3 FORMS of Linear Equations

Slope & y-int Form	Slope & Point Form	Standard Form
$y = mx + b$	$y - y_1 = m(x - x_1)$	$Ax + By + C = 0$

slope ↗ ↖ y-int

$m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{\Delta y}{\Delta x} = \dfrac{rise}{run}$
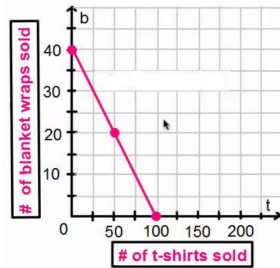
slope ↗

point (x_1, y_1)

-Multiply all terms by LCD to remove all fractions
-Move all terms to one side

CREATING AN EQUATION

FROM WORDS

A plumber charges a flat fee of $50 plus $35/hr.

FROM GRAPH
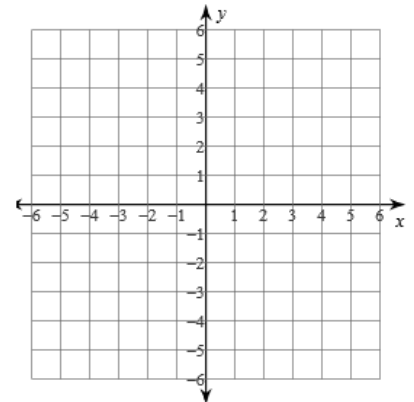

FROM 2 POINTS

$A(3, -5)$ and $B(-1, -3)$

SKETCH LINES

A. $y = \dfrac{2}{5}x$

B. $y = -6 - x$

FIND X & Y INTERCEPTS

$5x - y = 10$

USING A TABLE OF VALUES

$y = \dfrac{1}{2}x - 9$

-Choose any x-values
-If there are fractions, it is best to choose values that are multiples of denominator.

X	Y

PARALLEL LINES

The lines are parallel if and only if they have the same slope.

$$m_1 = m_2$$

PERPENDICULAR LINES

The lines are perpendicular if and only if their slopes are negative reciprocals of each other.

$$m_1 = -\frac{1}{m_2} \text{ or } m_1 m_2 = -1$$

Mr. Slope Guy

Equation	Parallel Line	Perpendicular Line
$y = \dfrac{1}{3}x - 7$		
$y = -6x + 1$		

Horizontal Lines

- They do not have an x-intercept
- They are parallel to the x-axis
- The slope is zero
- The equation is y = b

Vertical Lines

- They do not have a y-intercept
- They are parallel to the y-axis
- The slope is undefined
- The equation is x = a