

Lesson 7.2: Creating Equations of Lines

Learning Goal: We are learning to write the equation of a line without using a graph.

Recall that the slope intercept form is $y = mx + b$, where m is the slope of the line and b is the y-intercept. In today's lesson, we are going to focus on creating the equation of a line given various pieces of information.

Here are the steps:

1. Are you given slope? If yes, move to step 3. If no, do step 2.
2. Calculate the slope using the slope formula.
3. Do you have the y-intercept, meaning **b** or **(0,#)**? If yes, insert the **m** and **b** into $y = mx + b$ then done! If no, next step.
4. Pick a point, labeling it (x_1, y_1) , then insert the slope (m) and that point into the *Point-Slope Form*, $y - y_1 = m(x - x_1)$. You will then need to work it from there, but I will show you.

For all the following examples, create $y = mx + b$.

1. $m = \frac{4}{3}$ and $b = -8$

2. $m = 5$ and $(-2, 3)$

3. $m = \frac{-3}{5}$ and $(10, 6)$

4. $m = -7$ and $(0, 5)$

5. $(-3,3)$ and $(-2,5)$

6. $(-4,5)$ and $(5,2)$

7. Create the equation of a line which has the same slope as $4x - 5y = -5$ and has the same y-intercept as $3y + 5x - 9 = 0$.

8. Create the equation of a line which has the same slope as $8 - 3y = 7x$ and passes through the point $(4,-5)$.

Success Criteria:

- I can write the equation of a line if I am given the slope and the y-intercept
- I can use the point-slope form to create the equation of a line.