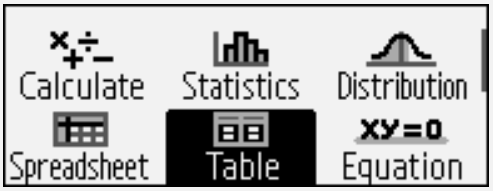
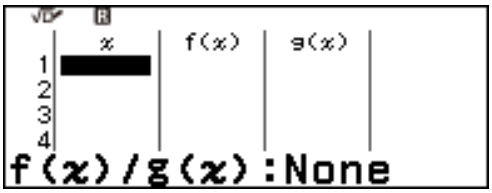
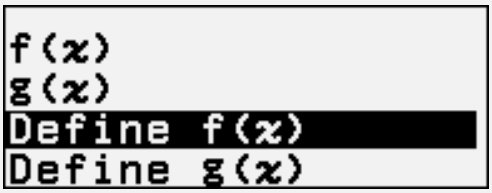
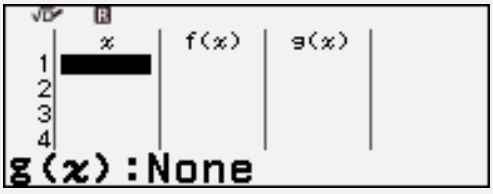
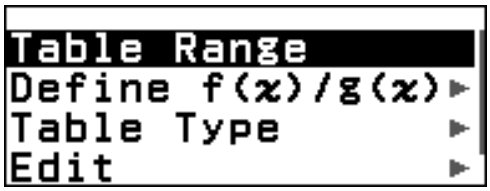
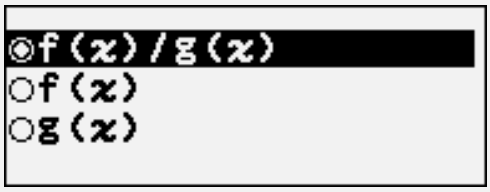
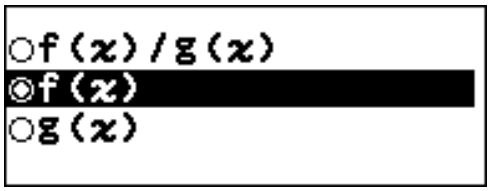
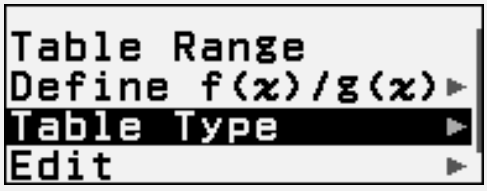
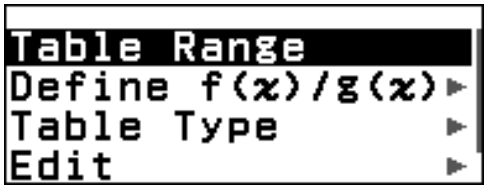
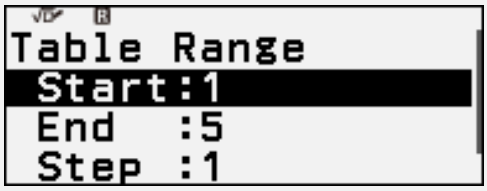
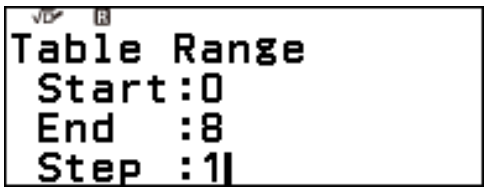
Unit 5: Lesson 7 – Connecting Representations of Functions

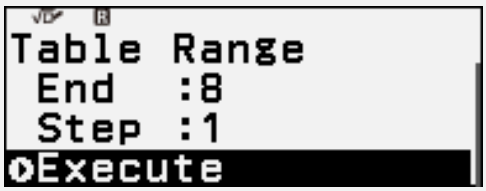
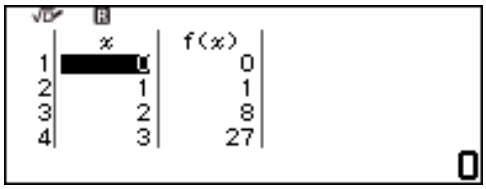
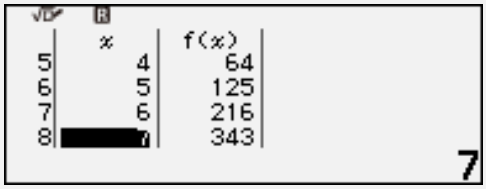
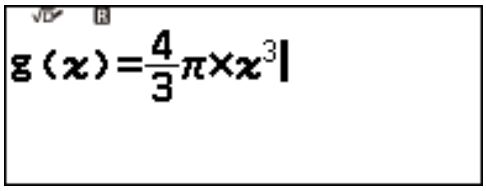
Activity 7.3: Comparing Functions

Skill: Use the Table app to compare volume of a cube to a graph of volume of a sphere.

Activity Summary:
In this activity, students make connections between different representations of a function. They are given the equation of the volume of a cube and a graph of the volume of a sphere. The calculator can be used to create a table of the volume of a cube of a given side length which can then be used to compare values on the graph of the volume of a sphere as a function of radius.

1. Turn on the calculator with the ⏻ **- On** button. Press ⌂ **– Home** and then use the arrows to highlight the **Table app**.	
2. Press either OK or EXE to open the **Table app**. We will enter the equation for the volume of a cube for ***f*(*x*)**. Explain that ***f*(*x*)** is another way to write ***y***, the **output** of an equation; the volume of the cube, **V,** here.	
3. Press the **function key**, f(x), to enter the function for ***f*(*x*)**. Press the **down arrow**, ▼, **twice** to highlight **Define *f*(*x*)**.	
4. Press either OK or EXE. To enter the volume equation for a cube for ***f*(*x*)**, type X ^ 3. Remind students that ***x*** will always be the **input variable** for the table on the calculator.	
5. Press either OK or EXE to return to the table.	

6. We are only entering one function for our table. Press **TOOLS button**, ⚙, to change the **Table Type**.	
7. Press the **down arrow**, ▼, twice to highlight **Table Type** and press either OK, EXE, or ▶.	
8. Press the **down arrow**, ▼, to highlight ***f*(*x*)**. Press either OK or EXE to **select**.	
9. Press the **back button**, ↩, or the **left arrow**, ◀, to go back to the **Table Settings** menu.	
10. Next, set the **Table Range**. Press the **up arrow**, ▲, twice or press the **scroll-up key**, ⏫, to highlight **Table Range**.	
11. Press either OK or EXE. The default settings for the table range are shown.	
12. Edit the settings by typing the desired value and then pressing either OK or EXE to move down to the next setting.	

13. Once all three values are changed, **Execute** at the bottom will be highlighted. The **scroll-down button**, ⊻, will also take you directly to **Execute** when finished.	
14. Press either [OK] or [EXE] to return to the table.	
15. Students can see the **exact** volume of the cube for the **selected** edge lengths in the **table**. The **graph** of the volume of the spheres can only give **estimated** volumes but over the **entire range** of radii.	
16. **OPTIONAL Extension:** The equation for the volume of a sphere can be given to be entered for **g(x)**, so **exact values** of the volume of a sphere can be viewed in the table as well.	
17. After **g(x)** is entered, change the **Table Type** back to the default of **f(x)/g(x)** and reset the table by going to **Execute** in the **Table Range** menu.