PROBLEMS AND SOLUTIONS
ALGEBRAIC REPRESENTATIONS OF LINEAR EQUATIONS IN TWO VARIABLES
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Please Send Questions and Comments to ingrid.stewart@csn.edu. Thank you!

PLEASE NOTE THAT YOU CANNOT USE A CALCULATOR ON THE ACCUPLACER - ELEMENTARY ALGEBRA TEST! YOU MUST BE ABLE TO DO THE FOLLOWING PROBLEMS WITHOUT A CALCULATOR!

Problem 1:

Change the *slope-intercept form* of the linear equation $y = -\frac{4}{3}x + \frac{8}{3}$ to *general form* $Ax + By = C$ so that the coefficient for x and y are integers with the coefficient for x a positive integer.

Problem 2:

Change the *slope-intercept form* of the linear equation $y = \frac{1}{2}x - \frac{7}{2}$ to *general form* $Ax + By = C$ so that the coefficient for x and y are integers with the coefficient for x a positive integer.

Problem 3:

Find the slope and the coordinates of the y-intercept, if they exist, for the lines described as follows:

a. $y = -x + 3$

b. $y = \frac{4}{5}x - 1$

c. $y = 2x$

d. $y = x$

e. $y = 1$

f. $y + 9 = 0$

g. $x = 1$

h. $x + 24 = 0$

Problem 4:

Find the slope and the coordinates of the y-intercept for the line $3x - y = -1$.

Problem 5:

Change the linear equation $2x - 3y = 6$ to *slope-intercept form* $y = mx + b$.

Problem 6:

Change the linear equation $3x + \frac{1}{4}y = 5$ to *slope-intercept form* $y = mx + b$.

Problem 7:

Change the linear equation $-7.8x + 3.9y - 11.7 = 0$ to *slope-intercept form* $y = mx + b$.

Problem 8:

Write the equation of the line with the given slope and y-intercept. For this we will use the *slope-intercept form* $y = mx + b$.

a. $m = 2, b = -5$

b. $m = -5, b = 0$

c. $m = 3, b = 1$

d. $m = 0, b = -7$

Problem 9:

Find the equation of a line passing through the points $(1, 2)$ and $(3, 0)$. Solve the equation for y, if possible.

Problem 10:

Find the equation of a line passing through the points $(1, 2)$ and $(1, -5)$. Solve the equation for y, if possible.

Problem 11:

Find the equation of a line passing through the points $(2, 1)$ and $(-5, 1)$. Solve the equation for y, if possible.

Problem 12:

Find the equation of a line given the point $(-3,-1)$ and the slope $m=-\frac{2}{3}$. Express the equation in *general form*.

Problem 13:

Write an equation of a vertical line through the point ***(-2, 6)***.

Problem 14:

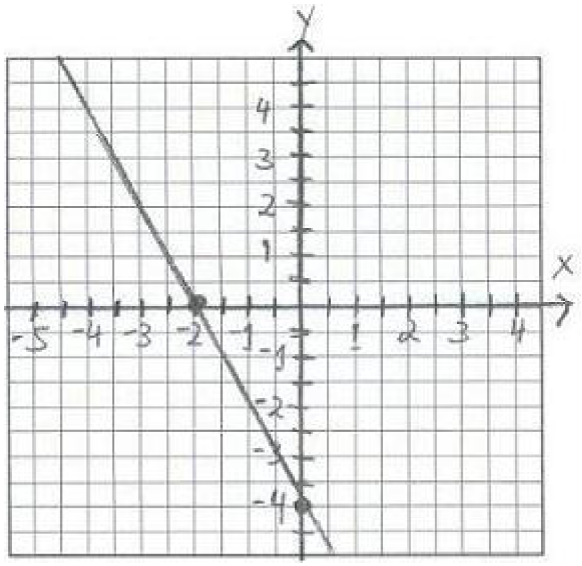
Write an equation of a line with undefined slope through the point ***(3, -5)***.

Problem 15:

Write an equation of a horizontal line through the point ***(-2, 6)***.

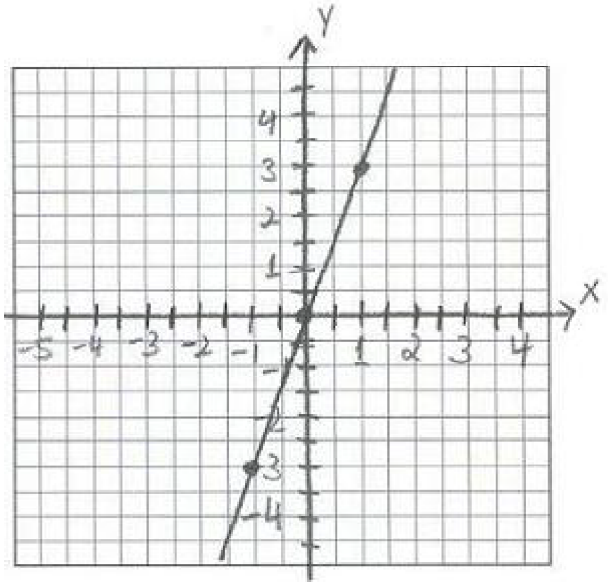
Problem 16:

Find the general equation of the following line.



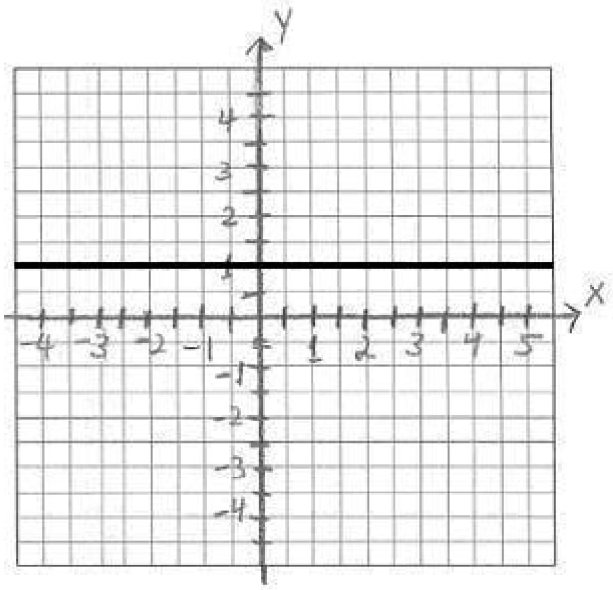
Problem 17:

Find the slope intercept equation of the following line.



Problem 18:

Find the slope-intercept equation of the following line.



Problem 19:

Are the lines ***y = -x + 3*** and ***y = 5 - x*** parallel? Answer Yes or No!

Problem 20:

Are the lines ***y = -x + 3*** and ***y - x = 2*** parallel? Answer Yes or No!

Problem 21:

Are the lines $y = -\frac{2}{3}x + 3$ and $y = \frac{3}{2}x + 6$ perpendicular? Answer Yes or No!

Problem 22:

What is the slope of a line perpendicular to the line ***y = 2x - 5***?

Problem 23:

Write the *Slope-Intercept Equation* of a line through point ***(2, 5)***. The new line is to be parallel to the line ***9x - 3y = -6***.

Problem 24:

Find the *Slope-Intercept Equation* of a line through point ***(-1, 3)*** . The new line is to be perpendicular to the line ***x - 3y = 12***.

SOLUTIONS

You can find detailed solutions below the link for this problem set!

1. 4x + 3y = 8	2. x - 2y = 7	3. a. m = -1, (0, 3) b. m = $\frac{4}{5}$, (0, -1) c. m = 2, (0, 0) d. m = 1, (0, 0) e. m = 0, (0, 1) f. m = 0, (0, -9) g. m is undefined no y-intercept h. m is undefined no y-intercept
4. m = 3, (0, 1)	5. $y = \frac{2}{3}x - 2$	6. y = -12x + 20
7. y = 2x + 3	8. a. y = 2x - 5 b. y = -5x c. y = 3x + 1 d. y = -7	9. y = -x + 3
10. x = 1	11. y = 1	12. 2x + 3y = -9
13. x = -2	14. x = 3	15. y = 6
16. 2x + y = - 4	17. y = 3x	18. y = 1
19. Yes	20. No	21. Yes
22. $m_{perp} = -\frac{1}{2}$	23. y = 3x - 1	24. y = - 3x