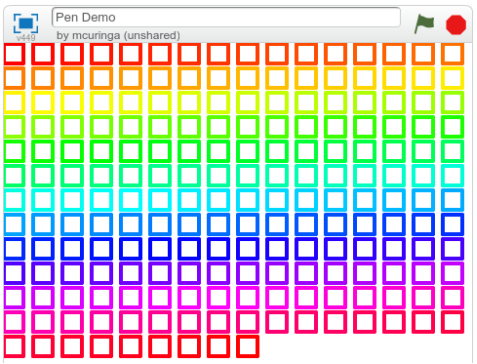
Designs with Pen



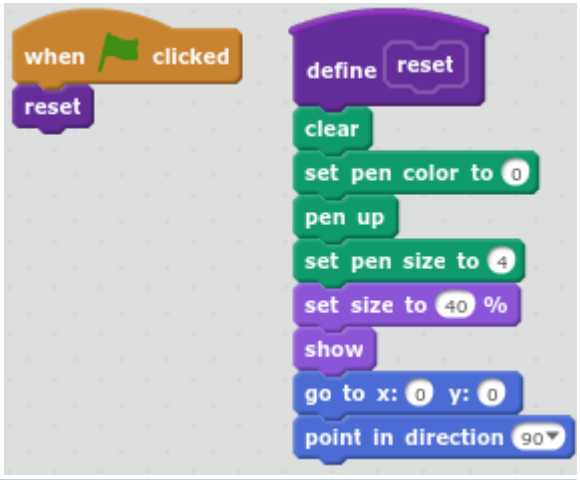
Use the **pen** blocks to draw shapes and make our own unique designs.

Tags: x-y coordinates, custom blocks, function parameters, digital art, geometry, block input, loops

Full code @ "Pen Demo" https://scratch.mit.edu/projects/123051521/

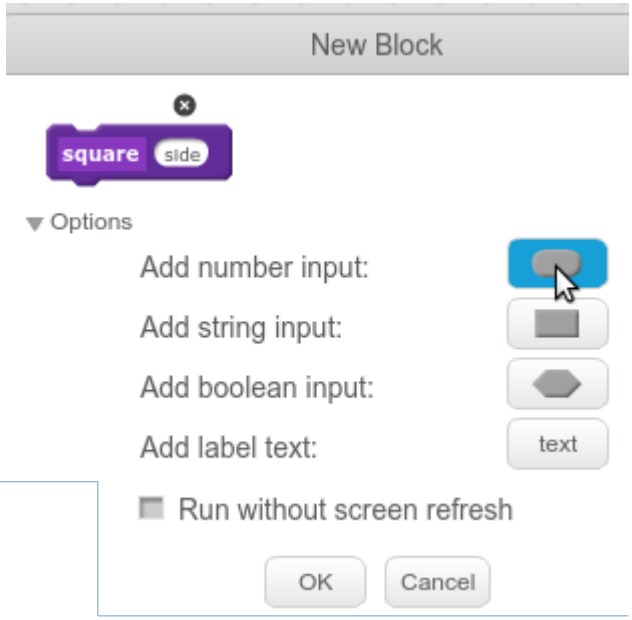
1

We write a custom block, **reset,** to get our pen ready to draw. We set things like the pen color and size, clear the screen, move the pen to the center, and put the pen up. *When the pen is "up" it doesn't write when it moves.* We *call* reset when the program starts.

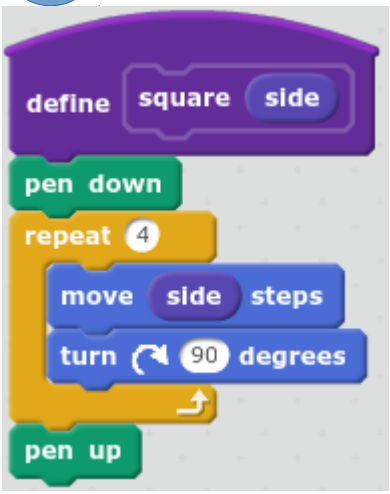


2

We write a custom block called **square** that uses pen to draw a square wherever Scratchy is on the stage. We define **square** with a number "number input" (also called a **parameter**) called **side**. side lets our custom block know how big the square should be.



3



Here is the basic **algorithm** to draw a square.

1) Draw a line which is *side* pixels long
2) Turn Scratchy 90 degrees.
3) Do steps 1 & 2 four times.

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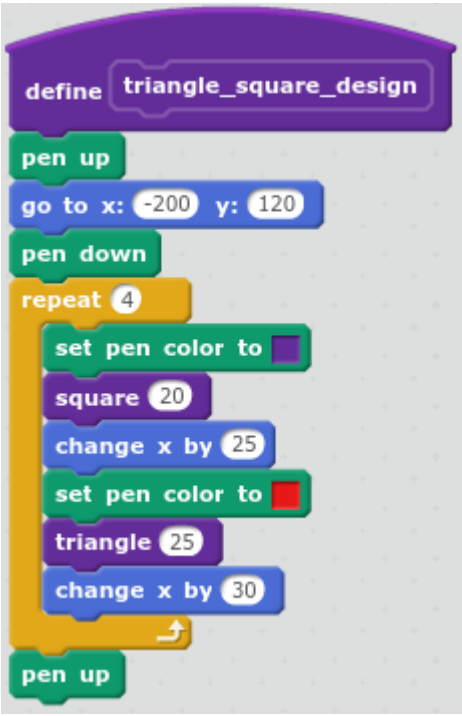
4

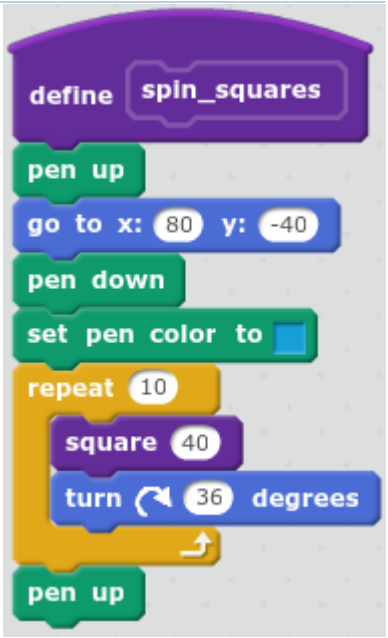
With our basic **square** and **triangle** functions we can create new custom blocks to make patterns and designs.

This block draws 4 purple squares and 4 red triangles next to each other. Notice that after drawing each shape we use the "**change x by**" block to move Scratchy to the right to make room for the next shape.



5

With **spin_squares** we make an interesting pattern by rotating Scratchy in a **loop**. This block draws 10 overlapping squares, spinning Scratchy around in a circle while he draws them.



6

With your partner, try these problems:

1) Write a custom block to draw a rectangle, with number inputs for length and width.

2) See what other shapes you can draw.

3) Change **spin_squares** to make different shapes.

4) Use squares, rectangles, and triangles to draw a house or a city.

5) Make your own design.