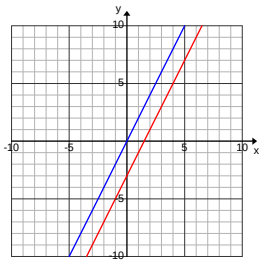
Parallel and Perpendicular Lines

Name:_____ Date:_____

Example: Graph the following equations on the same graph.

$y = 2x$ $-2x + y = -3$

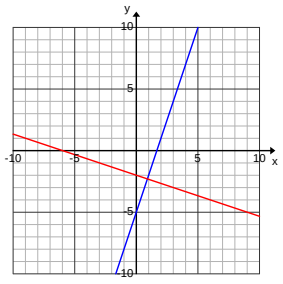


What do you notice about the lines? They appear to be parallel. But we can not tell until we calculate the slope of each.

If these lines are parallel what do they have in common? They have the same slope. For $y = 2x$ the slope is 2. for $-2x + y = -3$, the slope is also 2. ($\begin{matrix} -2x + y = -3 \\ y = 2x + 3 \end{matrix}$

a) Slope
b) Y-intercept
c) Point slope formula
d) They all have the same value no matter what point you use.

Example: Graph the following linear equations on the same graph. $3x - y = 5$ $y = (-\frac{1}{3})x - 2$



What do you notice about the lines? They appear to be perpendicular. The slope of $3x - y = 5$ is 3. The slope of $y = (-\frac{1}{3})x - 2$ is $-\frac{1}{3}$

What does it mean for lines to be perpendicular?

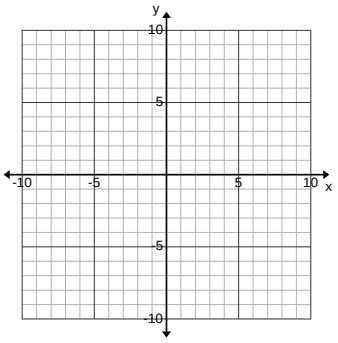
a) Reciprocal slope; same signs
b) Opposite reciprocal slope
c) Same slope same signs
d) Same slope different signs

Parallel and Perpendicular Practice

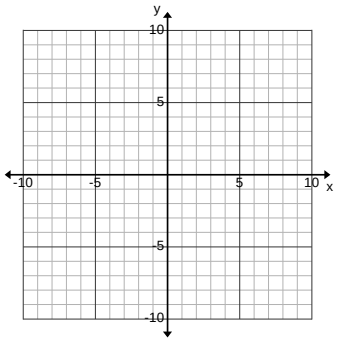
Name_____ **Period**_____ **Date**_____

Directions: Graph and determine if the lines are parallel or perpendicular.

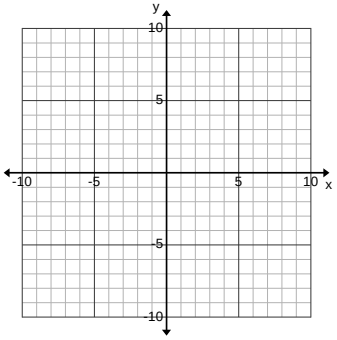
1.) $y = 3x - 1$
$y - 5 = 3(x + 7)$



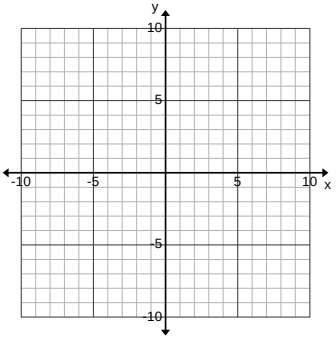
2.) $y - 4 = 2(x + 2)$
$4x + 2y = 6$



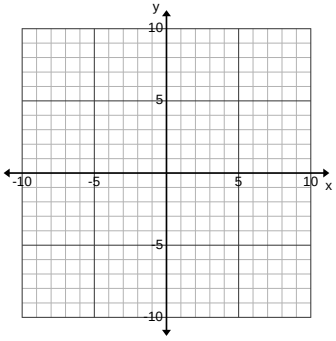
3.) $y = \frac{1}{3}x + 2$
$3x + y = 6$



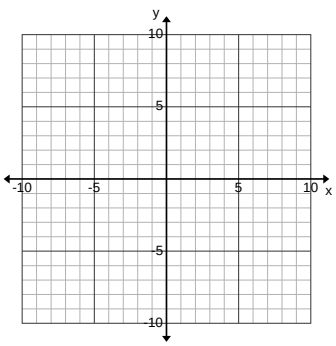
4.) $2x + 4y = 7$
$y - 3 = \left(-\frac{1}{2}\right)(x + 2)$



5.) $4x + 3 = y$
$y - 3 = \left(-\frac{1}{4}\right)(x + 8)$

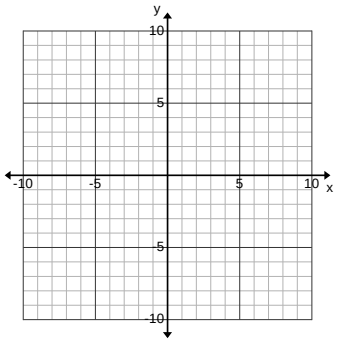


6.) $y - 3 = -(x + 1)$
$x + y = 4$



Directions: Graph each pair of lines on their given graph. What do you notice about these pairs?

7.) $y-3=3(x+2)$
$y=3x+9$



8.) $3x-2y=6$
$y=\frac{3}{2}x-3$