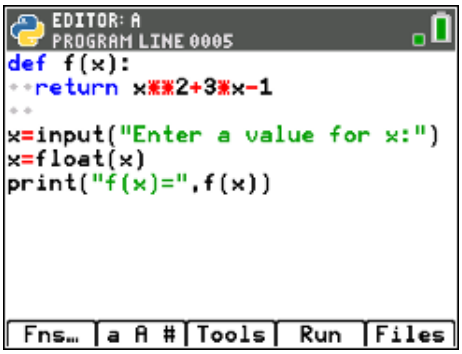
Unit 1: Getting Started With Python	Application: Two Functions Are Better Than One
In this Application, you will make a second function and use both functions to investigate some of the mathematical properties of functions.	**Objectives:** • Editing a Python file • Copying a Python file • Adding a function • Evaluating function expressions in the Shell • Creating an inverse function

In the last lesson (**Unit 1, Skill Builder 3**) you defined a function f(x). In this Application, you will add another function to that file and then evaluate some expressions using those functions.

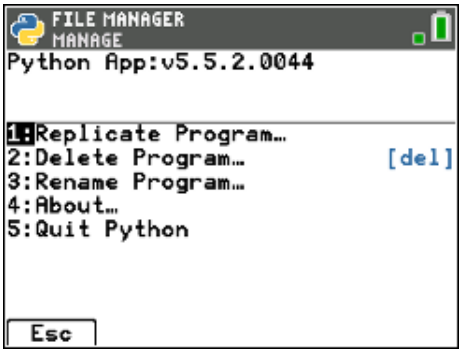


1. **Making a copy of a program**. Either start the Python App by pressing **[prgm]** or in the Python App go to the File Manager (select **[Files]** from either the Editor or the Shell).

   Point to your **Skill Builder 3** program in the list and select **[Manage]**.

   Choose **Replicate Program…**

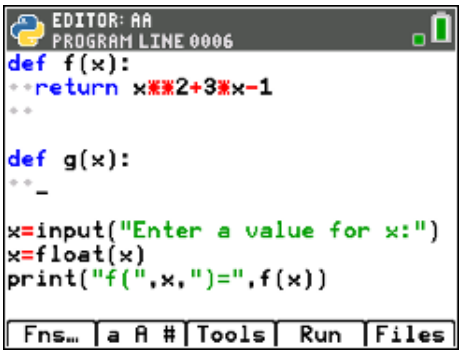
   Enter a name for the new program. The new program is loaded into the Editor for you to revise.



2. Now add a second function template below the function f(x):
   On a blank line, press **menu > Built-ins > Functions** and select **def function()**.

   Again, the syntax for the function structure includes a colon (**:**) at the end of the **def** line. This indicates that the following code is the definition of the function and the block is indented two spaces.

   Complete the **def** statement by naming the function **g** and using the argument **x.**

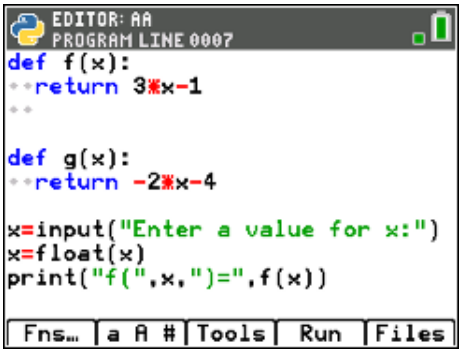


3. Using the **[del]**, revise f(x) by removing the **x**2** term:

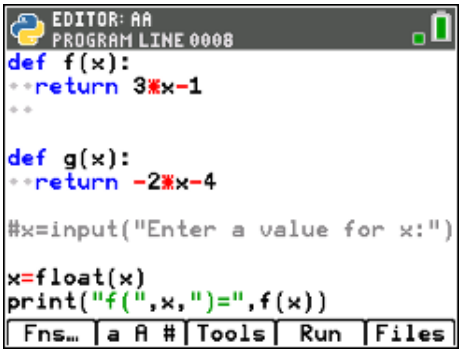
   f(x) = 3*x - 1

Define g(x):

return -2*x - 4

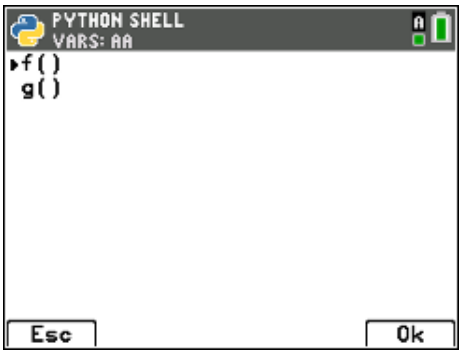


4. Turn each of the last three lines of code in the program into #comments:
   Place the cursor at the start of the line.
   Either:
   Select **[a A #]**
   Press **[enter]** on the # character.
   Select **[Paste]**
   Or:
   just press **[2nd] [3]** for the # character



*Note: Only the first line of code is commented in this image. Comments are grey. The # character indicates that the **rest** of the line is a comment and is ignored when the program is run.*

5. After all three lines are comments **[Run]** the program, the Shell appears, but nothing else happens because only the two functions are defined. Press the **[vars]** key and you will see the two functions listed. You can select one by pressing **[enter]**.



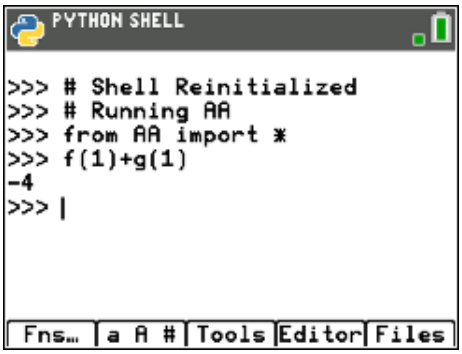
6. Complete the expression

   >>> f(1) + g(1)

   by either typing it or by selecting **f()** and **g()** from the **[vars]** menu. Press **[enter]** to see the result.

   Try other expressions using both functions like:

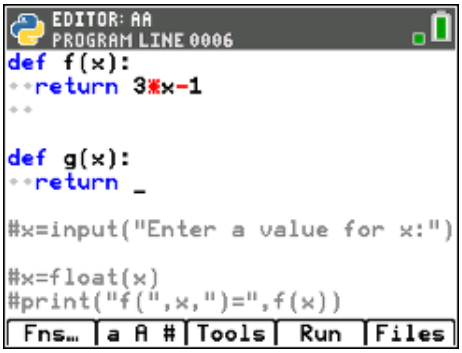
   f(4)+g(1) f(5)+g(2) (f+g)(4) f(g(6))



7. **Other functions**

Are you ready for this? Back in the Editor, change **g(x)** so that

$$f(g(x)) = g(f(x)) = x$$

regardless of the value of x. Test your functions carefully.

Challenges: create a function that is parallel to or perpendicular to f(x).