



Growing Patterns Translations Challenge

Lesson Credit:

This challenge was created by [Jim Cash](#) of Ontario as an addition to his remarkable [Mathland Studio](#)

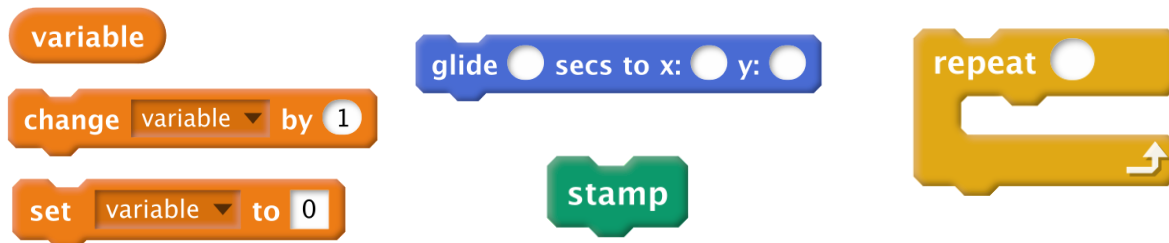
Project Goal:

Students will use pattern recognition to grow a visual pattern with translation and variables.

Standard:

9.3.4.6 Use numeric, graphic and symbolic representations of transformations in two dimensions, such as reflections, translations, scale changes and rotations about the origin by multiples of 90° , to solve problems involving figures on a coordinate grid.

Blocks:



Student Guide

Teacher Guide:

Start by having students open the guide linked above, and individually brainstorming about what's taking place in the pattern behind the scenes. Then, once they've compared ideas they can collaborate on the number patterns and how they are going to continue the pattern a few more levels.



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For prompt 2, we believe it's best for students to try using variables on their own and tinkering together on how to create a more efficient program for their translation pattern. Once they've had this opportunity with varying successes, you can share the decomposition guide linked below. Within this lesson, discuss with students how their overall plan matched the one provided.

Prompt 3 is very robust and open-ended. Challenge student to first pick a pattern they like by sketching or Google searching and then work to decompose it into reality. Have fun and validate creativity!

Solutions:

Prompt 2: Remix the project's code to make it more efficient

Optional Student Decomposition Guide

Here is a Handout or link for students to follow if they are unable to figure out a pattern. It also helps the students see how to use decomposition planning and functions :)

The image shows a Scratch code editor with a script and a function block. The script starts with 'when clicked', followed by 'clear', 'set x to -236', 'set y to 0', and 'set Layer to 1'. A 'repeat 6' loop contains a 'Build Stack' function block, 'change Layer by 1', 'set y to 0', 'glide 0.3 secs to x: x y: y', and 'change x by 33'. The 'Build Stack' function block contains a 'repeat Layer' loop with 'glide 0.3 secs to x: x y: y', 'stamp', and 'change y by 32'. A decomposition guide with four steps is overlaid on the code:

- Step 1: Initiali...
- Step 2: Build Stack
- Step 3: Increment Layer
- Step 4: Home y & Move Forward

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