

Name: _____



Exploring Geometry and Patterning with Coding – Session 1

Go to the website: scratch.mit.edu

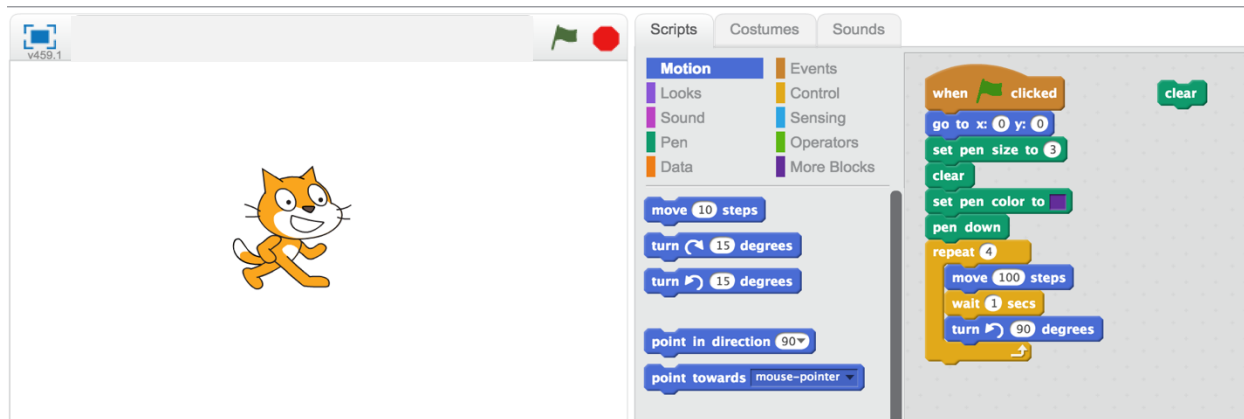
We are going to be creating our own Scratch accounts today so that we can save our work and continue with it during our next session. If you already have an account, feel free to use it!

- Username: _____
- Password: _____

In this session we are going to familiarize ourselves with what we can do on Scratch. In these work pages there is some code to get you started but please explore and feel free to modify the code as you go!

Activity 1: Draw a Square

To start your first Scratch program, create a new project and build the code below by dragging the blocks into the grey area on the right hand side of your screen. When you are done copying the code click on the **GREEN FLAG** to run your code.



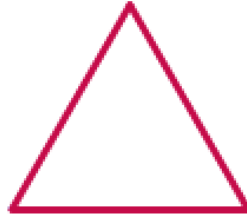
Once you are able to draw a square try making some changes to the code!

- Instead of a cat as your 'sprite', change it to a different character.
- Try changing the background of your project.
- Are there any sounds or changes in **"Looks"** that you want to make to your project?

Activity 2: Draw a Triangle

Using the code that you made in Activity 1, modify it to draw an equilateral triangle. You may want to go to "My Stuff" in your account if you wish to save the code from Activity 1 before you make any changes.

This is what your triangle should look like when it is drawn:



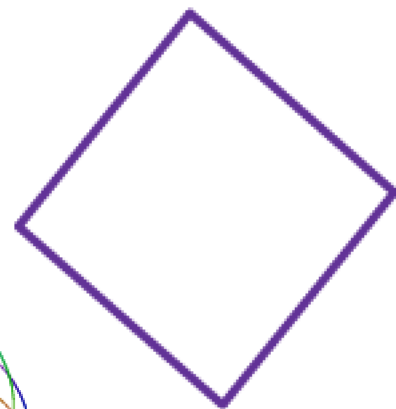
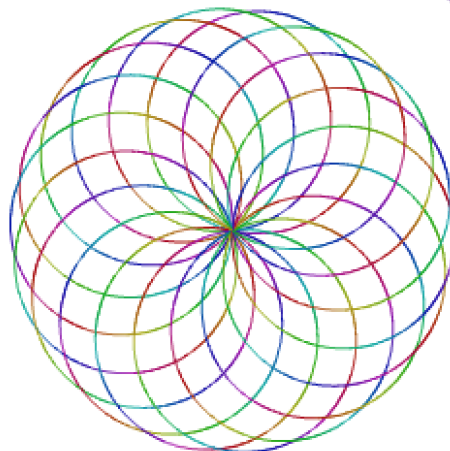
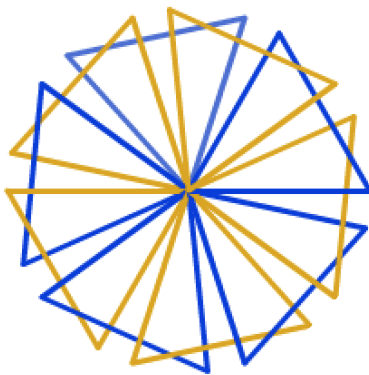
Activity 3: What Will this Code Draw?

Copy the following code into a new project. Can you guess what shape it will draw before you run your program? (Hint: think about common shapes that you know which have a rotation of 360°).

```
when clicked
  set pen size to 3
  pen down
  set pen color to red
  repeat 360
    move 1 steps
    turn 1 degrees
  clear
```

What shape I think it will be:

Once you have copied the above code and have your program working, see if you are able to modify your code, from any of the first 3 activities to draw the following shapes!

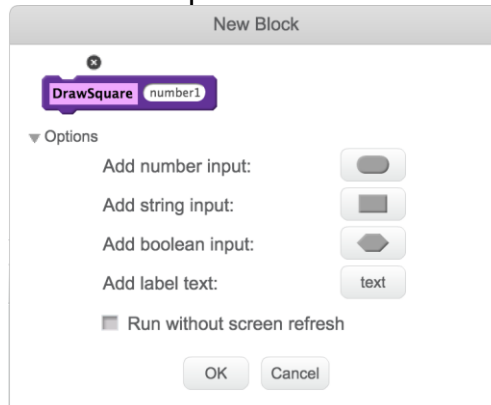


Activity 4: Let's Look at Blocks

You may have noticed that there is a feature called “**More Blocks**” on Scratch. This feature allows you to create your own function within your code which helps make your code more efficient and can carry out specific tasks.

If we go back to our Activity 1 code where we drew a square, we can modify this code to incorporate Blocks.

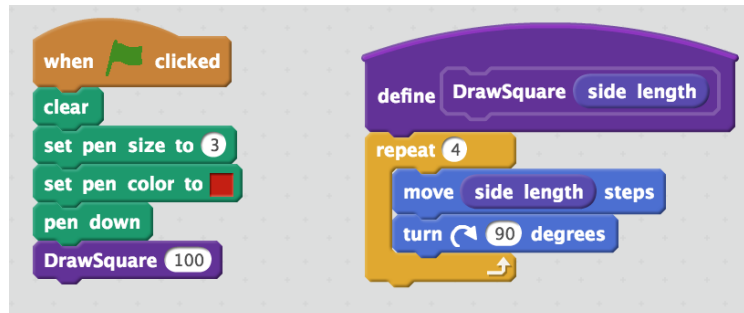
- Go to “**More Blocks**” on Scratch and click “**Make a Block**”.
- The following screen will come up. Make sure to select “**Add number input:**”



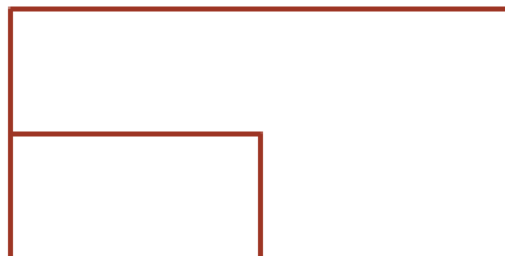
- Label your block “**Draw Square**”. Change “**number1**” to “**side length**” and click “**Ok**”. The following will appear in the work area:



- Complete the code as follows:

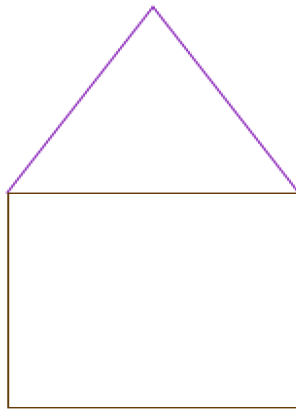


Now, try to modify the code given above to draw the following shape. You may want to create a new block under “**More Blocks**”.



Activity 5: Draw a House

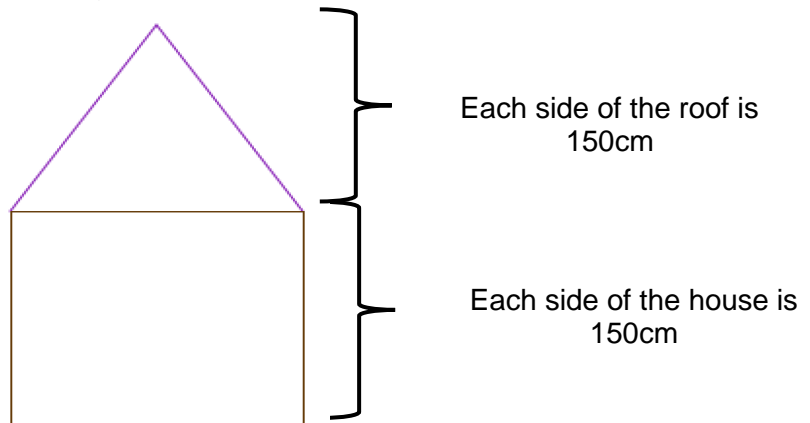
Using what we have done in this session thus far, are you able to draw a house like what is pictured below?



Make sure to use the different features that we have been using throughout our session today:

- Change the backdrop and Sprite for this program.
- Make sure to use Blocks where appropriate.
- Try to change the colour of the house.
- Is there anything extra that you can add? Can you try to add windows, or completely shade in the house or the roof?
- Try modifying the code so that the base of the house is a rectangle.

Using the picture complete the following questions:



What is the total area of the house? (**Hint:** find first the area of the house and then the area of roof).