**AP CSP CodeX**

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| **LESSON: Functions with Parameters #2** | | **Time: 45 minutes** |
| **Project Goal:** Students learn about parameters, arguments and local variables.  **Learning Targets**   * I can identify a parameter and what it is used for. * I can identify a local variable and what it is used for. * I can determine when to use a parameter and local variable. * I can use parameters in functions. * I can use arguments in function calls. | **Key Concepts**   * A parameter is used in a function when it needs information from the main program to complete a task. * Using a parameter with a function is a form of procedural abstraction because the details of how the function accomplishes a task are hidden. * Local variables are defined inside a function and can only be used in the function. * A parameter can be any data type, including a bitmap image, a string, a button, Boolean, etc. | |
| **Assessment Opportunities**   * Functions with Parameters #2 Activity Guide * Answer\_Bot\_parameters program * Heart2\_parameters program * Display\_parameters program | **Success Criteria**   * Identify parameters in a function definition and state what they are used for * Identify local variables in a function definition and state what they are used for * Use parameters in a function. * Use arguments in a function call. | |
| **AP CSP Framework**  **AAP-3.B** Explain how the use of procedural abstraction manages complexity in a program.  **AAP-3.C** Develop procedural abstractions to manage complexity in a program by writing procedures.  **Computational Thinking Practice 3.A** Generalize data sources through variables.  **Computational Thinking Practice 3.B** Use abstraction to manage complexity in a program. | **Materials**   * Functions with Parameters #2 slides * Functions with Parameters #2 Activity Guide / Answers * Unit 3 Review and Test Questions * Code Solutions:   + Answer\_Bot\_parameters   + Heart2\_parameters   + Display\_parameters | |
| **Teacher Notes**   * This lesson will be completed on the computer, using CodeSpace for programming. * Use the Sandbox in CodeSpace for programming. This lesson is not part of a mission. * The activity guide can be distributed digitally. Space is provided for students to take notes during the programming. * Students will add parameters to functions in Answer\_Bot\_functions, Heart2\_functions and Display\_functions programs. * The best experience will come from them modifying their own code. However, we want all students to be engaged, so you can give them the original code to modify if needed. * The most recent final version of each program can be found in the earlier assignments. If you are giving code to students, use the solution code found here:   + Answer\_Bot\_functions: Mission 4 Obj 8-10 and Functions (Unit 1)   + Heart2\_functions: Mission 6 Obj 8-11 (Unit 2)   + Display\_functions: Mission 7 Obj 7-9 (Unit 2) * Follow the slides for instructions and guidance. * Solution code for both finished programs are provided. | | |