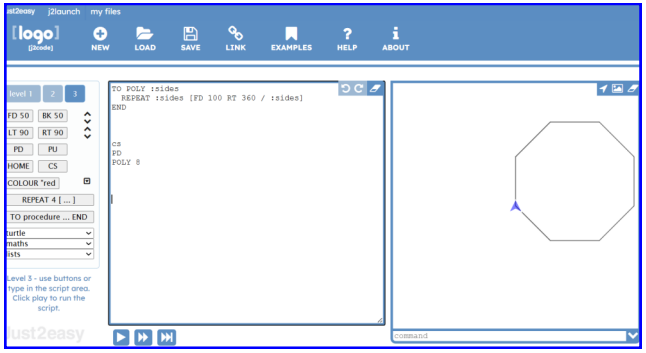
Year: 4
Term: Autumn 2
Topic: Programming - Repetition in Shapes

St Dennis Primary Academy

"Everyone matters, everyone succeeds, every moment counts"

Repetition in Shapes



Programming is when we make a set of instructions for computers to follow.

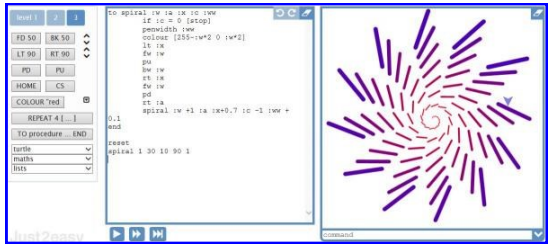
J2E Logo is a program that we can use in order to create shapes and patterns.

We use an **algorithm** (a set of instructions to perform a task) which we can plan, model and test, in order to create accurate and imaginative shapes and patterns.

Patterns are things that repeat in a logical way. In everyday life, patterns are everywhere!

Instead of typing in the code to create each individual shape, we can save time by repeating a sequence of instructions. We use the **repeat** function.

To use **repeat**, type repeat followed by the number of times you want to repeat, and then the commands in square brackets, like repeat 4 [fd 100 rt 90]. This command helps the computer repeat instructions so it can quickly draw shapes like squares or patterns without writing the same thing over and over.



Creating Shapes and Loops: To make shapes, we need to know the angles of corners of different shapes. To make a spiral, we tell the turtle to move forward and turn a little bit many times using the repeat command.

Sequencing and Algorithms

A **sequence** is a pattern or process in which one thing follows another.

We design **algorithms** (sets of instructions for performing a task) to help us program the sequence that we require to achieve our desired outcomes.

Trialling and Debugging

Programmers do not put their computer programs straight to work. They trial them first to find any errors:

Sequence errors: An instruction in the sequence is wrong or in the wrong place.

Keying errors: Typing in the wrong code.

Logical errors: Mistakes in plan/thinking.

Glossary

algorithm	A set of instructions to perform a task.
code snippet	A small, reusable piece of code that can be easily inserted into a program or project.
decompose	breaking down a complex problem or system into smaller parts that are more manageable and easier to understand.
procedure	A named block of code that performs a specific task, but does not return a value.
trace	Reading and analysing code, before running it to predict its outcome.
value	A numerical quantity of data.

LOGO Commands

[j2code] [code] repeat

Help Sheet

FD n	Move forward n units	FD 50 BK 50
BK n	Move back n units	LT 90 RT 90
LT n	Turn left n degrees	PD PU
RT n	Turn right n degrees	HOME CS
HOME	Return to centre of screen	COLOUR "red
CS	Clear screen and go home	REPEAT 4 [...]
HT	Hide turtle	TO procedure ... END
ST	Show turtle	
PU Pen up	(stops drawing)	
PD Pen down	(starts drawing)	
REPEAT n []	Repeat n times contents of brackets	
Procedure name	Run a pre-defined procedure	
WAIT n	Wait for n milliseconds	