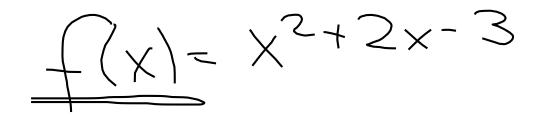
Functions: Parameters & Return Values

- Students learn how functions affect program flow, how functions use local variables, and how they use global variables.
- Students learn preferred means of communication with functions and how to incorporate them into their programs. Attention is also given to debugging programs that contain functions.





After we watch the video:

What is a function? What is a parameter? What are two types of parameters?



Arguments and return values

- Read Python for Everybody Chapter 4 Functions sections 4.1 to 4.3.
 - Define "argument"
 - Define "result"
- Visit this web page (https://docs.python.org/2/library/functions.html) that lists the built in functions in Python.
- Verify that the Python Version is 2.7.
- Ask, "How many built in functions are in Python 2.7?"
- Change the Python version to 3.4.1. How many built-in functions are in Python 3.4.1?
- Why do you think there are a different number of functions in Python 3.4.1 than in 2.7?

Compound Functions

- Open Runestone Interactive Functions page (http://interactivepython.org/nunestone/static/thinkcspy/Functions/functions.html) and read about user defined functions in Python.
- Read through lines 1 and 2 that define the header and body of compound statements. Note the format of the compound statement used to define a function.
 - What color is used to highlight the keyword def?
 - What punctuation mark ends the first(header) line?
 - How far is the body indented?
 - What color is the name of the function?
 - What word is used for the value in parenthesis?

Function Definitions

- Run ActiveCode 1.
 - Change the number in line 15 and run the code to make a smaller square.
 - Change the number in line 15 and run the code to make a larger square.
- Run ActiveCode 2.
 - What are the two line numbers used to call or invoke the function drawSquare?
- Run ActiveCode 3.
 - Change the definition of drawMulticolorSquare to different colors.
 - What line would you change to draw smaller multi-color squares?

Return Values

- . Some functions find and return values. Complete ActiveCode 5, 6 and 7.
- Change ActiveCode 7 so it prints the minimum values.

Line Numbers

- Run CodeLens 1.
 - What line is executed next after line 6?
 - What line is executed next after line 3?
 - How do you think Python knew what line to go to after line 3?
 - What keyword is used to tell Python to return a value from the function named square?
 - What do you think would happen if you run the program after removing the return statement from line 3?

Wrap Up

- Return to <u>Python for Everybody</u> Chapter 4 Functions Copy and paste the code from section 4.4 to Runestone ActiveCode 4.
- · Run the code multiple times.
 - a What do you note about the results?
 - What is the name of the function used?
 - Is the function on the list of the built-in Python functions or is it defined in the program?
 - Where do you think the function is defined?
- Add the number 1 as a parameter in the function call and run the program.
 - Explain the error message.
 - Write one thing to remember about functions in your journal.

