Unit 2 - *Working with Variables, Constants and Calculations*

Overview

In this unit, students will learn how a computer stores and manipulates various types of data including numeric and textual information. Students will learn how to perform basic arithmetic calculations such as adding, subtracting, multiplying, and dividing, as well as how to write code to count and accumulate values.

21st Century Capacities: Synthesizing, Imagining

Stage 1 - Desired Results

ESTABLISHED GOALS/ STANDARDS

MP 1 Make sense sense of problems and persevere in solving them
MP2 Reason abstractly and quantitatively
MP4 Model with Mathematics

Transfer:

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

1. Manipulate equations/expressions or objects to create order and establish relationships.
2. Demonstrate fluency with math facts, computation and concepts.
3. Make sense of a problem, initiate a plan, execute it, and evaluate the reasonableness of the solution. (Synthesizing, Imagining)

Meaning:

UNDERSTANDINGS: *Students will understand that:*

1. Effective problem solvers work to make sense of the problem before trying to solve it.
2. Computer Scientists apply the Computer Science they know to solve problems occurring in everyday life.
3. Computer Scientists create or use models to examine, describe, solve and/or make predictions.
4. Computer Scientists continually evaluate their process and the reasonableness of the

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

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

	intermediate results. 5. Computer Scientists represent and analyze mathematical situations and structures using algebraic symbols to communicate thinking.	
	Acquisition:	
	Students will know… 1. When to use integer, float, Boolean, and string variables 2. How to use variables to accumulate 3. How to use variables to count 4. How and when to use static variables 5. The order of operations the computer uses, and how to change the default order of operation 6. How to use a conditional statement for basic conditional logic 7. How to write a program to perform a complicated mathematical formula 8. Vocabulary: integer, float, Boolean, string, variable, constant, dim, private, conditional statement, modulo, concatenate, scope, visibility, amortization, compound interest	*Students will be skilled at…* 1. Naming and defining variables 2. Choosing an appropriate scope and visibility for a variable 3. Performing calculations involving constants and variables 4. Using addition, subtraction, multiplication, division, exponentiation, and modulo operators on numbers 5. Concatenating strings 6. Converting datatypes from string to numeric using the built in functions *cint*, *cdbl*, *cstr*, etc. 7. Formatting output with *formatpercent* 8. Validating inputs