Lesson 1.4.5: Linear Equations in Two Variables

Linear Equation: an equation in two variables which can be written in two forms:

- Standard Form: $Ax + By = C$, where $A, B \neq 0$, and $A, B, C \in \mathbb{R}$
- Slope-Intercept Form: $y = mx + b$, where m is the slope and b is the y-intercept, m and $b \in \mathbb{R}$

Solution of a Linear Equation: The solution of a linear equation in two variables is an ordered pair that makes the quation true.

How to Solve a Linear Equation?

1. Choose any value for x.
2. Substitute the chosen value for x and solve for y.

Practice Exercises 1.4.5

A. Determine whether each equation is linear in two variables or not. Write YES or NO.

1. $2x = 4 + y$
2. $y = 5x$
3. $2x - 1 = y$
4. $\frac{1}{4}x = y$
5. $xy = 2$
6. $x^2 + y^2 = 1$
7. $x = y^2$
8. $y = \frac{x}{2}$
9. $y = \frac{6}{x}$
10. $2x + y = 8$

B. Given the value of x, solve each linear equation.

1. $4x - 5y = -7$, $x = 2$
2. $x + 5y = 24$, $x = 4$
3. $3x - 2y = 5$, $x = -1$
4. $-\frac{1}{2}x + 8y = 4$, $x = 8$
5. $-2x + 3y = 17$, $x = 2$

C. Complete the following table.

Linear Equation	Coefficients	Constant
$4x - 5y = -7$		
$x + 5y = 24$		
$3x - 2y = 5$		
$-\frac{1}{2}x + 8y = 4$		
$-2x + 3y = 18$		

D. Complete the following table.

Linear Equation	Slope (m)	y-intercept (b)
$y = -2x + 12$		
$y = 3x - 5$		
$y = -\frac{2}{5}x + 7$		
$y = -3x - 8$		
$y = 10x - 4$		

E. Write *Yes* if the ordered pair is a solution of the given linear equation or *No* if it is not.

1. $(-1, 1)$, $4x - 3y = -7$
2. $(-2, -3)$, $x + 5y = 13$
3. $(3, 2)$, $3x - 2y = 5$
4. $(4, -1)$, $-\frac{1}{2}x + 6y = 4$
5. $(-5, -3)$, $-2x + 3y = 1$

Activity 1.4.5

A. Given the value of x, solve each linear equation.

1. $4x - 5y = 2$, $x = -2$
2. $x + 6y = 20$, $x = -4$
3. $3x - 2y = -3$, $x = 1$
4. $-\frac{1}{2}x + 4y = 4$, $x = -4$
5. $-2x + 3y = 9$, $x = 3$

B. Complete the following table.

Linear Equation	Coefficients	Constant
$3x - 2y = -3$		
$-\frac{1}{3}x + 5y = -4$		

C. Complete the following table.

Linear Equation	Slope (m)	y-intercept (b)
$y = -3x + 2$		
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D. Write *Yes* if the ordered pair is a solution of the given linear equation or *No* if it is not.

1. $(1, 4)$, $4x - 3y = -8$
2. $(-2, 3)$, $x + 5y = 13$
3. $(3, 2)$, $3x - 2y = 4$
4. $(4, 1)$, $-\frac{1}{2}x + 6y = 4$
5. $(-5, 3)$, $-2x + 3y = 1$

Typeset by Jonathan Rufo Bacolod using LaTeX

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