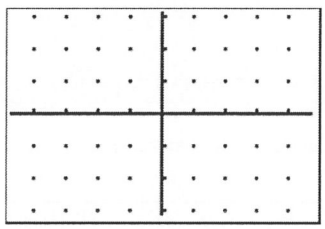
1. $Y_1 = 2X + 1$



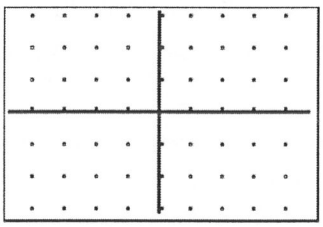
2. $Y_1 = 2/3X + 2$



3. $Y_1 = 1/4X - 2$



4. $Y_1 = -2X - 3$



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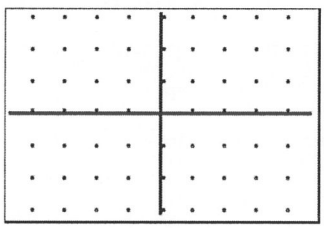
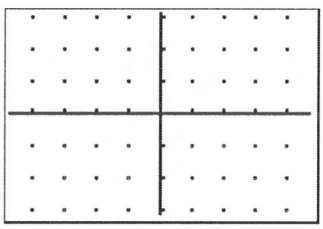


6. $Y_1 = -1/3X - 1$

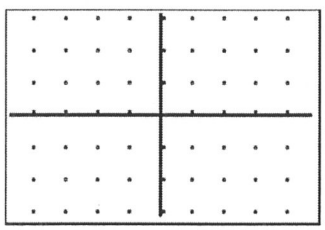


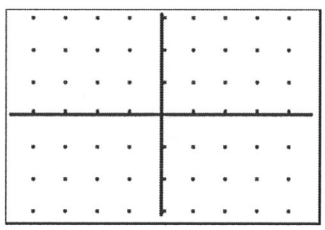
Solve each equation for y. Enter each equation in [Y=]. Press [GRAPH]. Sketch.

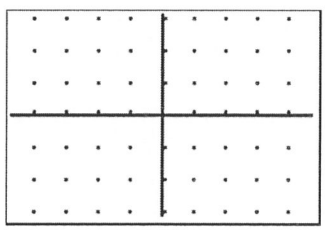
7. $2x + 3y = 6$

8. $x - 4y = 8$

9. $2x + 4y = 12$







Discovery: What does "m" represent? _____

What does "b" represent? _____

For each, write the equation for the graph. Enter your equation in [Y=]. Press [GRAPH] to verify.

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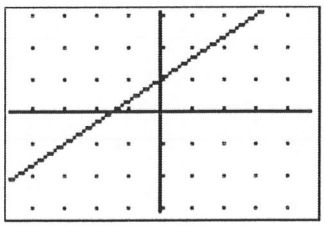

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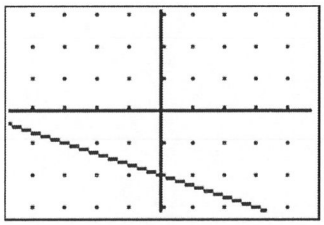

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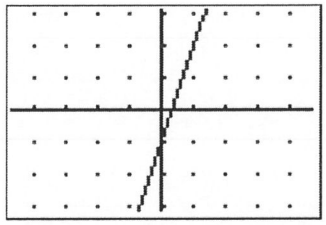

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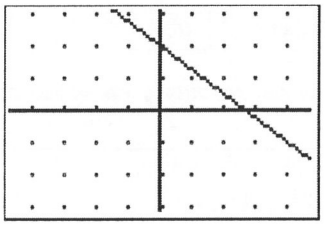

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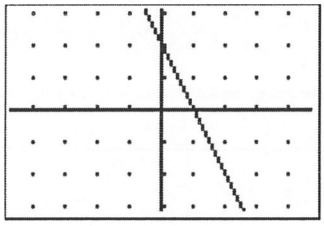

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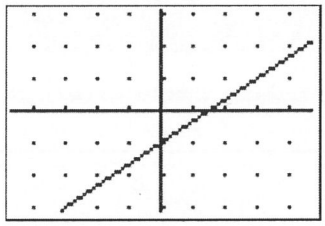
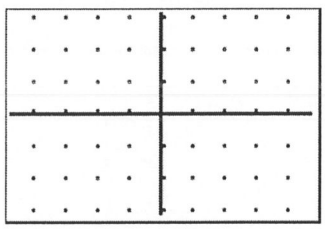


* * * * * No graphing calculator needed. * * * * *

Write an equation for the line with given m and b. Sketch a graph by marking "b" first.

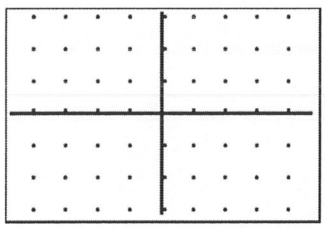
16. m = 3/4, b = -1

_____



17. m = $-\frac{1}{4}$, b = 2

_____



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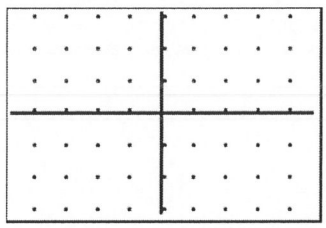

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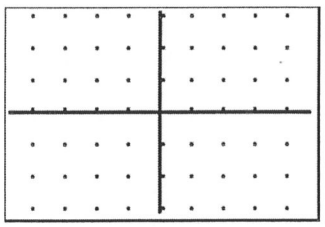

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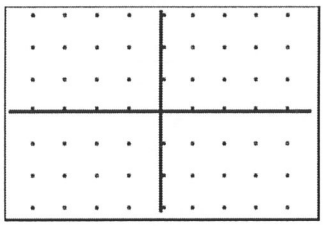
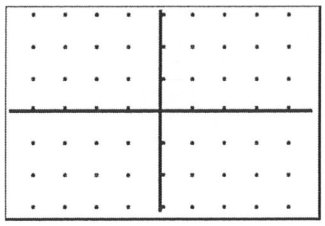


21. m = -5/3, b = -2

_____



Algebra Discovery
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and "b" represents...

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key

Enter each equation in [Y=]. Press [GRAPH]. Look closely to locate two points on the line. Sketch.

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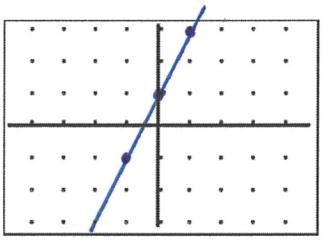

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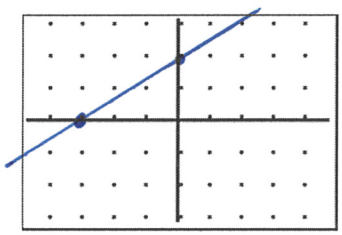

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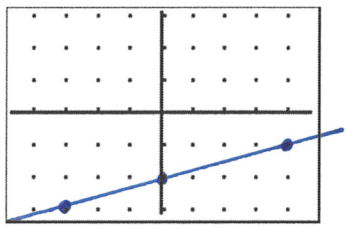

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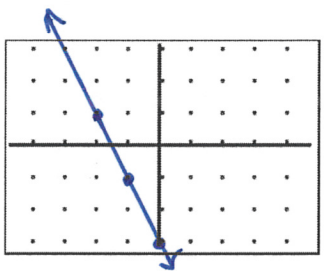

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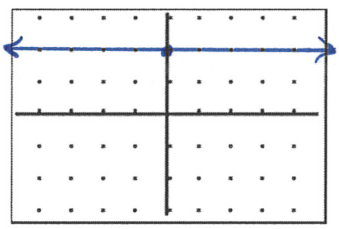
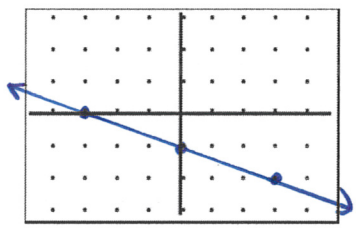


6. $Y_1 = -1/3X - 1$

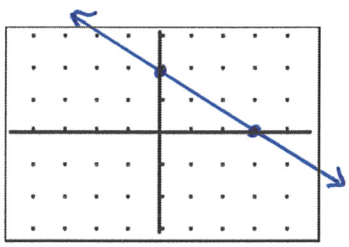


Solve each equation for y. Enter each equation in [Y=]. Press [GRAPH]. Sketch.

7. $2x + 3y = 6$

$3y = -2x + 6$

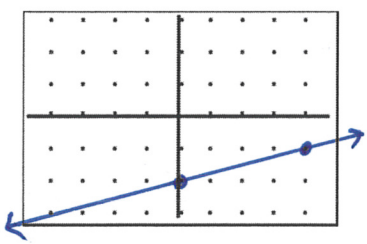
$y = \frac{-2}{3}x + 2$



8. $x - 4y = 8$

$-4y = -x + 8$

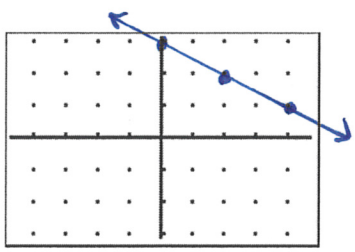
$y = \frac{1}{4}x - 2$



9. $2x + 4y = 12$

$4y = -2x + 12$

$y = \frac{-1}{2}x + 3$



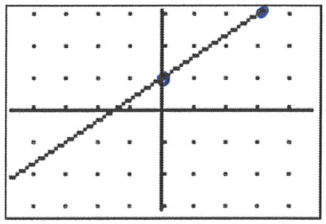
Discovery: What does "m" represent? slope of the line

What does "b" represent? where the line crosses y-axis

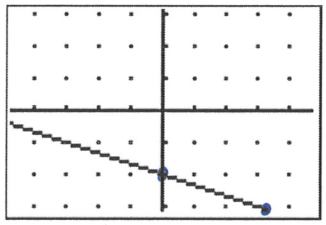
KEY

For each, write the equation for the graph. Enter your equation in [Y=]. Press [GRAPH] to verify.

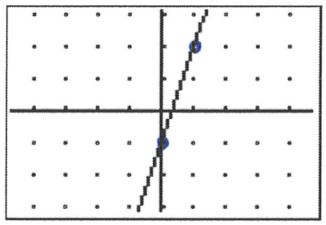
10. $y = \frac{2}{3}x + 1$



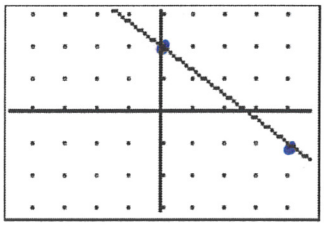
11. $y = -\frac{1}{3}x - 2$



12. $y = 3x - 1$



13. $y = -\frac{3}{4}x + 2$



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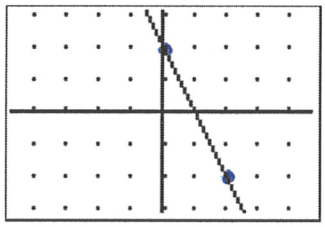

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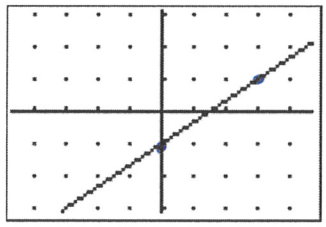

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Write an equation for the line with given m and b. Sketch a graph by marking "b" first.

16. m = 3/4, b = -1

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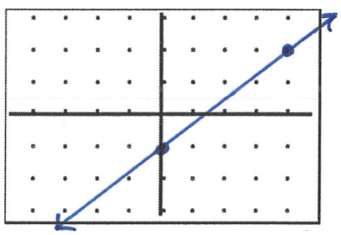

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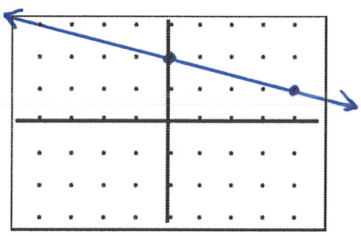
$y = -\frac{1}{4}x + 2$



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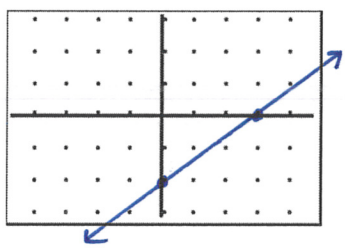

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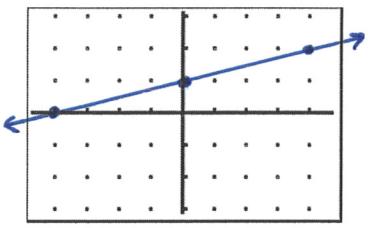

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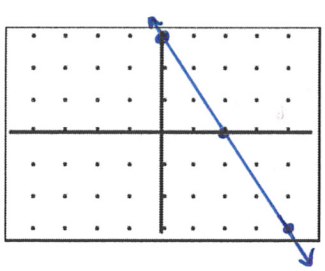

21. m = -5/3, b = -2

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