

Algebra Equations of Lines Day 4

warm up

1. Explain in words how to find the slope of a line if you know 2 points on the line.

To find slope use $m = \frac{y_2 - y_1}{x_2 - x_1}$

2. Find the slope of the line through $(-1, 5)$ and $(3, 8)$.

$m = \frac{8 - 5}{3 - (-1)} = \frac{3}{4}$

$m = \frac{3}{4}$

3. Write an equation for the line with a slope of -8 and a y-intercept of 3.

$y = mx + b$

$y = -8x + 3$

For numbers 4 & 5, write an equation for each line with the given information.

4. slope = 5 through the point $(2, -1)$.

$y = mx + b$
 $-1 = 5(2) + b$
 $-1 = 10 + b$

$-1 - 10 = 10 + b - 10$
 $-11 = b$

$y = 5x - 11$

5. slope = -3 through the point $(-6, 0)$

$y = mx + b$
 $0 = -3(-6) + b$
 $0 = 18 + b$
 $-18 - 18 = b - 18$
 $-18 = b$

$y = -3x - 18$

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When we are given two points, we first have to find Slope by $m = \frac{y_2 - y_1}{x_2 - x_1}$.
 Then we have to plug in Slope and our x + y coordinates. Then solve for y-intercept (b). Lastly we have to plug in b.
 $y = mx + b$

Examples

Write an equation for the line that passes through the following points.

1. $(-2, 0)$ and $(-1, 2)$

$m = \frac{2 - 0}{-1 - (-2)} = \frac{2}{1} = 2$

$y = 2x + 4$

$2 = 2(-1) + b$
 $2 = -2 + b$
 $4 = b$

2. $(-6, -1)$ and $(3, 7)$

$m = \frac{7 - (-1)}{3 - (-6)} = \frac{8}{9}$

$y = \frac{8}{9}x + 4.3$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$y = mx + b$
 $7 = \frac{8}{9}(3) + b$
 $7 = 2.6 + b$
 $7 - 2.6 = 2.6 + b - 2.6$
 $4.3 = b$

