

What's Going On?

Checking In

Minds on

Showing Off Your Skillz.

Action!

Leading Questions.

Consolidation

Step by step.

Learning Goal - I will be able to determine the equation of a line given the slope and a point on the line.

Have your homework logs out while you work on these questions.

Write the equation of a line parallel to $y = 4x - 7$

Write the equation of a line perpendicular to $y = 4x - 7$

Minds on

Showing off your skillz.

Does the line defined by the equation

$$y = -2x - 5$$

go through the point $(-4, 3)$?

$$y = -2(-4) - 5$$

$$y = +8 - 5$$

$$y = 3$$

$$(-4, 3)$$

$$y = 4x - 9$$

Is the point $(-3, 5)$ on this line?

$$y = 4(-3) - 9$$

$$y = -12 - 9$$

$$y = -21 \text{ NO!}$$

Find 3 different points on this line.

$$y = 4x - 9$$

Find 3 different points on this line.

When $x=1$ $y=-5$

$x=2$ $y=-1$

$x=3$ $y=3$

$x=4$ $y=7$

Action!

Leading Questions

Find the equation of the line with slope 2
that goes through the point (4, 6)

Action!

Leading Questions

Find the equation of the line with slope 2
that goes through the point (4, 6)

1. What do I need to determine the
equation of a line?

① *y-intercept*

② *slope*

Action!

Leading Questions

Find the equation of the line with slope 2
that goes through the point (4, 6)

2. What do I have?

① the slope
 $m=2$

② a point
 $(x,y)=(4,6)$

Action!

Leading Questions

Find the equation of the line with slope 2
that goes through the point (4, 6)

3. What do I still need?

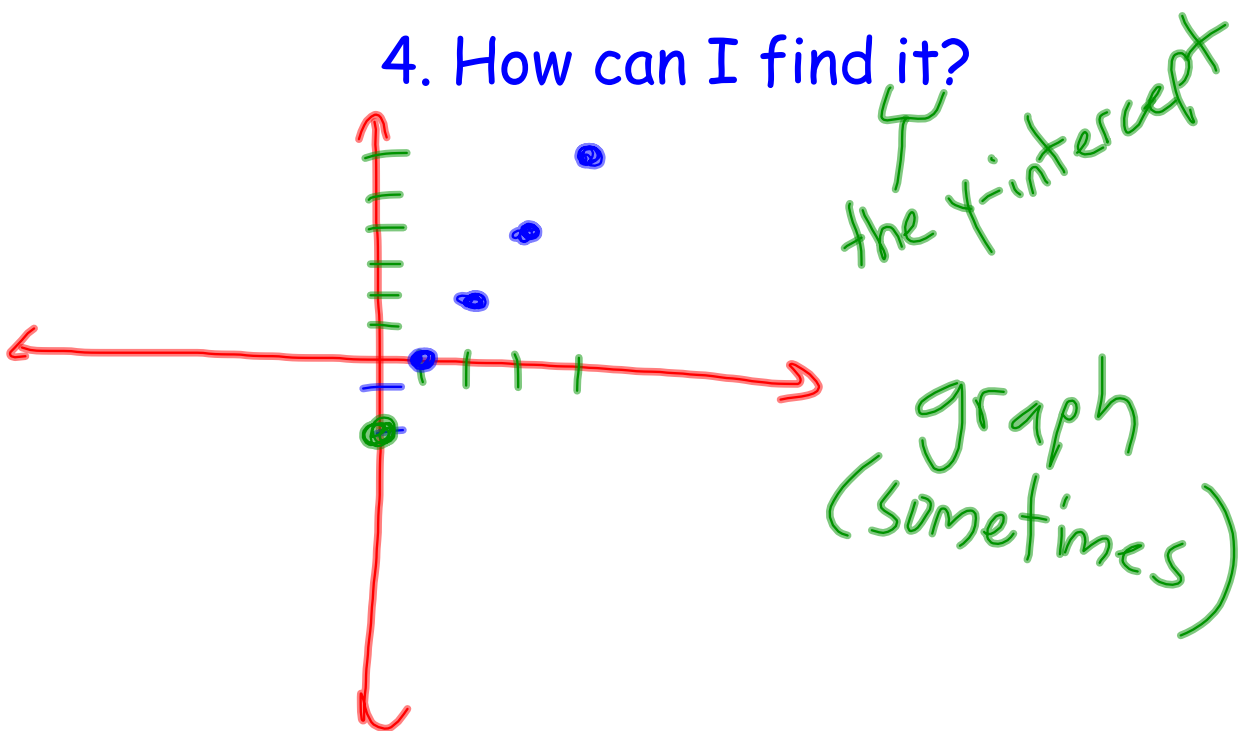
the y-intercept

Action!

Leading Questions

Find the equation of the line with slope 2 that goes through the point (4, 6)

4. How can I find it?



Action!

Leading Questions

Find the equation of the line with slope 2 that goes through the point (4, 6)

4. How can I find it?

(4, 6)

(3, 4)

(2, 2)

(1, 0)

(0, -2)

Action!

Leading Questions

Find the equation of the line with slope 2
that goes through the point $(4, 6)$

4. How can I find it?

$$m = 2 \quad (x, y) = (4, 6)$$

$$x = 4$$

$$y = 6$$

$$y = mx + b$$

$$6 = (2)(4) + b$$

$$6 = 8 + b$$

$$-2 = b$$

$$b = -2$$

$$y = 2x - 2$$

Consolidation

Step by Step

Determining the Equation of a Line
Given the slope and a point.

1. Identify the slope as m .
2. Label the point as (x, y) .
3. Plug in the values of x , y and m into
 $y = mx + b$.
4. Simplify and solve for b .
5. Write your equation with m and b in place!

Consolidation

Making Connections

Find the equation of the line **parallel** to

$$4x - 2y + 6 = 0$$

that goes through the point (2, 1)

$$\begin{aligned}
 & \cancel{4x} - 2y + \cancel{6} = 0 \\
 & \quad \quad \quad -4x - 6 \\
 & \quad \quad \quad \cancel{-2y} = \frac{-4x - 6}{-2} \\
 & \quad \quad \quad y = 2x + 3
 \end{aligned}$$

The slope of the given line is 2. \therefore our slope is also 2.

$$m = 2$$

$$(x, y) = (2, 1)$$

$$x = 2$$
$$y = 1$$

$$y = mx + b$$

$$\downarrow \quad \downarrow$$

$$1 = (2)(2) + b$$

$$1 = 4 + b$$

$$-4 \quad -4$$

$$-3 = b$$

$$b = -3$$

Because $m=2$
and $b=-3$, my
equation is

$$y = 2x - 3$$

Consolidation

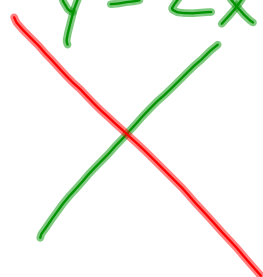
Making Connections

Find the equation of the line **perpendicular** to

$$4x - 2y + 6 = 0$$

that goes through the point $(2, 1)$

$$y = 2x + 3$$



$$\frac{2}{1} \Rightarrow -\frac{1}{2}$$

Consolidation

Practice it!

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