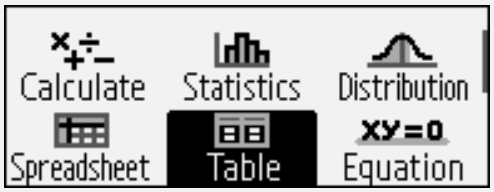
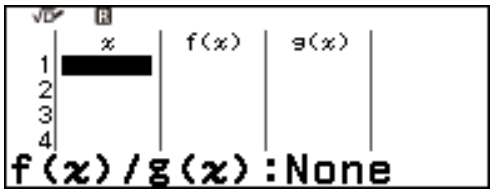
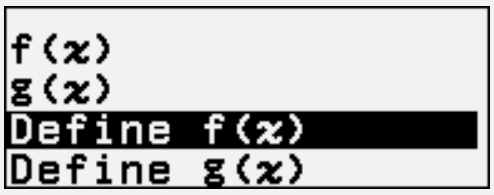
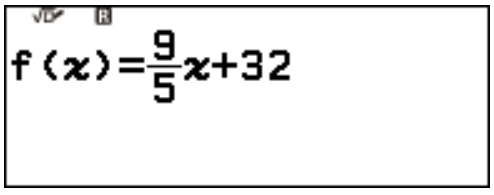
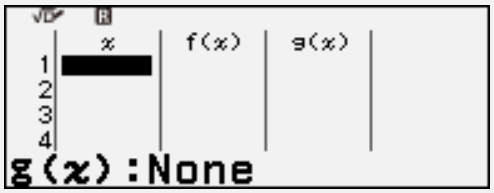
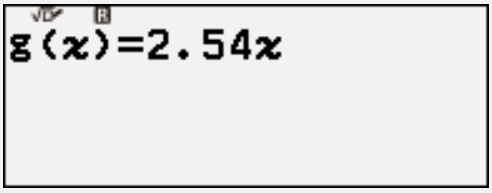
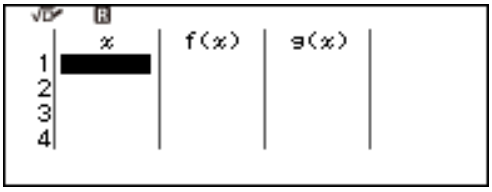
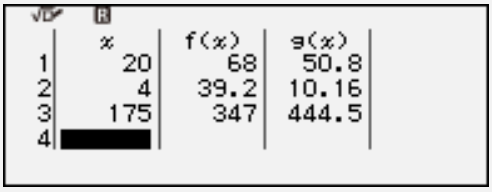
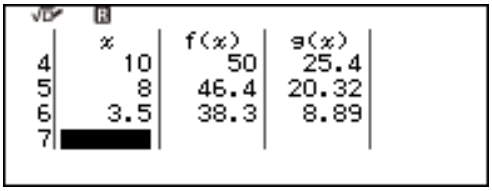
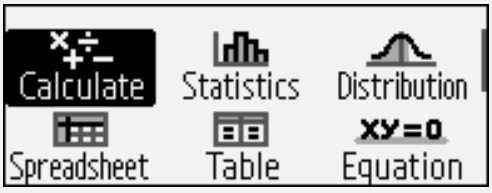
Unit 2: Lesson 8 – Comparing Relationships with Equations

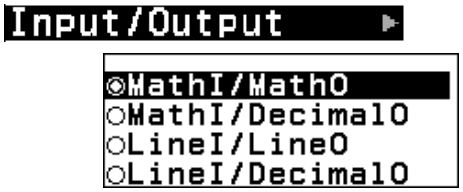
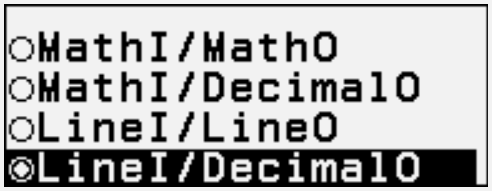
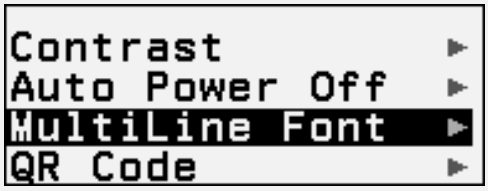
Activity 8.2: More Conversions

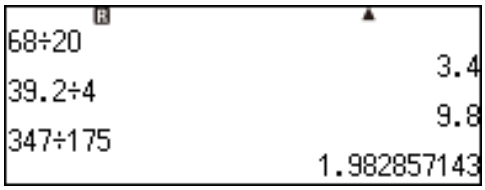
Skills: 1.) Given equations to convert units, use the Table app to complete a table.
2.) Adjust the Settings to view multiple calculations at once in the Calculate app.

Activity Summary:
This activity focuses on using equations to generate tables and determine if the relationships presented are proportional. Building on prior experience with proportional measurement conversions, this task introduces a measurement conversion that is *not* proportional. Given an equation to convert between units, the Table app can be used to complete a table. Settings can be adjusted within the Calculate app to view multiple lines of calculations on the screen at once to aid in determining which relationships are proportional.

1. Turn on the calculator with the ⏻ **- On button**. Press ⌂ **– Home** and then use the **arrow keys** to highlight the **Table app**.	
2. Press either OK or EXE to open the **Table app**. We will enter the **equation** converting temperature in **ºC** to **ºF** for ***f*(*x*)**. Explain that ***f*(*x*)** is another way to write ***y***, the **output** of an equation; the temperature, ***F*,** in the equation $F = \frac{9}{5}C + 32$.	
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 temperature conversion equation for ***f*(*x*)**, type ⏻ 9 ▼ 5 ▶ *x* + 3 2. Remind students that ***x*** will always be the **input variable** for the table on the calculator. In this formula, ***C*** is the **input** variable of **degree Celsius** whereas ***F*** is the **output** variable in **degree Fahrenheit**.	

5. Press either OK or EXE to return to the table.	
6. To complete the second table in this activity, the formula to convert length in inches to centimeters can be entered for ***g*(*x*)**. Press the **function key**, f(∞), to enter the function for ***g*(*x*)**. Press the **scroll down arrow**, ▼, to highlight **Define *f*(*x*)**.	
7. Press either OK or EXE. To enter the conversion from inches to centimeters equation $c = 2.54n$ for ***g*(*x*)**, type ② . ⑤ ④ x. Remind students that ***x*** will always be the **input variable** for the table on the calculator.	
8. To complete the first table for this activity, enter the given **temperatures** in **ºC** for ***x*** in the table.	
9. Enter the first value, **20**, and press either OK or EXE to enter the next value. Repeat to enter **4** and **175**. These three temperatures in **degree Celsius** are equivalent to **degree Fahrenheit** of **68**, **39.2**, and **347**.	
10. To complete the second table, focus on the ***g*(*x*)** column of the table. Enter the **length** values **10**, **8**, and **3.5** in **inches** for ***x*** in the table. These lengths are **equivalent** to **centimeter lengths** of **25.4**, **20.32**, and **8.89**; respectively.	
11. The last task is to determine if these are **proportional relationships**. If they are, the ***y*-value** of any point **divided** by its ***x*-value** will always be **constant**. Press ⌂ **– Home** and use the **arrow keys** to select the **Calculate app**.	

12. Press either [OK] or [EXE] to open the **Calculate app**. To view **multiple calculations** on the screen at the **same time**, we can adjust the **Settings**.	
13. Up to **three** different calculations and their answers can be displayed on the screen at once if the **Input/Output** setting is set to either **LineI/LineO** or **LineI/DecimalO** and **MultiLine Font** is set to **Small Font**. To change the settings, press [≡] **– Settings**.	
14. To change the **Input/Output** setting, press either [▷], [OK], or [EXE] **twice**. The top option, **MathI/MathO** is the default setting which shows **math fonts**, like fractions, for inputs and outputs.	
15. Change to **LineI/DecimalO** by the pressing **scroll down button**, [▽▽], and pressing either [OK] or [EXE] to activate the **radio button** in front, as shown.	
16. Next, press the **Back button**, [↩], **twice** to return to the **main settings screen**. Press the **down arrow**, [▽], to highlight **System Settings**.	
17. Press either [▷], [OK], or [EXE]. Press the **down arrow**, [▽], **twice** to highlight **MultiLine Font**.	
18. Press either [▷], [OK], or [EXE] and then the **down arrow** to highlight **Small Font**. Press either [OK] or [EXE] to activate the **radio button** in front, as shown.	

19. Press the AC **button** to return to the **Calculate app**. Notice that the **Math Font icon** at the top of the screen to the left of **R** has been removed.	
20. To determine if the **temperature conversion** is a **proportional relationship**, **divide** each **output (ºF)** in the table by its **input (ºC)**. Since each calculation yields **different results**, the **temperature conversion** is **NOT** a **proportional relationship**.	
21. Complete the same test on the **length conversion** values from the table. **Divide** each **centimeter output** by its equivalent **inch input**. In this case, each calculation yields the **same constant**, **2.54**. The **relationship** between **equivalent lengths** in **inches** and **centimeters** is **proportional**.