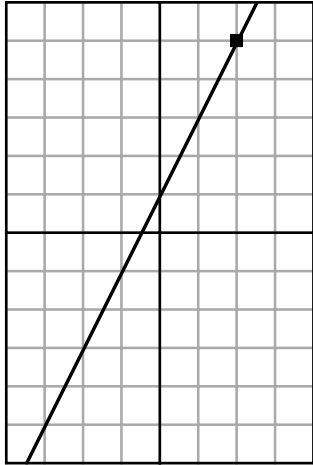


Linear Equations: $y = mx + b$

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Euclid site

Point and slope

Point = (1,3) slope = 2



$$\begin{aligned}y &= 2x + b \\(3) &= 2(1) + b \\3 &= 2 + b \\3 &= 2 + b \\-2 & \quad -2 \\ \hline 1 &= b \\y &= 2x + 1\end{aligned}$$

Question: What is the linear equation that has the point (1,3) on the line and has a slope of 2?

Write the equation with the slope = 2

From the point: $x = 1$ and $y = 3$
(Don't get them backwards)

Multiply the slope 2 times (1)

Solve for b:
Subtract the the 2 from the b side
and subtract 2 from the left side
to keep the equation balanced

Write the linear equation with the slope = 2
and $b = 1$

Two points

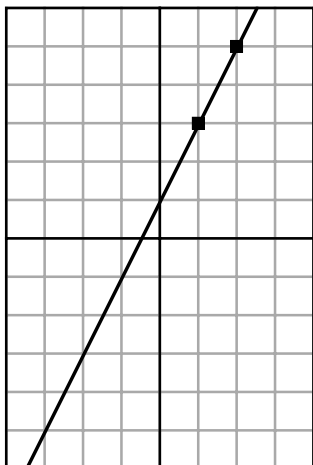
Points = (2,5) 2 5
(1,3) $-\frac{1}{1}$ $-\frac{3}{2}$

$$\text{slope} = \frac{2}{1}$$

Question: What is the linear equation that has the points (1,3) and (2,5) on the line?

Find the slope:
Subtract one point from the other
(it doesn't matter which one you subtract)

Put the y over the x (rise over run)
The slope = 2



$$\begin{aligned}y &= 2x + b \\(5) &= 2(2) + b \\5 &= 4 + b \\5 &= 4 + b \\-4 & \quad -4 \\ \hline 1 &= b \\y &= 2x + 1\end{aligned}$$

Write the equation with the slope = 2

From the first point: $x = 2$ and $y = 5$
(Or use the second point: $x = 1$ and $y = 3$)

Multiply the slope 2 times (2)

Solve for b:
Subtract the the 4 from the b side
and subtract 4 from the left side
to keep the equation balanced

Write the linear equation with the slope = 2
and $b = 1$