

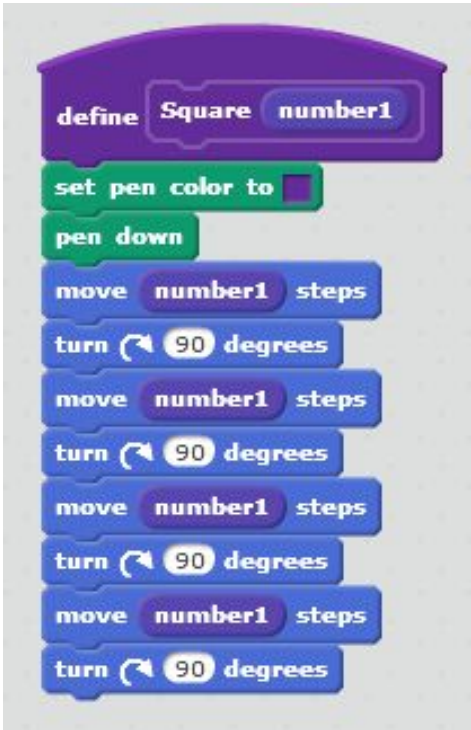
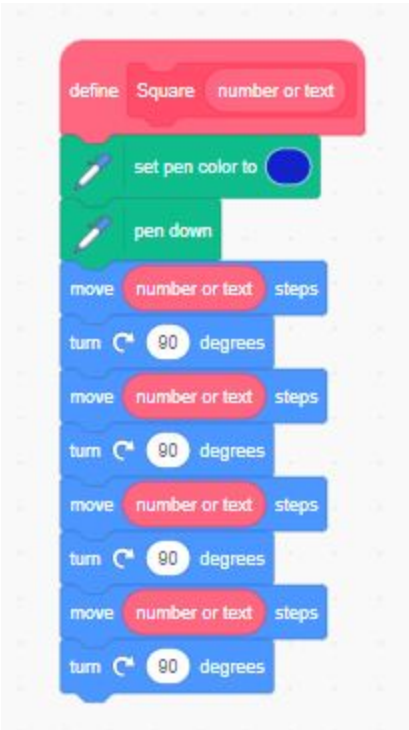
## Functions

A function is a block of code that will only run when it's called. They prevent us from repeatedly writing the same code over and over again. We can also pass values into functions for use later on with the function's code. These are called parameters.

In this exercise we'll be setting up a function that draws a square. The function will require one parameter to be passed in. This number will be used to determine the size of the square drawn.

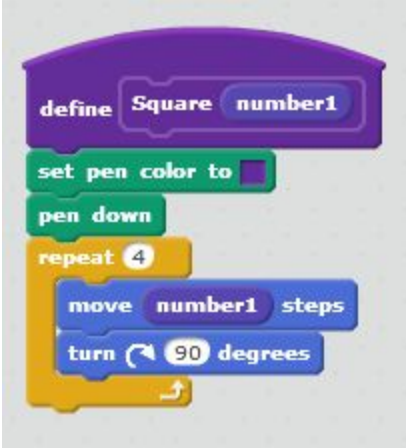

### Setting up the function

The setting up of functions is handled within the 'More Blocks' (Scratch 2) or 'My Blocks' (Scratch 3) section. This will allow you to define (create) your new function. The blocks below show how a function draws a square using the pen tool and a parameter to define the length of each side.

Scratch 2	Scratch 3
 <p>The Scratch 2 code block for defining a function named 'Square' with a parameter 'number1'. The function body consists of the following blocks: 'set pen color to' (with a purple color swatch), 'pen down', 'move number1 steps', 'turn 90 degrees' (left turn), 'move number1 steps', 'turn 90 degrees' (left turn), 'move number1 steps', 'turn 90 degrees' (left turn), 'move number1 steps', and 'turn 90 degrees' (left turn).</p>	 <p>The Scratch 3 code block for defining a function named 'Square' with a parameter 'number or text'. The function body consists of the following blocks: 'set pen color to' (with a blue color swatch), 'pen down', 'move number or text steps', 'turn 90 degrees' (left turn), 'move number or text steps', 'turn 90 degrees' (left turn), 'move number or text steps', 'turn 90 degrees' (left turn), 'move number or text steps', and 'turn 90 degrees' (left turn).</p>



## Streamlining the function

Although our functions are complete, they contain a lot of code that is simply repeating itself over and over again. Using the repeat loops let's condense the function into fewer lines of code.

Scratch 2	Scratch 3
	

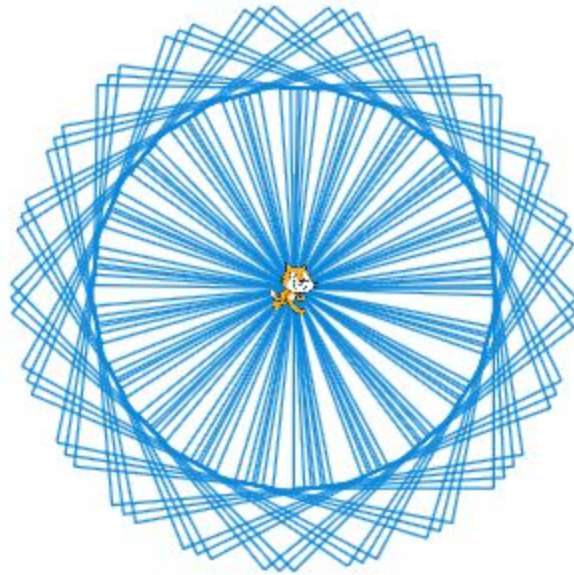
## Calling the function

A function, although defined and set up correctly will not run unless it has been called. To call a function first locate the Call Function block from within the Block section. This will allow you to run your function whilst passing it a value as its parameter.

Scratch 2	Scratch 3
	

## Things to consider

A function can be called from within a function. Why not create another function that has a value of degrees passed in as its parameter. This new function could then repeatedly call the Draw Square function, rotating X amount of degrees before the new square is drawn.



```
when clicked
  erase all
  Draw Shapes 17

define Square Number
  set pen color to blue
  pen down
  repeat 4
    move Number steps
    turn 90 degrees

define Draw Shapes Angle
  forever
    Square 100
    turn Angle degrees
```