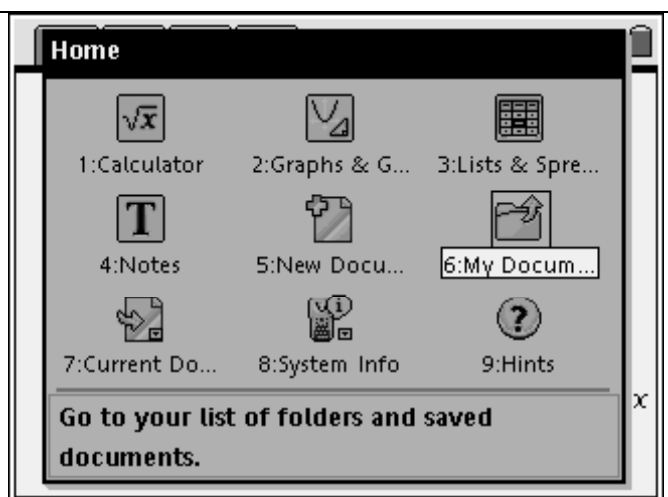TI-NSpire Activity: Line of Best Fit
Sugar vs. Salt: What makes Soda Good?

Problem Statement

What is it in soda that we crave? Usually it is either the sugar or the salt. Do companies compensate for less sugar by adding sodium? Through this investigation, we will determine if there is a relationship between the number of calories in a soda and the amount of sodium. We are going to pull data from seven popular beverages. The data is gathered from Gatorade®, Coke®, Sprite®, 7-Up®, Dr. Pepper®, A&W Root Beer®, and Minute Maid Lemonade®. Using the nutrition label, the data will be the amount of sugar(g) and the amount of sodium(mg) in 12oz.

1. Open the " sugar vs. salt" file in my documents. Read through the notes on the first screen.	**Home** √x **1:Calculator** ∨△ **2:Graphs & G...** ▦ **3:Lists & Spre...** T **4:Notes** 🗂 **5:New Docu...** 📂 **6:My Docum...** 📥 **7:Current Do...** 📟 **8:System Info** ⑦ **9:Hints** Go to your list of folders and saved documents.
	sugar vs salt | Name	△	Size
---	---	---
🗋presentation		4K
🗀Presentations		28K
🗋Area Function		4K
🗋Area Function Problems		20K
🗋Area Prob1		2K
🗋sugar vs salt		4K
🗀Training Activities		125K
🗋activity 3		4K
🗋activity⁻2		4K
🗋Box Problem		7K
🗋D2_1DiaCir		9K	

|	
2. Enter the data from your student worksheet into the lists under the appropriate columns of "sugar" and "sodium" • Select ⓒᵗʳˡ right on the wheel to move to the next screen • Input the data using the wheel to navigate through the table	**1.1 1.2 1.3 1.4 ▶RAD AUTO REAL** A beverage B sugar C sodium ◆ 1 Gatorade 0 2 Coke 0 3 Diet Coke 0 4 Sprite 0 5 7-Up 0 B1│0

3. Draw the scatterplot of the data
 • Go to the next screen where your graph is located by hitting ⓒᵗʳˡ and right on the wheel
 • Select ⓜᵉⁿᵘ
 • Choose "3: Graph Type"
 • Choose "3: Scatter Plot"
 • At the bottom of the screen you will need to tell the calculator where to find the data. In the x box use the pull down menu and select "sugar" and in the y box select "sodium"
 • Set your window with the following settings by choosing ⓜᵉⁿᵘ then "4:window", "1:window settings"
     X min: 0
     X max: 50
     Y min: 0
     Y max: 175
     Choose ok
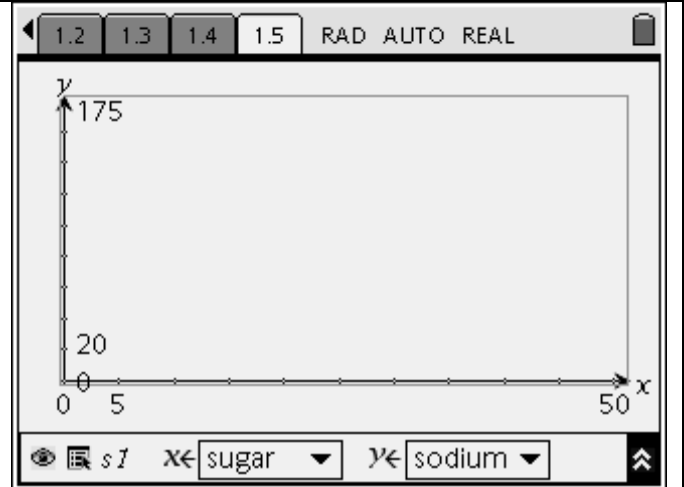 	
 Sketch what you see on your activity sheet.
	◀ 1.2 1.3 1.4 1.5 RAD AUTO REAL
	 y
	 ▲175
	
	 20
	 0→
	 0 5 50 →x
	 👁 ▣ s1 x←sugar ▼ y←sodium ▼ »

|	
4. Determine the type of correlation based on you scatterplot. On your activity sheet, record what you determine the type of correlation to be and why you chose it.	

5. Draw what you believe to be the line of best fit.
  • Choose on (menu)
  • Choose "3. Graph Type"
  • Choose "1. Function"
  • Graph f1(x)= x
  • Press "Esc" to enter the graphing window and (ctrl) when your line f1(x)=x when it is flashing ↺ (either end of line)
  • Move the cursor until you feel the slope of the line is where you want it and hit (enter)
  • Move you arrow to the origin until it changes to the ⊕ (center of line) and hit (ctrl) This will allow you to change your y-intercept. Move the line until you feel you have found the line of best fit for the data.
  • If you need to go back and forth between changing the slope and y-intercept then switch between selecting the ↺ and the ⊕ on the line.
 	
On you student worksheet, write the equation of the line you determined to be the line of best fit and draw it on your scatterplot.
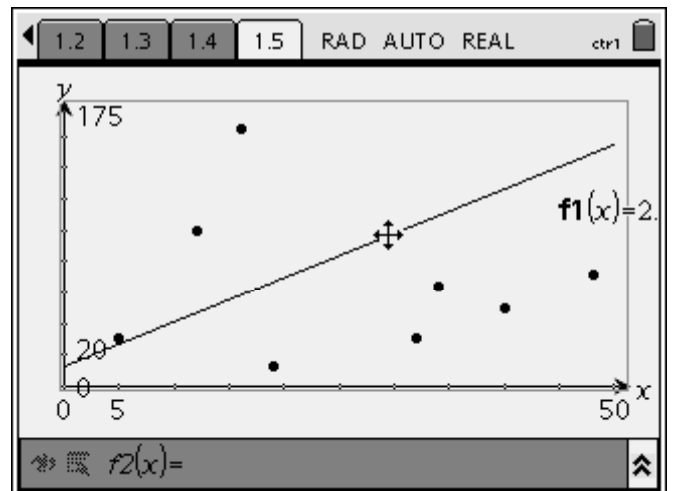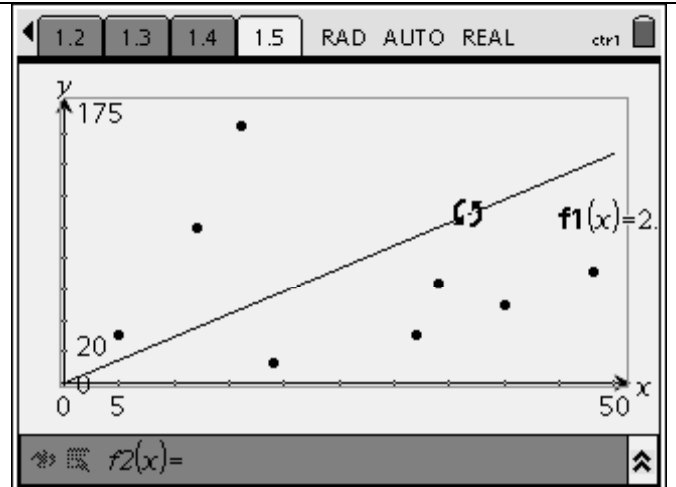
6. Use the TI-Nspire to calculate the linear regression for the given data.
- Toggle back to the list screen using (ctrl) and left on the wheel
- Choose (menu)
- Choose "4: Statistics"
- Choose "1: Stat Calculations"
- Choose "3:Linear Regression (mx+b)
- From the drop Down Menus select
  X List: Sodium
  Y List: Sugars
  Save RegEq to : f2
  Frequency List: 1
  Category List:
  Include Categories:
  1 Result Column: d[]
  Choose OK

Toggle back over to your graph screen by selecting (ctrl) right

You should see your equation for the line of best fit in f2(x)=. Hit (enter) to graph

On your activity sheet, record what the calculator generated to be the line of best fit and draw it on your scatterplot.