Two-Way Tables – Data Exploration

This activity is based on the *Titanic* data exploration from 1.1.

The two-way table below gives information about adult passengers who lived and who died, by class of travel.

		Survival status	
		Survived	Died
Class of Travel	First Class	197	122
	Second Class	94	167
	Third Class	151	476

The movie *Titanic* with Leonardo DiCaprio and Kate Winslett suggested that first-class passengers received special treatment in boarding the lifeboats, while some other passengers were prevented from doing so (especially third-class passengers).

Is the survival status associated with the class of the passenger? Give appropriate graphical and numerical evidence to support your answer.

1. Begin a *New Document* and *Add a Lists & Spreadsheet*.

2. Enter the data from the table above in the next three columns.

   - Name column A: **class**, and enter the classes of passengers in the first three cells. (Remember to use quotes so the Nspire treats the classes as categorical data. – "First", "Second", "Third").
   - Name column B: **survived** and column C: **died**.

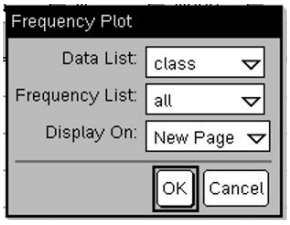
   NOTE: Since we will be using this data to calculate the marginal and conditional distributions, you will need to enter a decimal after every number. This is so the Nspire will display the results as a decimal instead of a fraction.

3. Create the marginal distribution for the *class of passenger*.

   First find the total number of passengers for each class.

   - Arrow to column D and name it **all**. Press (enter) and the cursor should now be in the cell below the name. This cell is the *formula cell*. Any time you want to perform a function with the lists you will use this cell.
   - Press (enter) again and the line **all:=** will appear. To total the count of passengers of each class, press (var) and the names of the lists should appear. Select **survived** by arrowing to it and press (enter). Type (+), (var), select **died**, then press (enter). The total number of passengers that were aboard the Titanic should now be in each cell of **all**.

4. Graph the marginal distribution.



   - On the Lists & Spreadsheet page, press (menu), *Data, Summary Plot*. Select the **class** for *Data List* and **all** for *Summary List*. Also select ***New Page*** for *Display On*. (tab) to [OK] and press (enter).
   - Using the Touchpad, you can view the percentages by arrowing over the bars.

Describe the marginal distribution of the class of passenger.

5. To determine if survival status was associated with the class of passenger, the *conditional distribution* of class and survival status needs to be examined.

   - On the *Data & Statistics* page, press (doc▾), *Page Layout*, *Select Layout*, *Layout 7*.
   - Press (ctrl) (tab) and the upper right box will be highlighted. Press (menu), *Add a Data & Statistics page*.
   - Press (ctrl) (menu) and select *Add X variable with Summary List*. Select **class** for the *Data List* and **survived** for the *Summary List*. (tab) to [OK] and press (enter).
   - Repeat the last two steps to display the graph of passengers that died in the lower right box.

Using these graphs, is the survival status associated with the class of the passenger?