Graphic Organizer for Problem-Based Courses Example

# Restate the problem or question/determine the type of problem

Find the equation of the line perpendicular to the line $y=-5x+2$ that passes through the point (3,-1).

# Identify Knowns and Unknowns

## Known

Line 1: $y=-5x+2, M\_{1}=-5, b\_{1}=2$

Line 2: passes through $(3,-1)$

## Unknown

Slope 2: M2=

Y-int. 2: b2=

# Identify Formula

$Y=Mx+b$, M is the slope, b is the Y-int; $M\_{2}=\frac{-1}{M\_{1}}$

# Other Notes

1 lines: Slopes are negative reciprocals $M\_{2}=\frac{-1}{M\_{1}}$

# To find the Answer.

# Show your work and write an explanation for each step.

## Step 1

Find M2. $M\_{2}=\frac{-1}{M\_{1}}$. $M\_{2}=\frac{-1}{-5}=\frac{1}{5}$. Find slope of line 2 from slope of line 1.

## Step 2

Find b2. $Y=\frac{1}{5}x+b$. Set up equation for line 2 with slope of line 2.

## Step 3

$\left(3,-1\right)=(x,y)$, $-1=\frac{1}{5}\left(3\right)+b$. Use the point $(3,-1)$ to find b (y-int) of line 2.

## Step 4

$-1=\frac{3}{5}+b$, $-1-\frac{3}{5}=\frac{3}{5}-\frac{3}{5}+b$. Simplify.

## Step 5

$-1-\frac{3}{5}=b$, $-\frac{8}{5}=b$. Simplify to find b of line 2

## Step 6

$Y=\frac{1}{5}x+(-\frac{8}{5})$, Use M2 and b2 to write equation!

## Answer (Examine your answer. Is it correct? Is it reasonable?)

$$Y=\frac{1}{5}x-\frac{8}{5}$$

Additional Info

For more information, visit the Center for Academic Success in B-31 Coates Hall, call (225)578-2872, or visit [lsu.edu/cas](https://lsu.edu/cas/).