MTH1W

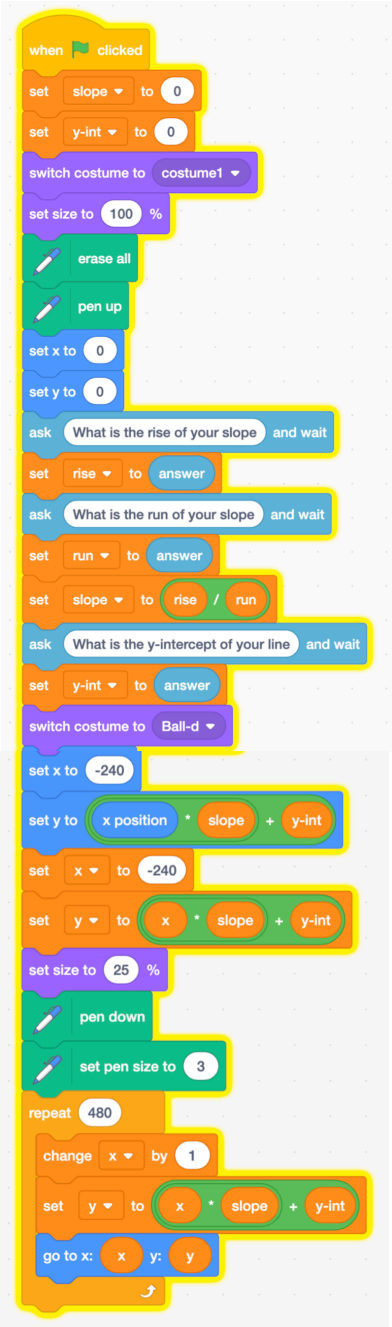
Coding Assignment #2 – Linear Relationships

Learning Goals: *apply coding skills to represent mathematical concepts and relationships related to linear functions.*

Success Criteria: *be able to create a program using Scratch to find the point of intersection of two lines.*

Task 1: Read this block of code. What do you think it does? Explain in detail then try it using the link to see if you are right.

https://scratch.mit.edu/projects/792456407



What does the program do?

- Moves sprite to the origin

- ask for rise and run and stores answers in variables

- calculates slope by doing rise/run and stores in a variable

- asks for y-intercept and stores in a variable

- moves to a point on the graph of the line by choosing an x-value and calculating y using the equation of the line

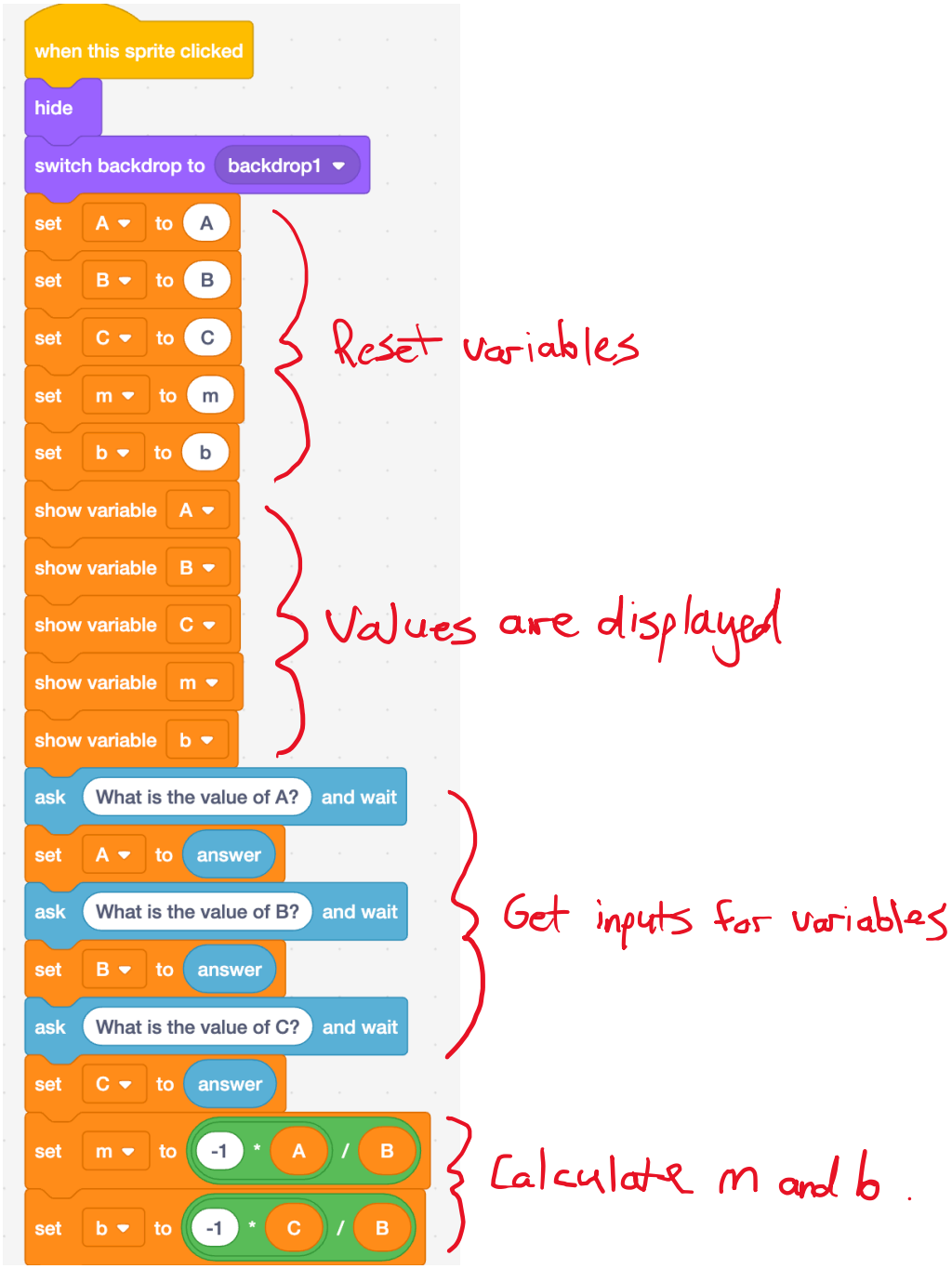
- draws the line by going through a loop that continuously increases x by 1 value and then re-calculating the y-value and moving to the new point on the line.

Task 2: Write pseudocode that would tell a program how to convert a standard form equation, $Ax + By + C = 0$, to a slope y-intercept form equation, $y = mx + b$.

Pseudo code:

- Get inputs for A, B, and C and store them in variables
- Create variables for m and b
- Calculate m by doing $\frac{-A}{B}$ and store value
- Calculate b by doing $\frac{-C}{B}$ and store value
- Have program display both the standard form and slope y-intercept form equation
- Make sure to clear values when program is restarted.

Task 3: As a class, create a program in Scratch that converts a standard form equation, $Ax + By + C = 0$, to a slope y-intercept form equation, $y = mx + b$.



https://scratch.mit.edu/projects/792558007

Task 4: In groups, analyze this program that graphs a line, plots a point, and then states if the point is on the line or not. Press 'See Inside' and analyze the code and backdrops to get an idea of how it works.

https://scratch.mit.edu/projects/792574513

Task 5: Write a program that graphs 2 lines and states where they intersect. Start with pseudo code and share the link to your program with your teacher when you are done.

Pseudo code:

Category	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding Demonstrates knowledge and understanding of powers, exponent rules, and block coding.	demonstrates limited understanding of content	demonstrates some understanding of content	demonstrates considerable understanding of content	demonstrates thorough understanding of content
Thinking Use of planning using pseudo code. Shows critical/creative thinking when designing program.	uses planning skills with limited effectiveness	uses planning skills with some effectiveness	uses planning skills with considerable effectiveness	uses planning skills with a high degree of effectiveness
Communication Able to use block code to create a program that clearly communicates knowledge of exponent rules.	expresses and organizes ideas and information with limited effectiveness	expresses and organizes ideas and information with some effectiveness	expresses and organizes ideas and information with considerable effectiveness	expresses and organizes ideas and information with a high degree of effectiveness
Application Transfer knowledge and skills of how to use coding to evaluate powers to create a new program that applies the quotient rules of powers.	transfers knowledge and skills to new contexts with limited effectiveness	transfers knowledge and skills to new contexts with some effectiveness	transfers knowledge and skills to new contexts with considerable effectiveness	transfers knowledge and skills to new contexts with a high degree of effectiveness

Comments: