



Intro to Computer Science - Unit 2 - Working with Variables, Constants and Calculations

Unit Focus

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.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
Common Core Mathematics: 9-12 - Make sense of problems and persevere in solving them. (CCSS.MATH.MP.1) - Reason abstractly and quantitatively. (CCSS.MATH.MP.2) - Model with mathematics. (CCSS.MATH.MP.4) Madison Public Schools Profile of a Graduate - Analyzing: Examining information/data/ evidence from multiple sources to identify possible underlying assumptions, patterns, and relationships in order to make inferences. (POG.1.2) - Idea Generation: Studying a problem, need or model (mentor text, political piece, documents, art work, etc.) to consider limitations and imagine new solutions/transformations. (POG. 2.1)	<i>Students will be able to independently use their learning to...</i> T1 manipulate equations/expressions or objects to create order and establish relationships. T2 demonstrate fluency with math facts, computation and concepts. T3 make sense of a problem, initiate a plan, execute it, and evaluate the reasonableness of the solution.	
	Meaning	
	Understanding(s)	Essential Question(s)
	<i>Students will understand that...</i> U1 Effective problem solvers work to make sense of the problem before trying to solve it. U2 Computer Scientists apply the Computer Science they know to solve problems occurring in everyday life. U3 Computer Scientists create or use models to examine, describe, solve and/or make predictions. U4 Computer Scientists continually evaluate their process and the reasonableness of the intermediate results. U5 Computer Scientists represent and analyze mathematical situations and structures using algebraic symbols to communicate thinking.	<i>Students will keep considering...</i> Q1 How does a problem solver think? Q2 What is the problem? Q3 How can I break a problem down into manageable parts? Q4 What math tools/models/ strategies can I use to solve the problem?
	Acquisition of Knowledge and Skill	
	Knowledge	Skill(s)
	<i>Students will know...</i> K1 when to use integer, float, Boolean, and string variables K2 how to use variables to accumulate K3 how to use variables to count	<i>Students will be skilled at...</i> S1 naming and defining variables S2 choosing an appropriate scope and visibility for a variable

Stage 1: Desired Results - Key Understandings

	K4 how and when to use static variables K5 the order of operations the computer uses, and how to change the default order of operation K6 how to use a conditional statement for basic conditional logic K7 how to write a program to perform a complicated mathematical formula K8 Vocabulary: integer, float, Boolean, string, variable, constant, dim, private, conditional statement, modulo, concatenate, scope, visibility, amortization, compound interest	S3 performing calculations involving constants and variables S4 using addition, subtraction, multiplication, division, exponentiation, and modulo operators on numbers S5 concatenating strings S6 converting datatypes from string to numeric using the built in functions cint, cdbl, cstr, etc. S7 formatting output with formatpercent S8 validating inputs
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