

Geometry Unit 6: Analytic Geometry

Bronx Early College Academy

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7 December 2022 - 13 January 2023

6.1 Midpoint formula

8 December

6.2 Slope-intercept form

9 December

6.3 Functions, standard form

12 December

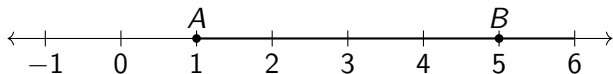
Learning Target: I can plot a midpoint on the plane

HSG.CO.C.9 Prove theorems about lines and angles

6.1 Thursday 8 December

Do Now

1. Review your Jumprope grades
2. Find the midpoint M of \overline{AB}



Lesson: Midpoint and average, classwork practice

Homework: Deltamath midpoint practice (optional extension)

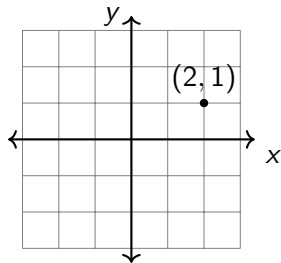
What do you know about the coordinate plane?

Coordinates Values locating a point on a plane (x, y)

Axis The two number lines, x and y -axis

Origin The center of the plane, $(0, 0)$

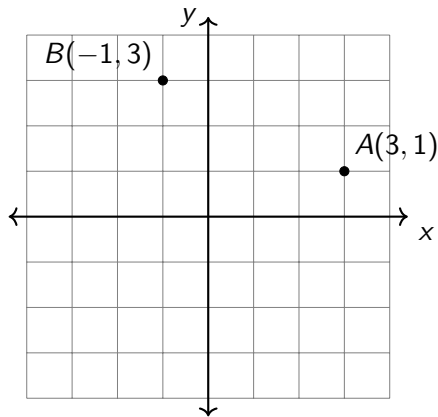
Quadrant The four quarters of the plane



The midpoint formula

Given $A(x_A, y_A)$, $B(x_B, y_B)$, midpoint

$$M = \left(\frac{x_A + x_B}{2}, \frac{y_A + y_B}{2} \right)$$



Learning Target: I can use slope-intercept form of linear equations

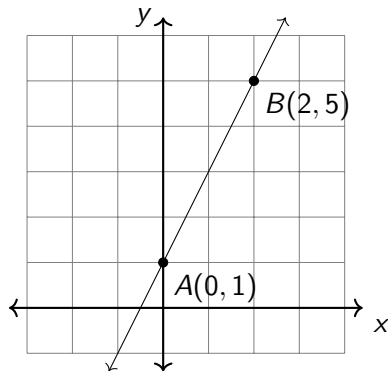
HSG.CO.C.9 Prove theorems about lines and angles

6.2 Friday 9 December

Do Now: Find the midpoint M of \overline{AB}

Lesson: Slope, y -intercept, linear equations

Homework: Deltamath graphing practice
(optional extension)



Linear equations of the form $y = mx + b$

Linear Straight, constant rate of change

Intercept Where the line crosses the axis

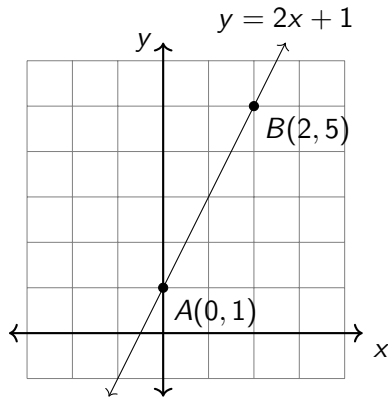
b y-intercept, point $(0, b)$ when $x = 0$

Increasing Going up. y increases as x increases

Decreasing Going down. y decreases as x increases

m , **slope** How steep the line is

$$m = \frac{\text{rise}}{\text{run}} = \frac{y_B - y_A}{x_B - x_A}$$



Learning Target: I can use the standard form of linear equations

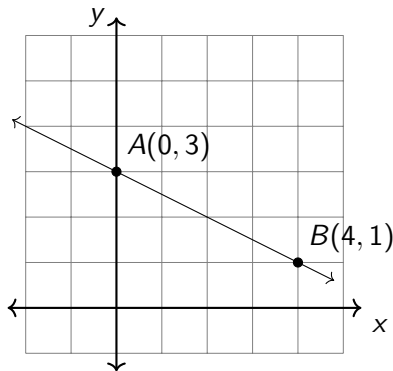
HSG.CO.C.9 Prove theorems about lines and angles

6.3 Monday 12 December

Do Now: Find the equation of \overleftrightarrow{AB}

Lesson: Function notation, vertical and horizontal slopes, the standard form of linear equations (GraspableMath practice)

Homework: Handout problem set



Function notation, $f(x) = mx + b$

Function (x, y) pairs that satisfy a rule,
 $f(x) = y$

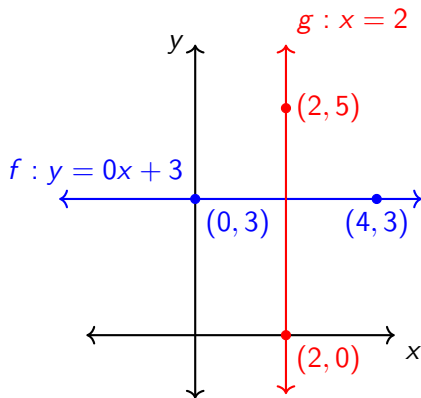
Horizontal Slope is zero, $m = 0$

Vertical Slope is undefined, $m = \infty$

Domain The set of x values that are allowed

Range The set of y values that are allowed

Real numbers The set of all numbers, \mathbb{R}



Linear equations of the form $ax + by = c$

Standard form A linear equation written in the form $ax + by = c$

Calculator form Casios and other calculators use the form $y = mx + b$

Convert from standard to y -intercept form. Example:

$$x + 2y = 6$$