# Drawing Patterns with Scratch

The following activities will give you practice with algorithmic thinking, spatial reasoning and basic programming constructs. Grading will be based on effort and exploration. For example, someone who only gets through activity 3 but asks lots of good questions and tries out different things will get a better grade than someone who races through the activities without stopping to think about what they are doing. Feel free to jump around.
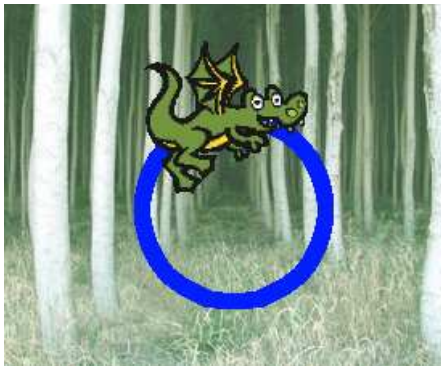
**Please save each step as a separate Scratch file in your 'Scratch Projects' folder!**
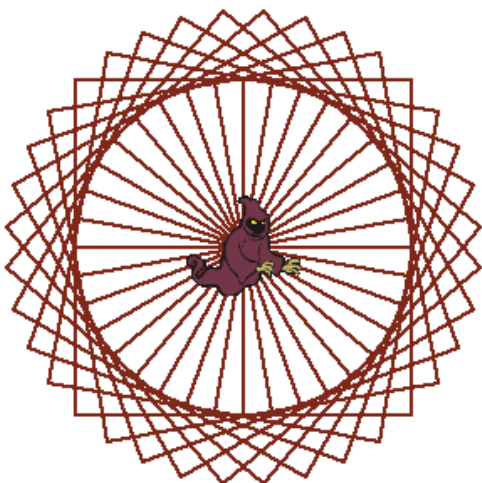
## Activity 1: Square



Your sprite should draw out a square on a background of your choice. The square should always been drawn in the same place and in the same way.

## Activity 2: Circle



Now make your sprite draw a circle. There should be no fancy math involved. Think carefully about what you do when you turn around in a circle. You're constantly turning, right? Remember, it takes 360 degrees to get all the way around.



## Activity 3: Logo

This kind of computer-generated drawing is great for making logos. Can you reproduce the shape to the left? Think carefully about the steps needed. Notice that it is composed of 36 squares.

## Activity 3b

Can you give your logo a color gradient such as displayed below? If you want, take some time to explore other cool shapes you can create using a similar method.
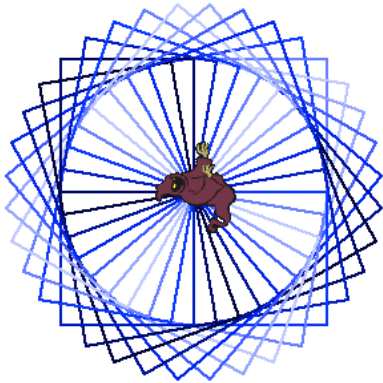


## Activity 4: Resizable Square



Go back to your original square. Now the user should be able to set the square's size using a slider. Notice I made sure multiple sizes would show on my screen. The size variable doesn't have to be in any particular unit. *Note: things WILL look weird if the sprite draws off screen. Don't worry about it!*

## Activity 5: Resizable Regular Polygon

There are many kinds of regular polygons:

| Name | Number of sides | Angle |
|------|----------------|-------|
| Triangle | 3 | 120 |
| Square | 4 | 90 |
| Pentagon | 5 | 72 |

Using the pattern found in the table above as well as the screenshots below, modify your previous script so that a user can change how many sides are on the figure.