

Subject: Computing

Year group: 4

Term: Summer Term

Unit name: Repetition in shapes

Big idea: To plan, modify and test commands to create shapes and patterns using repetition and loops.

This unit looks at repetition and loops in programming. Pupils will create programs by planning, modifying and testing commands to test shapes and pattern.

If there is sufficient time, there is a second unit -Unit B-Repetition in games that can be taught afterwards.

Progression of skills :

Declares and assigns variables.

Uses post-tested loop e.g. 'until', and a sequence of selection statements in programs, including an if, then and else statement.

Designs solutions (algorithms) that use repetition.

Prior learning:

Year 3 Summer term Sequence in Music unit. Children explored the programming environment of Scratch. They built sequences of commands and implemented their algorithms as code to produce a representation of a piano. Within the unit they applied stages of program design.

In **year 2**, children created and debugged simple programming of floor robots in **Programming Unit A**. Children may also have experience of other languages or environments such as ScratchJnr, which may also be useful.

Vocabulary

Complex programming	Solve
Logical reasoning	Until
Script/script area	Count controlled loops
Conditional	Commands
Bugs	Coding
Solutions	Algorithm
Test	Repeat
Predict	



2Logo



National Curriculum links :

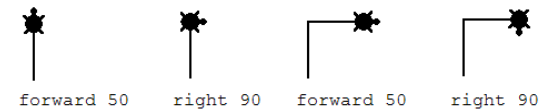
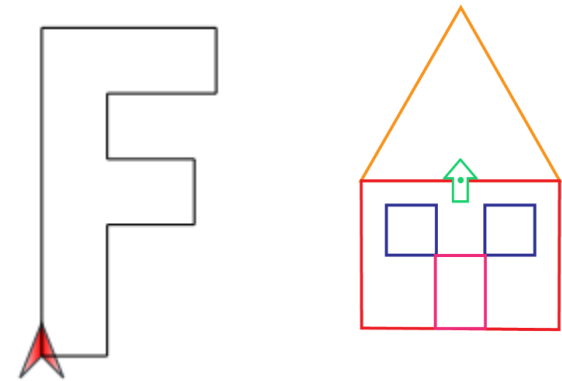
- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Use logical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

Future learning:

Year 4 Programming B Repetition in Games. Here they will compare what they know to a new environment : Scratch. They will look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.

In **Year 5**, children go on to use selection in their programming units-**Selection in Physical Programming** and **Selection in Quizzes** .

In **Year 6**, there is a further games unit in which children develop their learning about variables-**Variables in Games**. Here they develop their use of the Scratch environment.



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Key Learning assessment statements-what will the children know by the end of the unit?

To program a computer by typing commands to move a screen turtle.

To write an algorithm that will draw a letter, debugging their code and fixing errors.

To use the repeat command to draw a shape , such as a square, using an efficient code .

To use and modify count controlled loops to produce a certain outcome eg. Drawing a certain shape.

To decompose a problem and learn to create, call and name procedures in Logo that are code snippets. They recognise that these can be reused in programming.

To design , create and debug a program that uses count controlled loops.

To work collaboratively with a partner on their tasks.

Work in this unit can be linked to other aspects of the curriculum, such as art or angles work in Maths.

When unit A and B are both taught, they must be done in that order.

Spiritual Development

Computing allows children to reflect on the awe and wonder of the achievements and possibilities of ICT in a modern world. They think about the limitless opportunities that could be achieved thus promoting their sense of self and motivation. **Exodus 15:11:** And amazement seized them all, and they glorified God and were filled with awe, saying, "We have seen extraordinary things today."