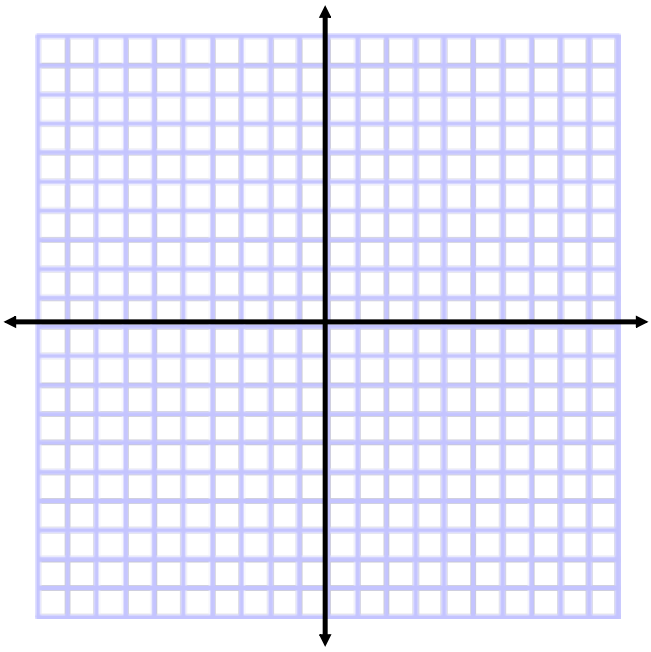
What is the slope and y intercept for the following line?

$-4x + 8 = y$

Write the equation of the line with a slope of 4 and passing through (-3, -9).



Learning Goal:

By the end of today, I will be able to recognize parallel and perpendicular lines from their equations.

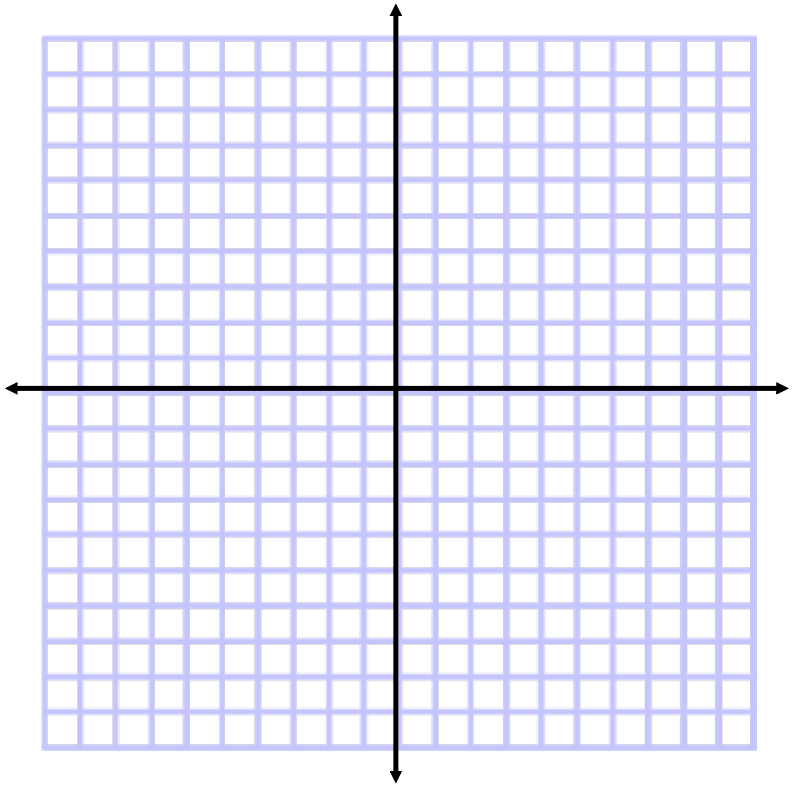
Graph the following three lines.

What similarities do you see?

$y = 2x + 7$

$y = 2x + 3$

$2x - 6 = y$



Parallel Lines have the SAME Slope.

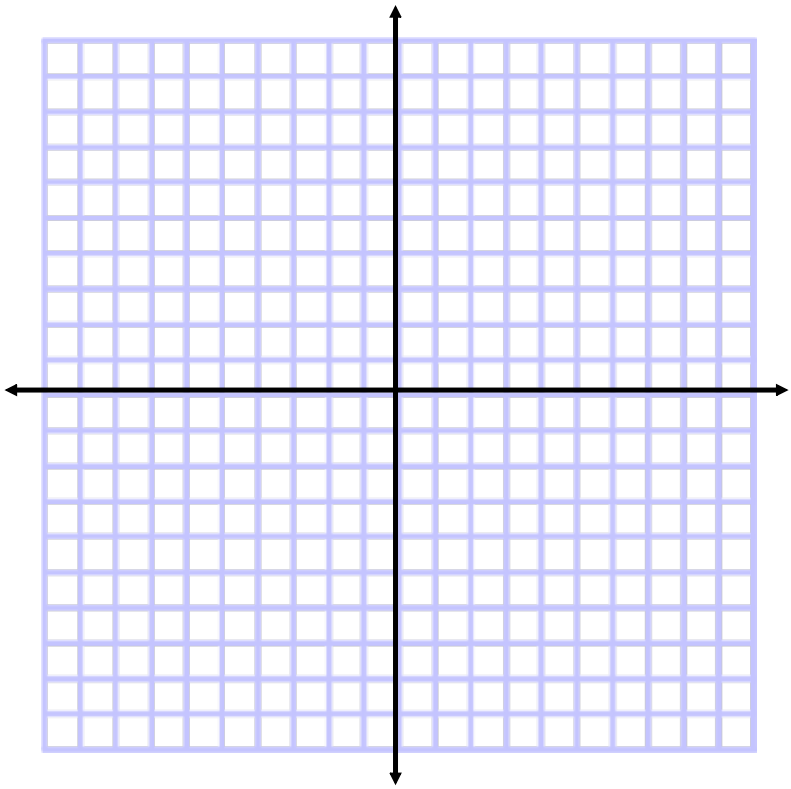
The symbol for parallel is two line " II "

Graph the following two lines.

At what angle do the lines meet?

$y = 2x + 3$

$$y = -\frac{1}{2}x - 2$$



Perpendicular Lines have Slopes that are "negative reciprocals" of each other.

The symbol for perpendicular is two lines in the shape of an upside down "T" $\perp$

Example

m = 3 $m_{\perp} = \frac{-1}{3}$

Find the parallel and perpendicular slopes for the following:

m = 5 $m_{\parallel} =$ $m_{\perp} =$

m = -3 $m_{\parallel} =$ $m_{\perp} =$

m = $\frac{3}{4}$ $m_{\parallel} =$ $m_{\perp} =$

Finding equations - we need the slope and any point

Find the equation of the line that is perpendicular to y = -3x + 8
and passes through (6,1)

Find the equation of the line, that is parallel to $2x+4y-8=0$

and

has the same x intercept as $4x-3y=12$

Are the following line segments parallel, perpendicular or neither.

Line Segment AB - A(2,10) and B(-7,4)

Line Segment CD - C(-2,3) and D(-6,9)

Consolidation Questions:

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Super Challenging - 9, 10, 11, 15