What you will learn about:
Graph with Intercepts

Intercepts of a graph

Standard form
\[ Ax + By = C \]

Finding x-intercept
Let \( x = 0 \) and solve for \( y \)

Finding y-intercept
Let \( x = 0 \) and solve for \( y \)

Finding the \( x \) and \( y \) intercepts of the graph

Find the intercepts of \( 2x + y = 6 \)

Find the intercepts of \( 3x + 6y = 24 \)
\[
X = \frac{2y}{3}, \quad Y = \frac{2y}{4}
\]
\[
(3,0), \quad (0,4)
\]

Find the intercepts of \( 4x - 3y = 12 \)
\[
X = \frac{12}{4}, \quad Y = \frac{12}{-5}
\]
\[
(3,0), \quad (0,4)
\]

Graph using the intercepts
\( -x + 2y = 6 \)

\[
A = -1, \quad B = 2, \quad C = 6
\]

\[
X = \frac{C}{A}, \quad Y = \frac{C}{B}
\]

\[
(-6,0), \quad (0,3)
\]
Graph using the intercepts
5x - 2y = 10
\[ A = 5 \quad B = -2 \quad C = 10 \]
\[ X-inter = \frac{C}{A} \]
\[ Y-inter = \frac{C}{B} \]
\[ X = \frac{10}{5} = 2 \]
\[ Y = \frac{-10}{-2} = \frac{10}{2} \]
\[ (2,0) \]
\[ (0,5) \]

Slope = \frac{-A}{B}
\[ = \frac{-5}{-2} = \frac{5}{2} \]

Graph using the intercepts
3x - 5y = 0
\[ A = 3 \quad B = 5 \quad C = 0 \]
\[ X-inter = \frac{C}{A} \]
\[ Y-inter = \frac{C}{B} \]
\[ X = \frac{0}{3} = 0 \]
\[ Y = \frac{0}{-5} = 0 \]
\[ (0,0) \]
\[ (0,0) \]

Slope = \frac{-A}{B}
\[ = \frac{-3}{5} = \frac{3}{5} \]

Graph using the intercepts
-2x - 8y = 0
\[ A = -2 \quad B = 8 \quad C = 0 \]
\[ X-inter = \frac{C}{A} \]
\[ Y-inter = \frac{C}{B} \]
\[ X = \frac{0}{-2} = 0 \]
\[ Y = \frac{0}{-8} = 0 \]
\[ (0,0) \]
\[ (0,0) \]
What you will learn about:
Understanding Slope of a Line

Slope of a line

\[
\frac{m}{m} = \frac{\text{rise}}{\text{run}}
\]

\[
m = \frac{\Delta y}{\Delta x}
\]

Find the slope of the line.

Work left to right

\[
m = \frac{4}{5}
\]

\[
m = \frac{-4}{6} = \frac{-2}{3}
\]

\[
m = \frac{3}{5}
\]
Formula to find slope given two points

\[ m = \frac{y_2 - y_1}{x_2 - x_1} \]

Find the slope of the line that passes through the points 
(1, 2) and (4, 5).

\[ m = \frac{5-2}{4-1} = \frac{3}{3} = 1 \]

Find the slope of the line that passes through the points 
(8, 5) and (6, 3).

\[ m = \frac{5-5}{6-8} = -\frac{2}{-2} = 1 \]

Find the slope of the line that passes through the points 
(-2, -3) and (-7, 4).

\[ m = \frac{4-(-3)}{-7-(-2)} = \frac{7}{-5} = -\frac{7}{5} \]

Find the slope of the line that passes through the points 
(-2, 6) and (-3, -4).

\[ m = \frac{-4-6}{-3-(-2)} = \frac{-10}{-1} = 10 \]

Find the slope of the line that passes through the points 
(3, -5) and (3, 8).

\[ m = \frac{8-(-5)}{3-3} = \frac{13}{0} \quad \text{Undefined} \]

Vertical Line

Find the slope of the line that passes through the points 
(4, -2) and (-2, -2)

\[ m = \frac{-2-(-2)}{-2-4} = \frac{0}{-6} = 0 \]

Horizontal Line

Find the slope of the line that passes through the points 
(5, 0) and (5, -6)

\[ m = \frac{-6-0}{5-5} = \frac{-6}{0} \quad \text{Undefined} \]
Quick Guide to Slope (Left → Right)

- Increasing
- Decreasing
- Constant
- Positive
- Negative
- Zero
- Undefined

Graph the line passing through the point (1, -1) whose slope is \( m = \frac{3}{4} \)

\[
m = \frac{\text{rise}}{\text{run}}
\]

Graph the line passing through the point (-2, 2) with a slope of \( m = \frac{2}{3} \)
Graph the line passing through the point \((4, 2)\) with a slope of 
\[ m = -\frac{1}{4} \]

Graph the line with \(y\)-intercept 2 whose slope is 
\[ m = -\frac{2}{3} \]
Graph the line with y-intercept 4 whose slope is \( m = -\frac{5}{2} \)

Graph the line with x-intercept -3 and slope \( m = -\frac{3}{4} \)

Graph the line passing through the point (-1, -3) with a slope of \( m = 4 \)

\[
m = \frac{y}{x} = \frac{4}{1}
\]