

Silver Project

In the Bronze project we coded for Felix the Scratch Cat to draw different shapes. Here we have the codes to clear the screen and then draw a triangle, a square and a pentagon. Try creating these codes. HINT – if you want to change the colour click on the tiny coloured square on the SET PEN COLOUR block and then click on any part of scratch to select that colour – try clicking on Felix!



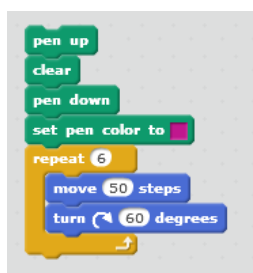
Can you see a pattern in these codes? Tell an Adult.

The number of degrees you need the cat to turn at each corner of the shape depends on the number of times you turn (number of repeats). To draw a shape Felix the cat has to start at one point and go all the way around and get back to the starting point – he will turn in total 360 degrees. We can use this knowledge to work out how far around he needs to turn each time.

For example, a Hexagon has 6 sides. So Felix the cat will turn 6 times. He has to turn 360 degrees so we need to share out 360 degrees 6 times to complete our shape:

Amount of degrees to turn each time = $360/6$ So 60 degrees each turn.

The code will look like this:



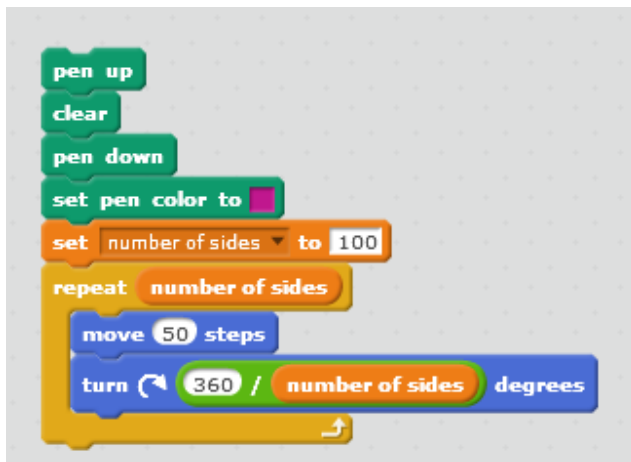
But that means we have to work out the degrees each time. Can't we get Scratch to do this for us? Yes, yes we can! Using an OPERATOR block:



But that still means we have to type in the calculation each time. Computers are meant to do more of the work for us. We could make Scratch draw any shape for us if we create a variable called NUMBER OF SIDES and inserted it into this code. Have a go. **Try it> check it> change it.**

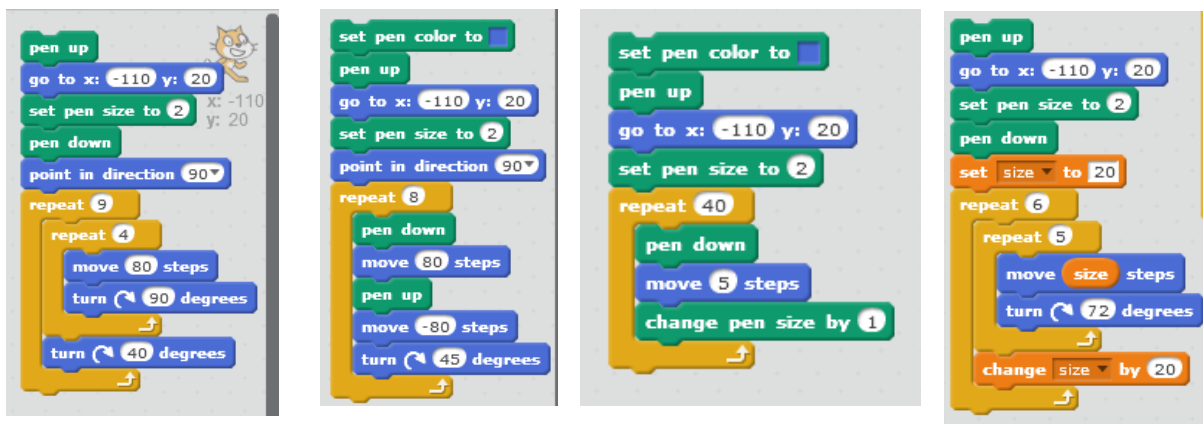
Don't peak at the next page until you have tried it!

Did your code look like this? Remember, there can be more than one way to write a code to solve a problem, the main test is can the computer follow it to create the outcome you wanted?



This code works with shapes that have small numbers of sides, but ones with big numbers can't fit on the stage. How could you fix that? What other shapes can you draw?

What about drawing more than one shape to make a picture? Here are some codes you may like to try – what do they draw? Can you alter these codes to change the shapes?



Can you use scratch to draw a picture? Here is a picture I made – look inside at my code. What would you change? Changing someone else's project is called remixing.

<https://scratch.mit.edu/projects/80006360/>

Well Done!

You have taken one more step towards being a computer programmer. You looked for patterns and used them to solve a problem (this is Pattern Recognition and is very cool). You have solved a problem by breaking it into smaller parts (this is called DECOMPOSITION and means you are totally boss). You have taken something complex, the drawing of a shape, and found the simple parts of repeats and degrees to make your code (this is called ABSTRACTION and means you beasted it).