Unit 4 - *Functions and Subroutines*

Overview

In this unit, students will learn how we can break large tasks into smaller, reusable units of work called subroutines and functions. Students will learn the value of subroutines and functions, how to write them, and how to pass arguments to them. Students will continue exploring how to use built-in functions to efficiently code solutions to problems.

21st Century Capacities: Synthesizing, Imagining

Stage 1 - Desired Results

ESTABLISHED GOALS/ STANDARDS

MP5 Use appropriate tools strategically
MP7 Look for and make use of structure

Transfer:

Students will be able to independently use their learning in new situations to...

1. Use appropriate tools to make reaching solutions more efficient, accessible and accurate. (Synthesizing, Imagining)
2. Apply familiar mathematical concepts to a new problem or apply a new concept to rework a familiar problem. (Synthesizing, Imagining)

Meaning:

UNDERSTANDINGS: *Students will understand that:*

1. Computer Scientists examine relationships to discern a pattern, generalizations, or structure.
2. Computer Scientists can describe patterns, relations, and/or functions to access strategies to solve problems.

ESSENTIAL QUESTIONS: *Students will explore & address these recurring questions:*

A. How can I break a problem down into manageable parts?
B. What math tools/models/strategies can I use to solve the problem?

	Acquisition:	
	Students will know…	*Students will be skilled at…*
	1. Why we write subroutines and functions 2. The difference between "pass by value" and "pass by reference" 3. How to return a value from a function 4. How to create a function library 5. How to use a function that exists in a function library 6. How to use recursion in a function 7. Vocabulary: function, subroutine, argument, parameter, call by value, call by reference, recursion, overload	1. Writing a subroutine or function definition 2. Passing arguments to a subroutine or function 3. Writing a subroutine or function body 4. Nesting function calls 5. Calling a function