Bolton Schools ICT

Knowledge Mats - Computer Science – Year 3 - Sequence

National Curriculum Links: KS2 Computing

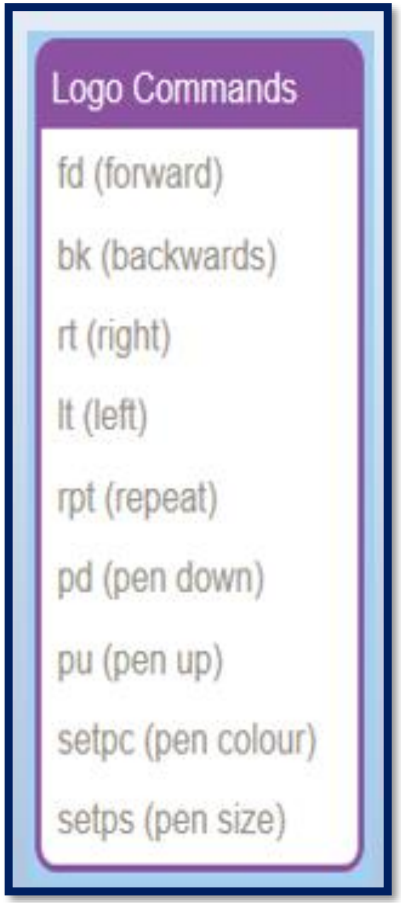
- **design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts**
- **use sequence, selection, and repetition in programs; work with variables and various forms of input and output**
- **use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs**

- I know that a **sequence** is a list of instructions in a particular order
- I know that if I change the sequence I may change the outcome of the program
- I can sequence a simple program on Logo to produce a line drawing of a 2D shape
- I can solve problems by decomposing them into smaller parts.

- I can detect and debug errors in my sequence
- I can use and edit a pre-written program to achieve a specific outcome
- I can use logical reasoning to explain what will happen next
- I can predict how a change in a sequence may impact on the outcome of a program

Computer Science Vocabulary

computer science	BBC Bitesize Computing KS2 computer scientists design new software, solve computing problems and develop different ways to use technology
computational thinking	involves looking at a problem and working out a way a computer might be able to help you solve it
algorithm	a set of instructions in everyday language, e.g ‘get ready for school’, ‘go out to play’
program	a precise set of instructions for a computer
sequence	a program with a number of steps in the right order
decompose	breaking a program down into smaller steps
debugging/ deglitching	Identifying and correcting mistakes when the program doesn’t work as expected
abstraction	being able to focus on the problem and ignoring detail, focus on program before look and feel e.g. colour, size, background
Input / output	data or information that a computer receives in or displays out
unplugged	computer science without using the computer
event blocks	all programs need an event which acts like a start button
mathematical language	Directional language- backward, left, right, angles, clockwise / Anti-clockwise



Logo Commands

fd (forward)

bk (backwards)

rt (right)

lt (left)

rpt (repeat)

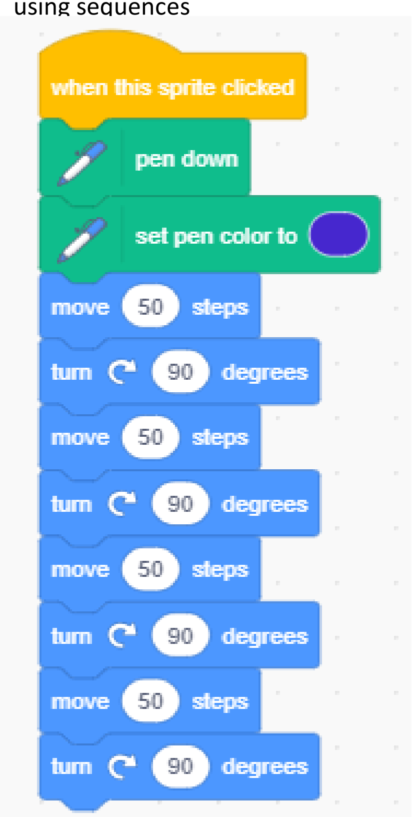
pd (pen down)

pu (pen up)

setpc (pen colour)

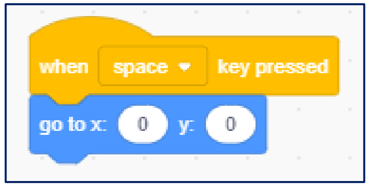
setps (pen size)

Program for a square using Scratch using sequences



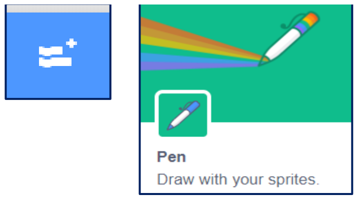
```
when this sprite clicked
pen down
set pen color to
move 50 steps
turn ↻ 90 degrees
move 50 steps
turn ↻ 90 degrees
move 50 steps
turn ↻ 90 degrees
move 50 steps
turn ↻ 90 degrees
```

Reset program using Scratch



```
when space ▾ key pressed
go to x: 0 y: 0
```

How to add blocks for the pen:



LO extension:

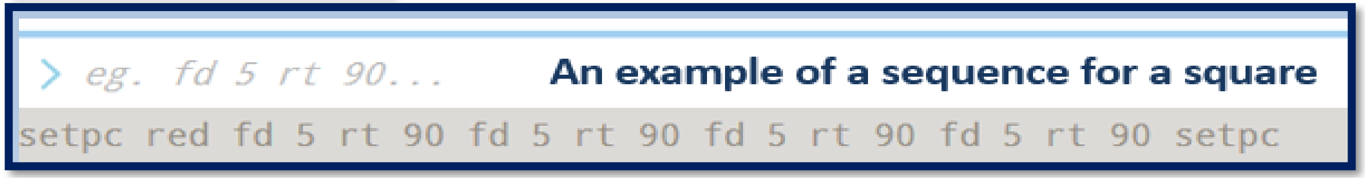
Using the same format for a square

fd * rt * fd * rt *

Now write a program for:

A HEXAGON – 6 sides angle 60

A OCTAGON – 8 sides angle 45



An example of a sequence for a square

```
> eg. fd 5 rt 90...
setpc red fd 5 rt 90 fd 5 rt 90 fd 5 rt 90 fd 5 rt 90 setpc
```