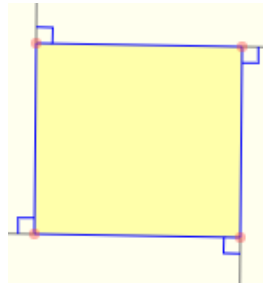


Lesson 2 - Square and Triangle Step by Step

PART I:

Group Work: Before we decide to draw a square, we must define what a square is.



To help with understanding of how to draw polygons like a triangle or square, you need to physically act out the drawing process:

Algorithm for Drawing a Square:

Step 1: Put pen down on paper.

Step 2: Move a set amount of units.

Step 3: Turn clockwise to make a right angle (90 degrees).

Step 4: Move the same amount of units.

Step 5: Turn clockwise to make a right angle (90 degrees).

Step 6: Move the same amount of units.

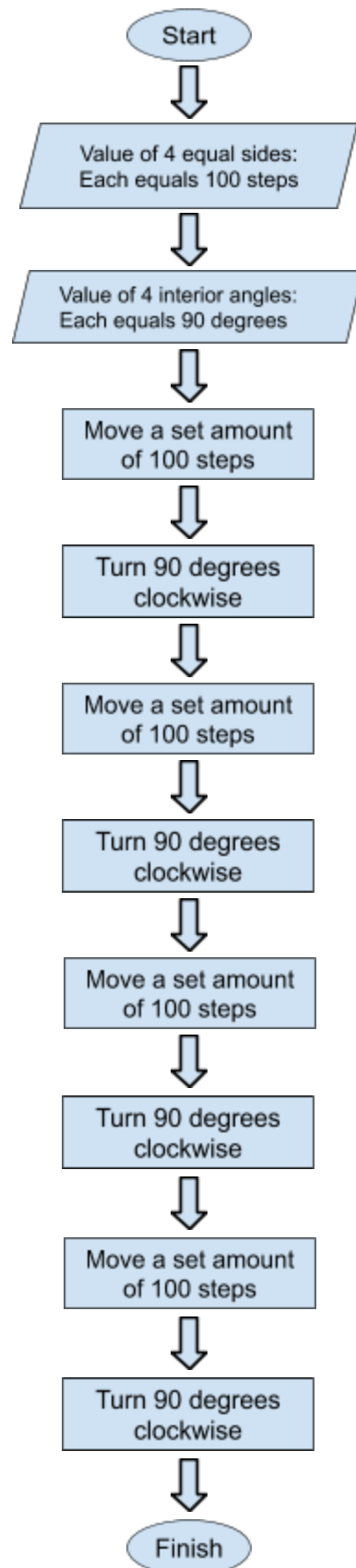
Step 7: Turn clockwise to make a right angle (90 degrees).

Step 8: Move the same amount of units.

Step 9: Turn clockwise to make a right angle (90 degrees).

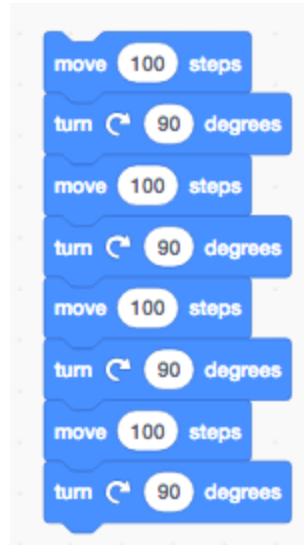
Step 10: Pick up pen from paper.


Below is a flowchart to help draw a square in scratch (refer to flowchart handout):



- Algorithm:
- ❖ Move a certain amount of steps.
 - ❖ Turn 90 degrees
 - ❖ Move a certain amount of steps.
 - ❖ Turn 90 degrees
 - ❖ Move a certain amount of steps.
 - ❖ Turn 90 degrees
 - ❖ Move a certain amount of steps.
 - ❖ Turn 90 degrees

Let us take our algorithm and write a code in Scratch. Below is what that algorithm should look in Scratch:



Don't forget to add the  block at the beginning so you can actually see where your sprite is going.

You've drawn a square!

Checkpoint 1

Questions to think about:

Q1. What is the perimeter of the shape in the above script?

Q2. How many degrees does the sprite turn in total?

Q3. What number do you need to change to make the shape larger/smaller?

PART II:

- Before we decide to draw an equilateral triangle, we must define what an equilateral triangle is.

Algorithm for Drawing an Equilateral Triangle:

To draw a triangle, keep in mind:

- ❖ The interior angle is 60 degrees.
- ❖ A triangle has three sides, so the steps should be repeated three times.

Create an algorithm and flowchart for drawing an equilateral triangle. Refer to the algorithm and flowchart in Part I as your guide. Imagine yourself telling a robot to do these steps; what would they need to do?

Now create a script using Scratch based on your algorithm and flowchart to construct an equilateral triangle. Run your code.

Checkpoint 2

What went wrong?

- With this new knowledge of Scratch and angles, write your new script for an equilateral triangle

Checkpoint 3

Questions to think about:

Q4. If you've made a script to draw a triangle by turning clockwise 120 degrees at each corner, what will happen if you change the script to turn

counter clockwise 120 degrees at each corner?

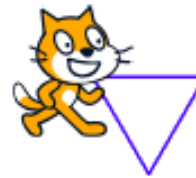
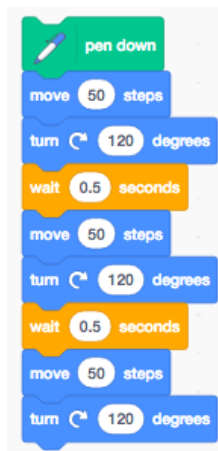


Part III:

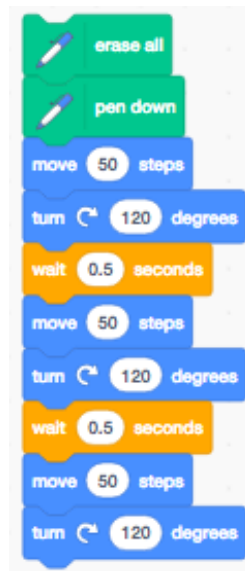
“Wait” Block and “Clear” block

Checkpoint 4

Q5: What happens when you add “wait” blocks? How does this help you?



Q6: What happens when you add a “clear” block? How does this help you?



Checkpoint 5

Explore. How many times will the sprite turn to draw a pentagon and a hexagon. How many degrees did the sprite turn in total?



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