y=mx+robot

Projects for Algebra 1 with Robots

ALAMEDA
COUNTY OFFICE OF
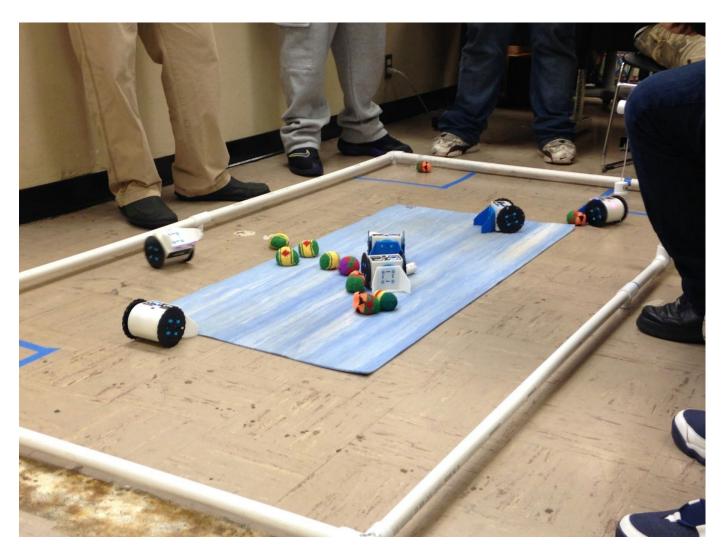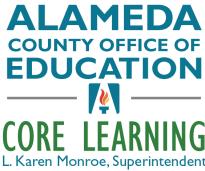**EDUCATION**

CORE LEARNING
L. Karen Monroe, Superintendent

Python Edition

y=mx+robot

Projects for Algebra 1 with Robots

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These projects are designed to support the Algebra I with Computing and Robotics (C-STEM) course that is approved by the UC office of the President to meet the 'c' mathematics requirement. Approved course outline.

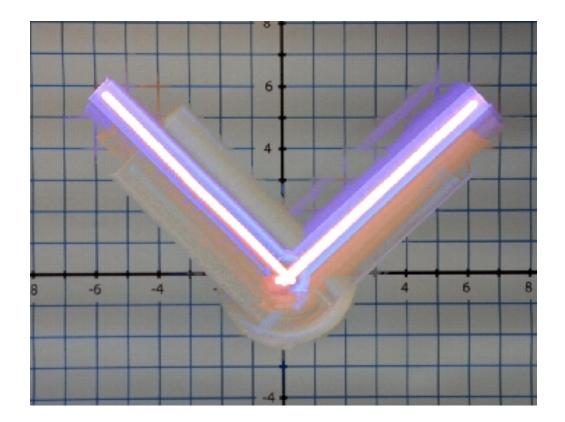If you would like to become a contributor and improve the current projects or add you own to the catalogue, please contact James Town (jtown(a)acoe.org). This is an open source project, it can only get better with your help!

Though this course was written for the Barobo Linkbots in Python or Ch, many (if not all) of the projects can be adapted to work with other classroom robots (Finchbots, Lego NXT, etc). We would be happy to help you translate any of the projects and incorporate adjustments you made so that more teachers and students can benefit from this course. Please contact James Town (jtown(a)acoe.org) for assistance.

Project List

Projects*	Big Ideas	C-STEM Unit Overlap
Height Challenge	Linear Equations, Graphing, Evaluating Expressions	Intro - Unit 1 Linear Models - Unit 3
Testing Tolerances	Statistics	Prob and Stat - Unit 6
Race to Tie	Functions, Linear Equations, Statistics, Systems of Equations	Functions - Unit 2 Linear Models - Unit 3
Race to Tie 2	Systems of Equations, Functions	Functions - Unit 2 Linear Models - Unit 3
Gravity Car	Quadratics, Piecewise Functions	Quadratics - Unit 4 Piecewise - Unit 5
Quadratic Calculator	Quadratics, Evaluating Expressions	Intro - Unit 1 Quadratics - Unit 4
The Big Race	Functions, comparing Quadratic, Linear, and Exponentials	Functions - Unit 2
Light Graphing	Absolute Value, Transformations	Piecewise and Absolute Value - Unit 5
Radioactivebots	Exponents, sequences	Functions - Unit 2

*Projects are listed in the order in which we would teach them

Big Ideas

Big Ideas*	Project Overlap	C-STEM Unit Alignment
Linear Equations	Height Challenge, Race to Tie, The Big Race	Linear Models - Unit 3
Functions - Graphing - f(x) - words - table	The Big Race, Race to Tie (1 and 2), Quadratic Calculator, Radioactivebots	Functions - Unit 2
Evaluating expressions with real numbers	Height Challenge, The Big Race, Quadratic Calculator	Intro - Unit 1
Transformations	Quadratic Calculator, Race to Tie (some), The Big Race (some), Light Graphing	Quadratics - Unit 4
Creating equations, describe numbers	Height Challenge, The Big Race, Race to Tie (some), Radioactivebots	Intro - Unit 1
Quadratics	Gravity Car, The Big Race, Quadratic Calculator	Quadratics - Unit 4
Prob and Stats	Testing Tolerances, Race to Tie, Gravity Car, The Big Race	Prob and Stat - Unit 6
Systems	Race to Tie (1 and 2)	Systems of equations - Unit 3
Piecewise Functions	Gravity Car	Piecewise - Unit 5
Absolute Value	Light Graphing	Absolute Value - Unit 5

*Big Ideas are listed in no particular order

C-STEM Units

C-STEM Units*	Suggested Project(s)	Big Ideas
Intro - Unit 1	Height Challenge	Evaluating expressions with real numbers, creating equations, describe numbers
Functions - Unit 2	The Big Race, Radioactivebots	Functions (sequences, linear, quadratic, exponents) - Graphing - f(x) - words - table
Linear Models - Unit 3	Race to Tie (1 and 2)	Linear equations and systems of equations
Quadratics - Unit 4	Quadratic Calculator	Quadratics, transformations
Piecewise and Absolute Value - Unit 5	Gravity Car Light Graphing	Transformations, absolute value
Prob and Stat - Unit 6	Testing Tolerances	Statistics

*Units are listed in the same order as the C-STEM: Algebra 1 with Robotics and Computing Course