

Sketch Patterns

Introduction

1. Choose someone to read aloud to the group:

“A function allows the coder to break up their code into smaller parts. Each function should perform a task in and of itself, and work as intended with the larger “main” code.

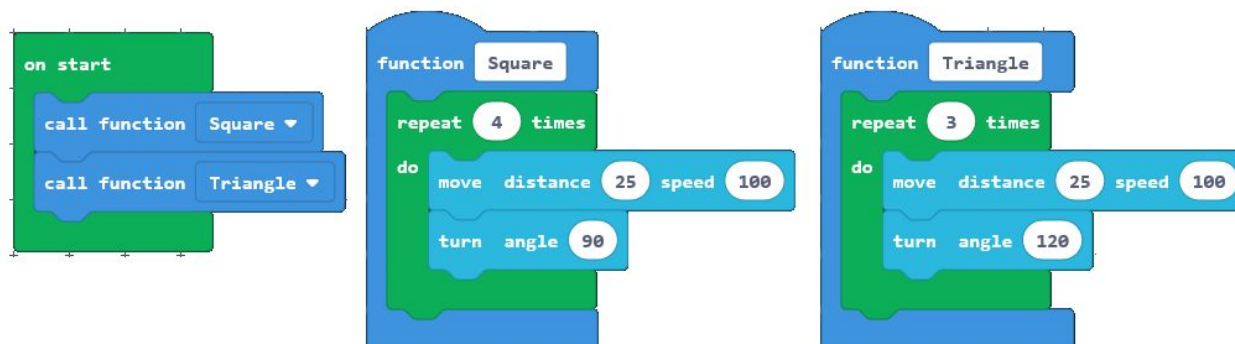
It is similar to how a car is made up of many parts. The radio performs a very different function than the engine. If the radio breaks down you can simply replace the radio, and it doesn't affect the operation of the main engine. Functions work the same way, if a function is not working properly it can be easily swapped with a new one that might perform better, without affecting the operation of the rest of the code.

Functions also allow for multiple coders to work on one larger project, where each coder can build one function, and then each function can be put together into a larger working whole at the end. Again, like a car, the person who designs the engine is not the same person that designs the radio. They are each separately designed and built, and then put together at the end in the final assembly.

Functions also allow for code to be reused easily. A well-written function might be useful to another coder, or another coding project. In a car, a really great engine design might be used again and again in several different models of car, over several different years of the car's production. A well-designed piece of code becomes that much more valuable when its packaged inside a function, that other coders can easily make use of without necessarily understanding all of the inner workings.”

Guided Practice

1. Build this code on your screen. The blocks are colour-coded to match the menu colour.



2. Notice how each function is responsible for drawing a specific shape. These shapes can be called on by the main program in any order, or any number of times.



Independent Practice

- Change the Functions so that rather than shapes, they draw letters.
 - Easiest: I, L, T, E, M, N, O, V, W,
 - Medium: C, F, E, H, X, Z
 - Difficult: A, B, D, G, J, K, P, Q, R, S, U, X
- For example, This function will draw the letter "T"

```
function T
  move distance 35 speed 20
  turn angle 90
  move distance 15 speed 20
  turn angle 180
  move distance 30 speed 20
```

- Try to write a 2 or 3 letter word by calling each letter from the main code.
- For example, the letters N, O, and W, can be remixed and called in the following orders to spell 4 different words.

```
on start
  call function N
  call function O
  call function W

on start
  call function W
  call function O
  call function N

on start
  call function O
  call function N

on start
  call function N
  call function O
```

Curriculum Connection - Geometry and Angles

- Plan out the distances and angles for each letter on a paper, labeling the length of each side and the angle in degrees.
- Label the angles (obtuse, acute, right angle)

