

**TAKS Objective 1**  
**TEK A.1D**  
**Tutorial**  
**(Grades 9, 10, and 11)**

...represent relationships among quantities using models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities.

## Hint

When given coordinates,  $x$  comes first and  $y$  comes second.

## Example

$(2, 3)$  means  $x = 2$  when  $y = 3$

Mappings and tables are just another way to represent ordered pairs.

# Domain

- x-coordinates
- Independent variable

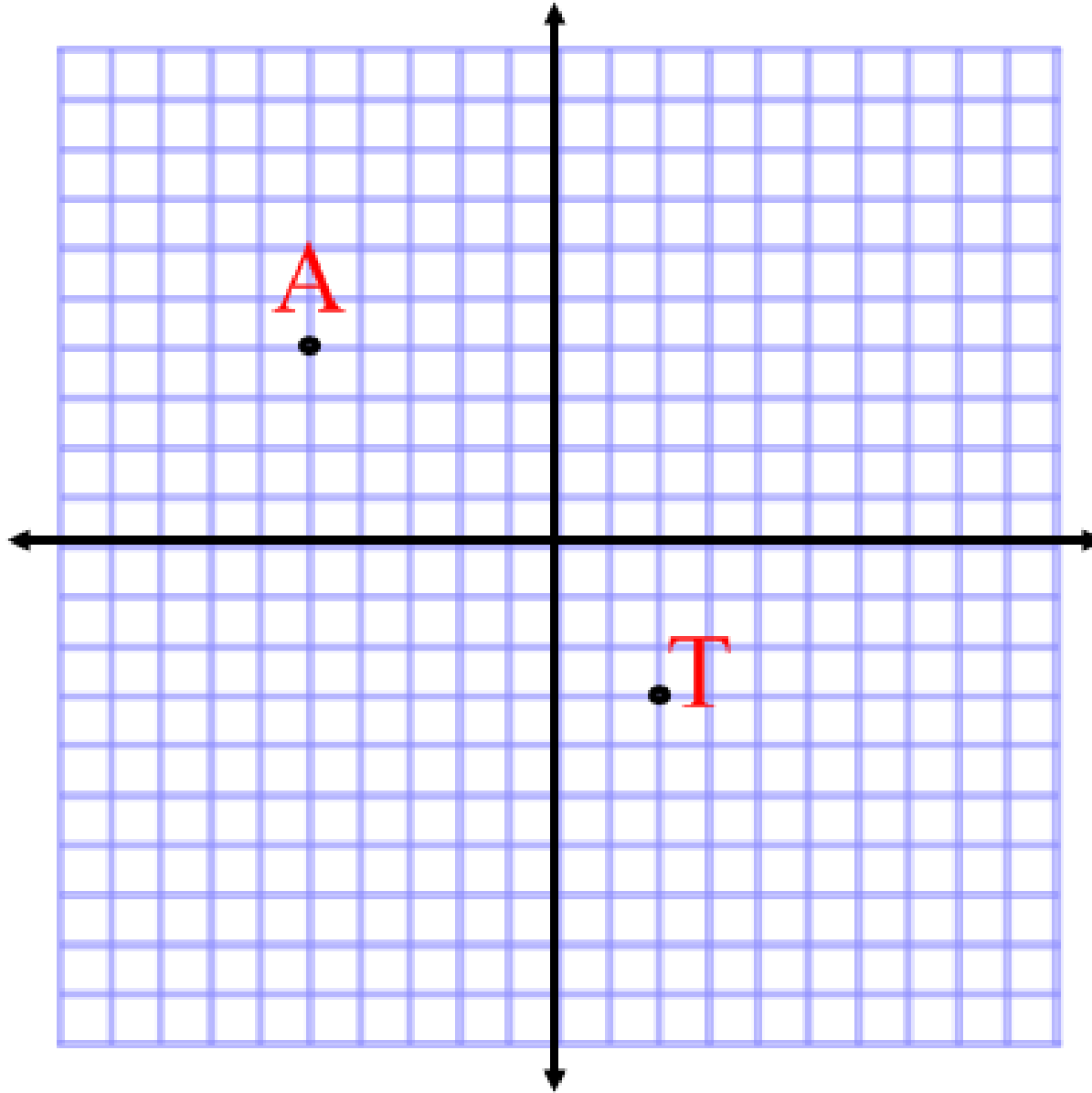
# Range

- y-coordinates
- Dependent variable

# Graphing Points

- On the  $x$ -axis, find the value of the  $x$ -coordinate. Keep track of this location without marking it.
  - From that location, go up or down according to the  $y$ -coordinate and mark the final destination with a dot.

Graph  $A(-5, 4)$  and  $T(2, -3)$ .

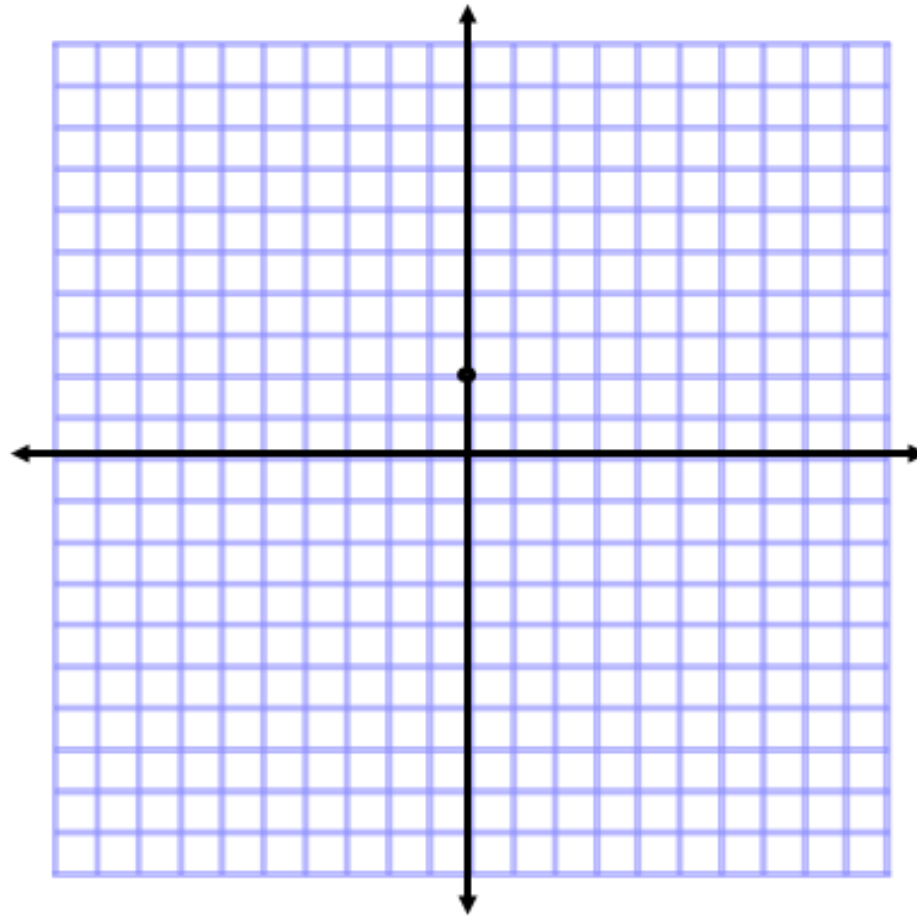


# Graphing Linear Equations

- Graph the  $y$ -intercept first.
- From the  $y$ -intercept, graph the slope: first, the rise, and then, the run.

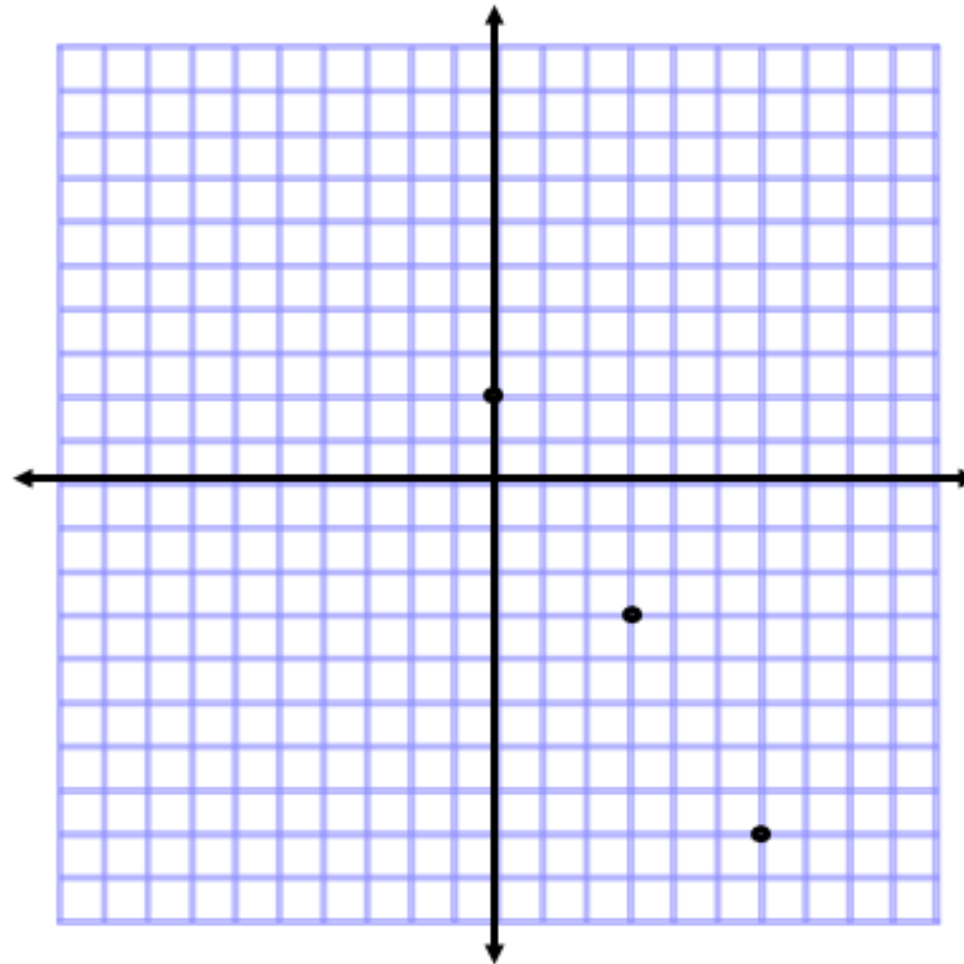
**Graph  $y = -\frac{5}{3}x + 2$ .**

First, graph the y-intercept which is 2.



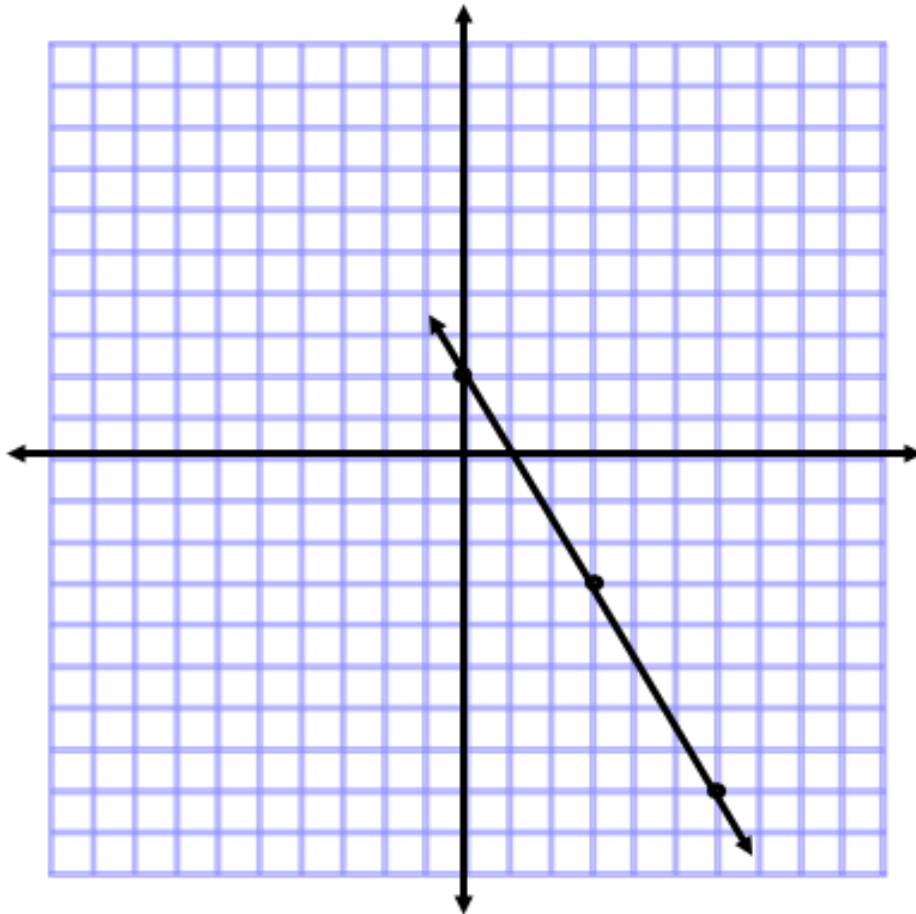
**Graph  $y = -\frac{5}{3}x + 2$ .**

Second, graph the slope which is  $-\frac{5}{3}$ .



**Graph  $y = -\frac{5}{3}x + 2$ .**

Third, draw the line  
that connects the  
points.



# Graphing Inequalities

- When graphing  $>$  or  $<$ , the line is dashed because it is not “equal to”.
- When graphing  $\leq$  or  $\geq$ , the line is solid because it is “equal to”.  
The solid line shows that the line is shaded.

# Graphing Inequalities

- When graphing  $y >$  or  $y \geq$ , shade the area where  $y$  is getting bigger (usually above the line).
- When graphing  $y <$  or  $y \leq$ , shade the area where  $y$  is getting smaller (usually below the line).

# Given Equations in Standard Form

$$ax + by = c$$

- Solve the equation for  $y$ .
- First, take “ $ax$ ” to the other side using the opposite operation of addition or subtraction.
- Next, divide both sides by “ $b$ ” and simplify.

Solve  $3x - 2y = 7$  for  $y$ .

$$\begin{array}{r} 3x - 2y = 7 \\ -3x \qquad \qquad -3x \\ \hline \end{array}$$

$$\frac{-2y}{-2} = \frac{-3x + 7}{-2}$$

$$y = \frac{3}{2}x - \frac{7}{2}$$

Solve  $-5x + 4y = -20$  for  $y$ .

$$-5x + 4y = -20$$

$$+5x$$

$$+5x$$

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$$\frac{4y}{4} = \frac{5x - 20}{4}$$

$$y = \frac{5}{4}x - 5$$

# Given Inequalities in Standard Form

- Solve the inequality for  $y$ .
  - First, take “ $ax$ ” to the other side using the opposite operation of addition or subtraction.
    - Next, divide both sides by “ $b$ ” and simplify.
- (Reminder: If “ $b$ ” is negative, flip the inequality.)

Solve  $3x - 2y < 7$  for  $y$ .

$$\begin{array}{r} 3x - 2y < 7 \\ -3x \qquad \qquad -3x \\ \hline -2y < -3x + 7 \\ \frac{-2y}{-2} < \frac{-3x + 7}{-2} \\ y > \frac{3}{2}x - \frac{7}{2} \end{array}$$

Solve  $-5x + 4y \geq -20$  for  $y$ .

$$-5x + 4y \geq -20$$

$$+5x$$

$$+5x$$

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$$\frac{4y}{4} \geq \frac{5x - 20}{4}$$

$$y$$

$$4$$

$$y \geq \frac{5}{4}x - 5$$