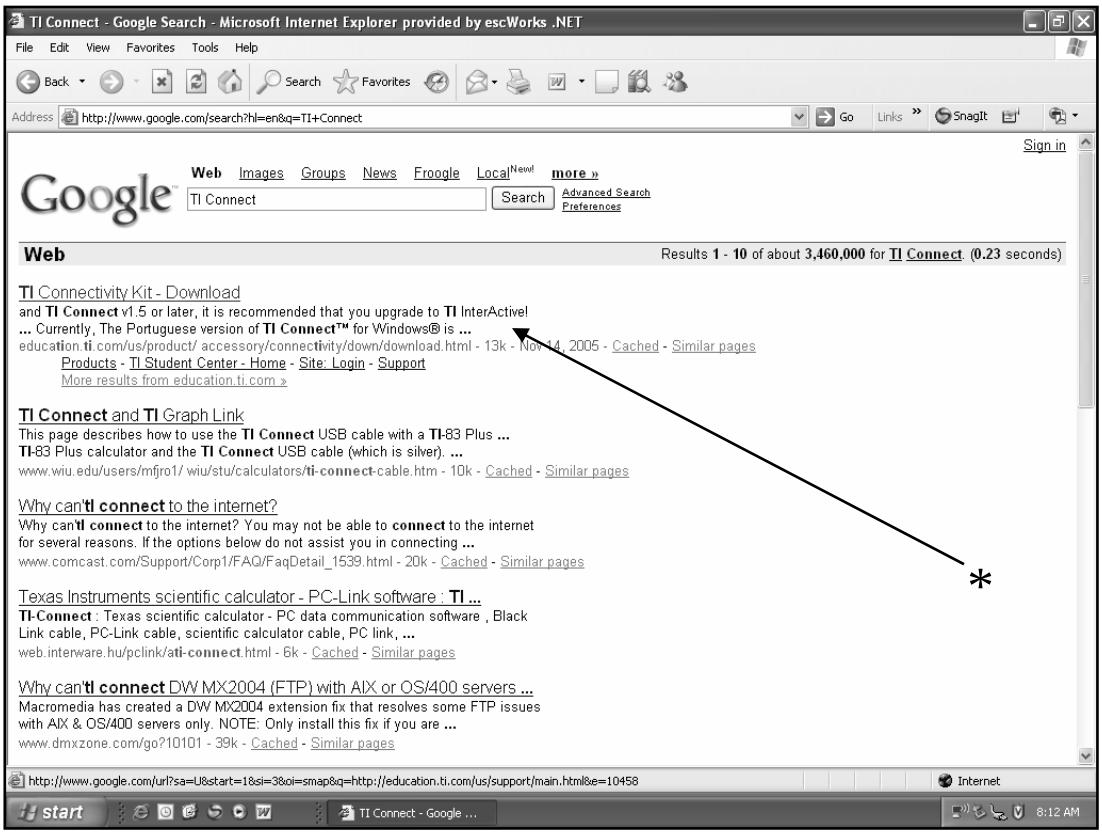
Technology Tutorial: Loading TI Connect

TI Connect is a linking software used to download and transfer data, and connect calculator, computer and internet platforms.

Note: In order for TI Interactive 1.3 software to interface with the TI Connect software a 1.5 or higher version of TI Connect must be downloaded.

Advance Preparation

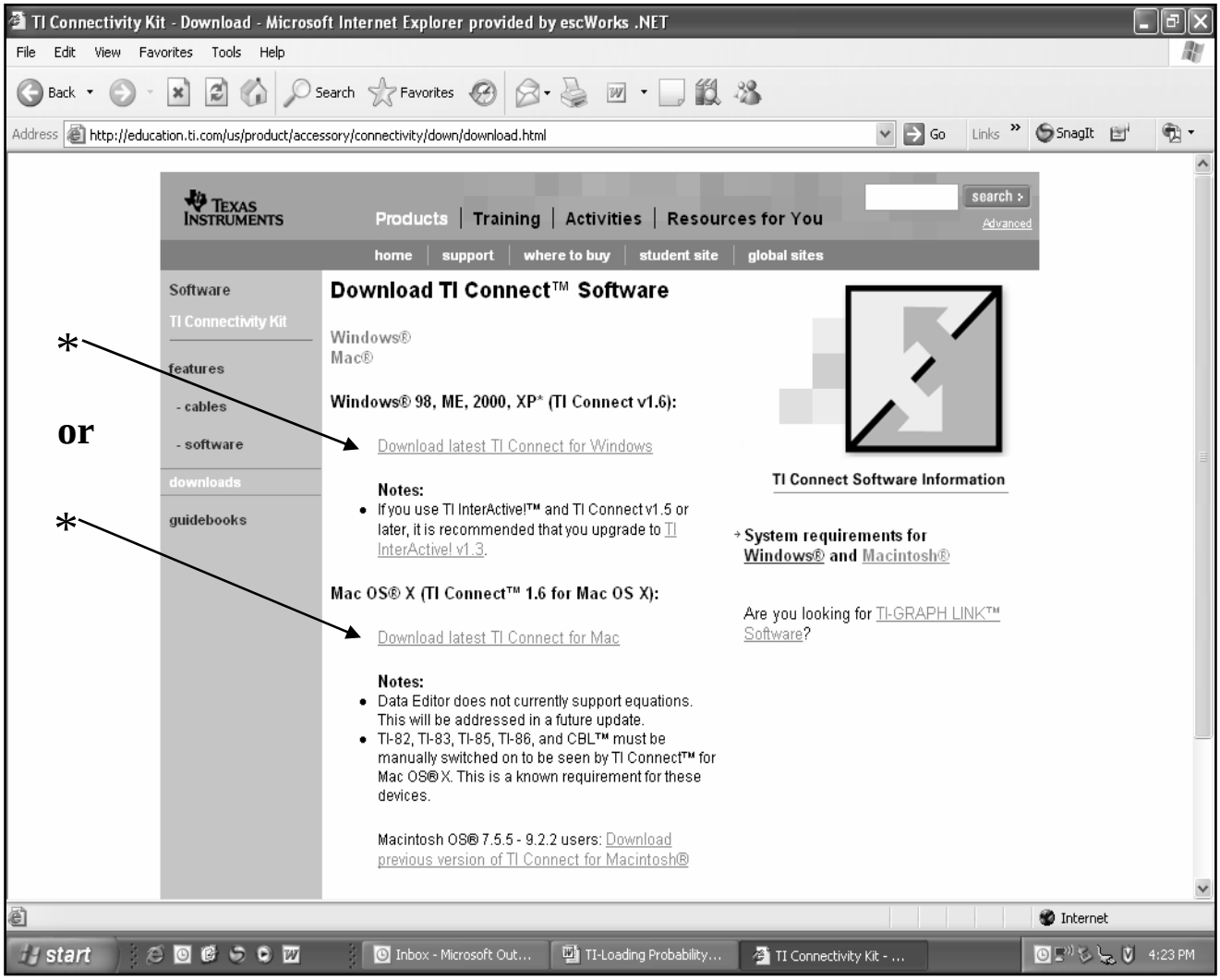
Google search: TI Connect, select TI Connectivity Kit (*) and Bookmark.
Website: Appearance of the Texas Instruments website may differ.
http://education.ti.com/us/product/accessory/connectivity/down/download.html



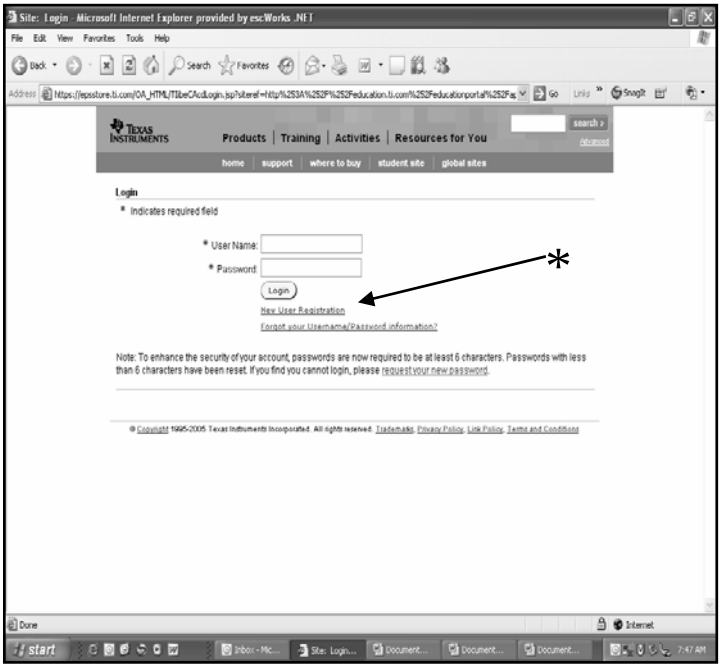
1. TI requires a registration/login process to the website. Registration/Login process follows:

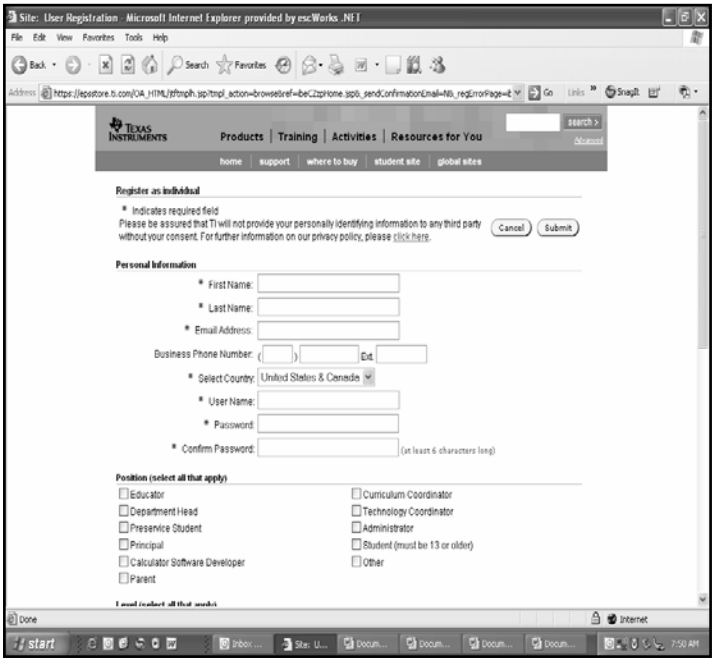
   A. Google/Browse to website, if bookmarked use bookmark:
   http://education.ti.com/us/product/accessory/connectivity/down/download.html

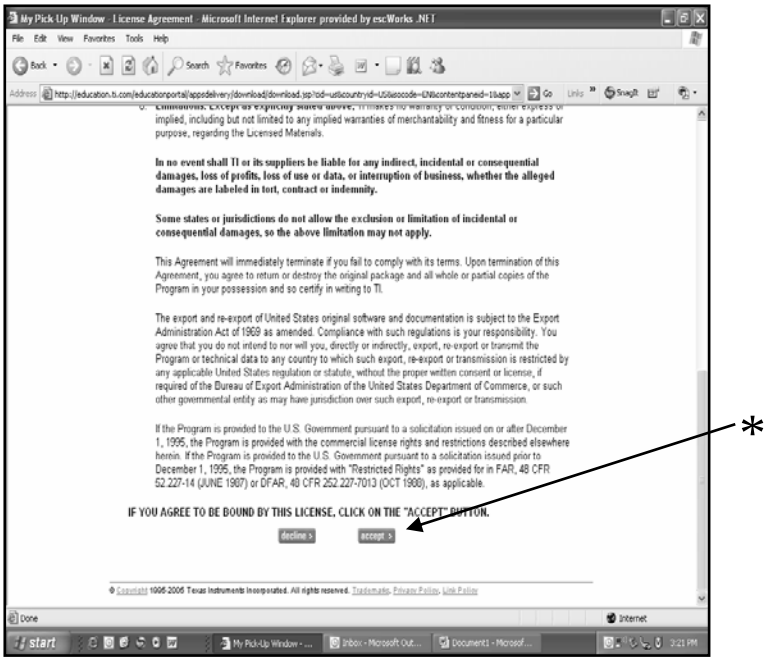
B. Select the appropriate computer platform (*). If a **Security Alert** window pops up click **OK**.



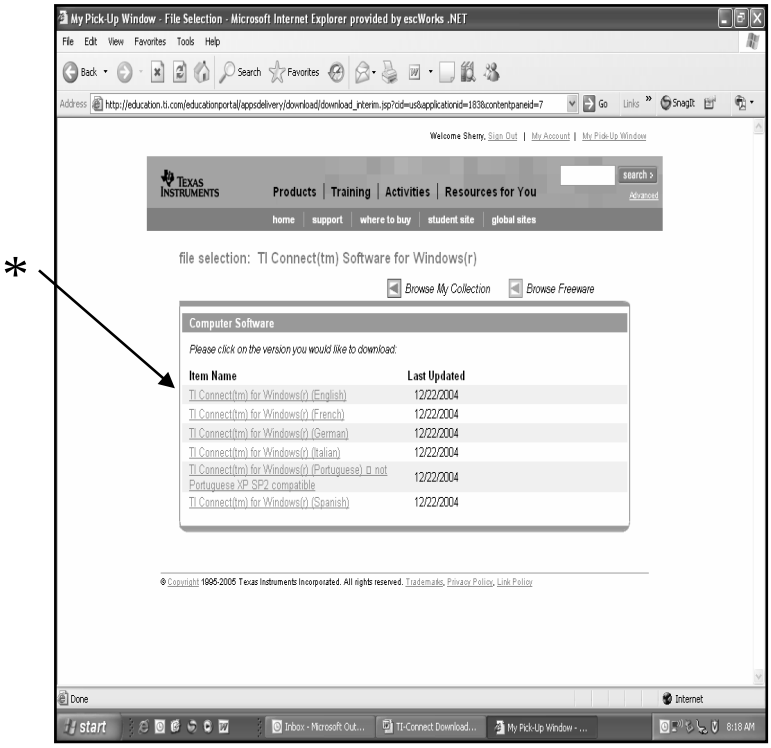
C. The registration/login process will begin at this point. Select **New User Registration** or input **User Name** and **Password**. Personal information and an agreement with terms will follow for new users. As illustrated below (*). If a **Security Alert** window pops up click **YES**.

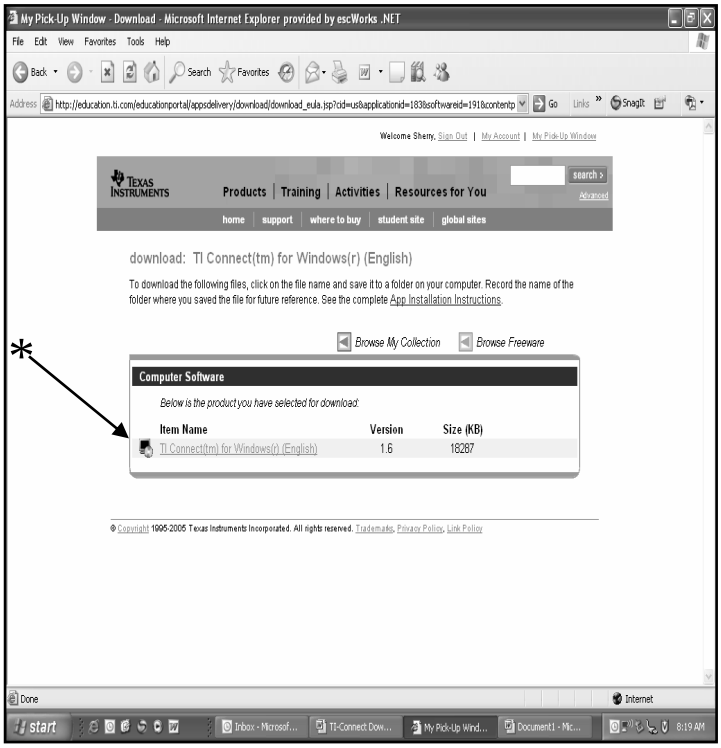




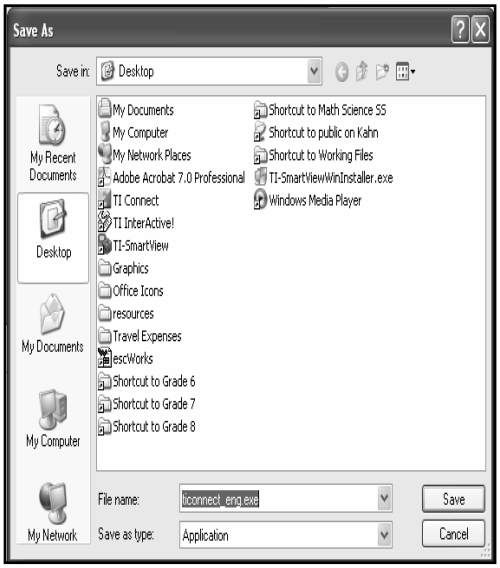


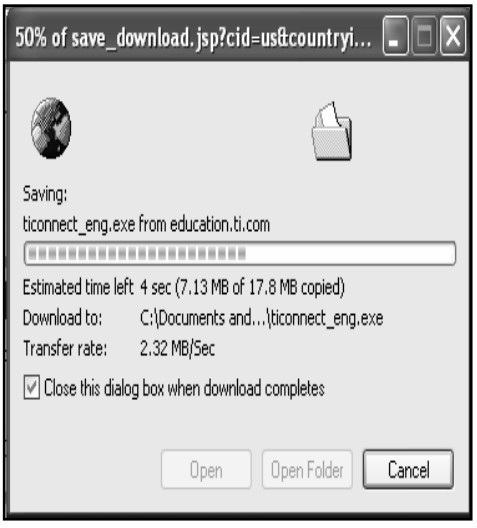
2. Select the **TI Connect(tm)** language platform that is appropriate. Then click on the file name (*). Example: Windows (English) version was selected.





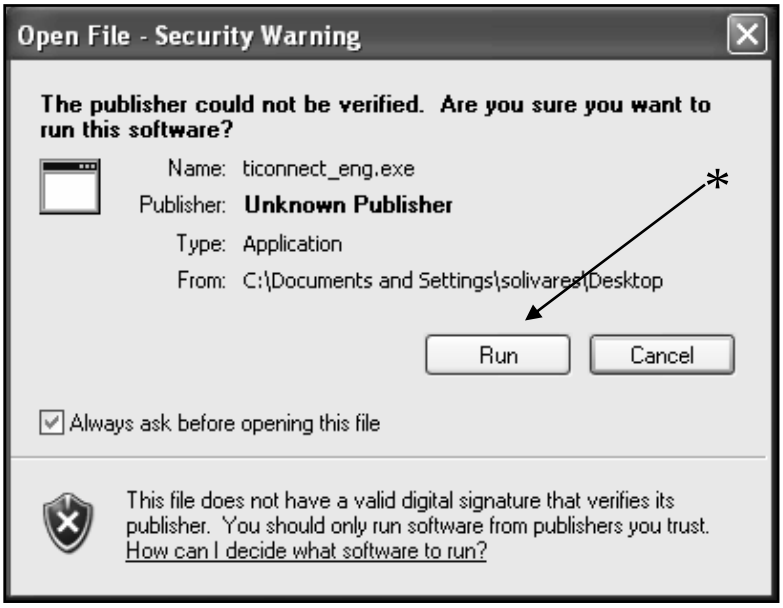
3. Select **Save** (*), and save to the **Desktop**. Download will begin.



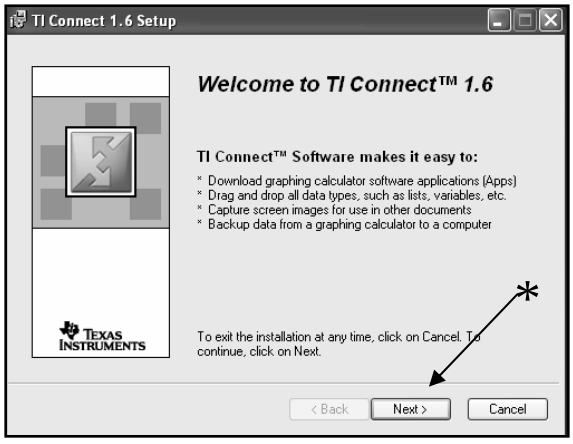


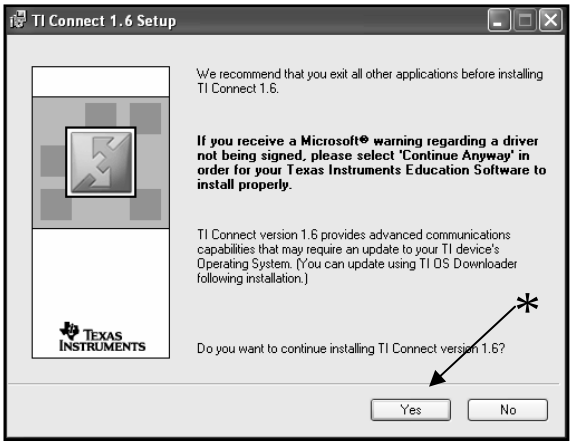
4. Once download is complete, close all windows. A **TI Connect_eng.exe** icon  will appear on the desktop.

5. Double click on the **TI Connect_eng.exe** icon  , and run set up.

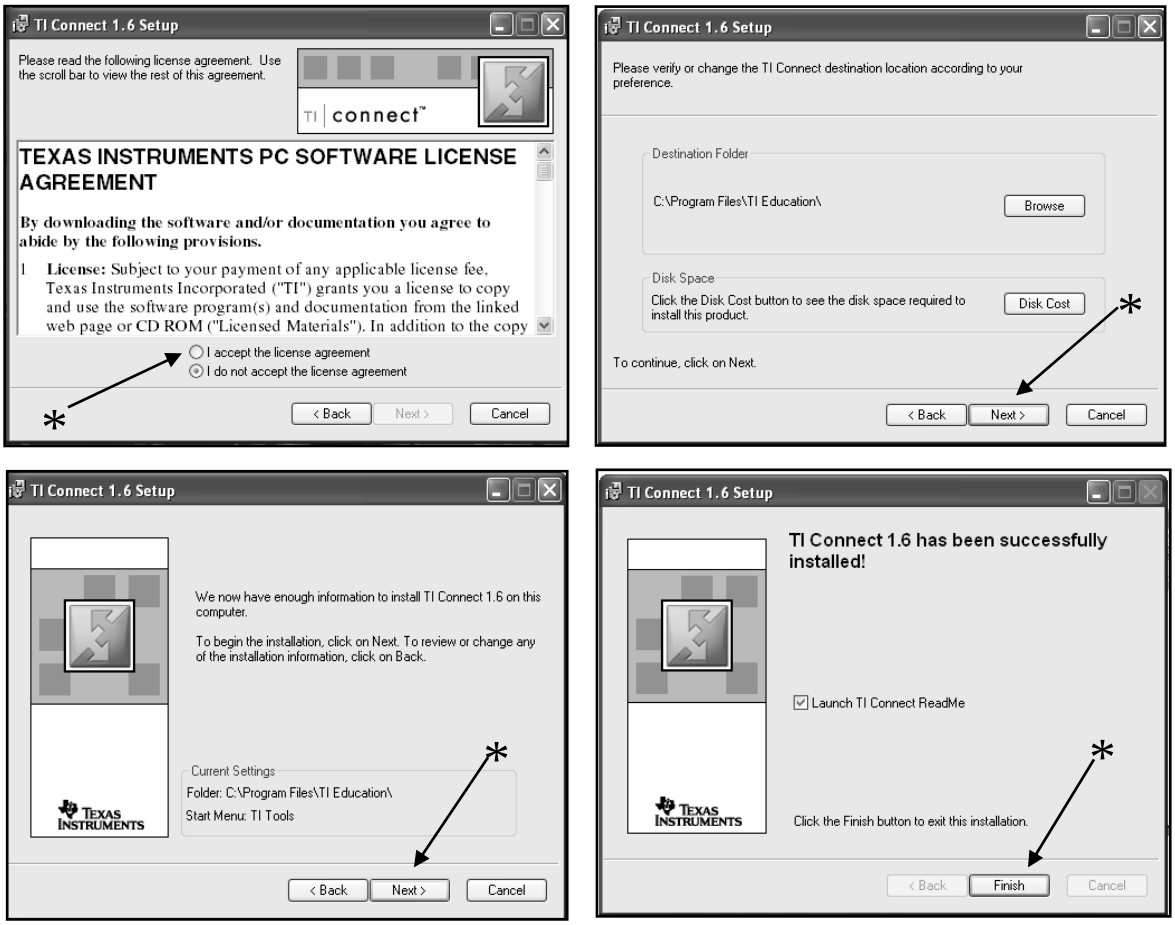


6. The **TI Connect Set**-up will go through several windows including a software license agreement.





(continue)



7. Close all windows when setup is complete.

8. A **TI Connect** icon  will appear on the desktop.

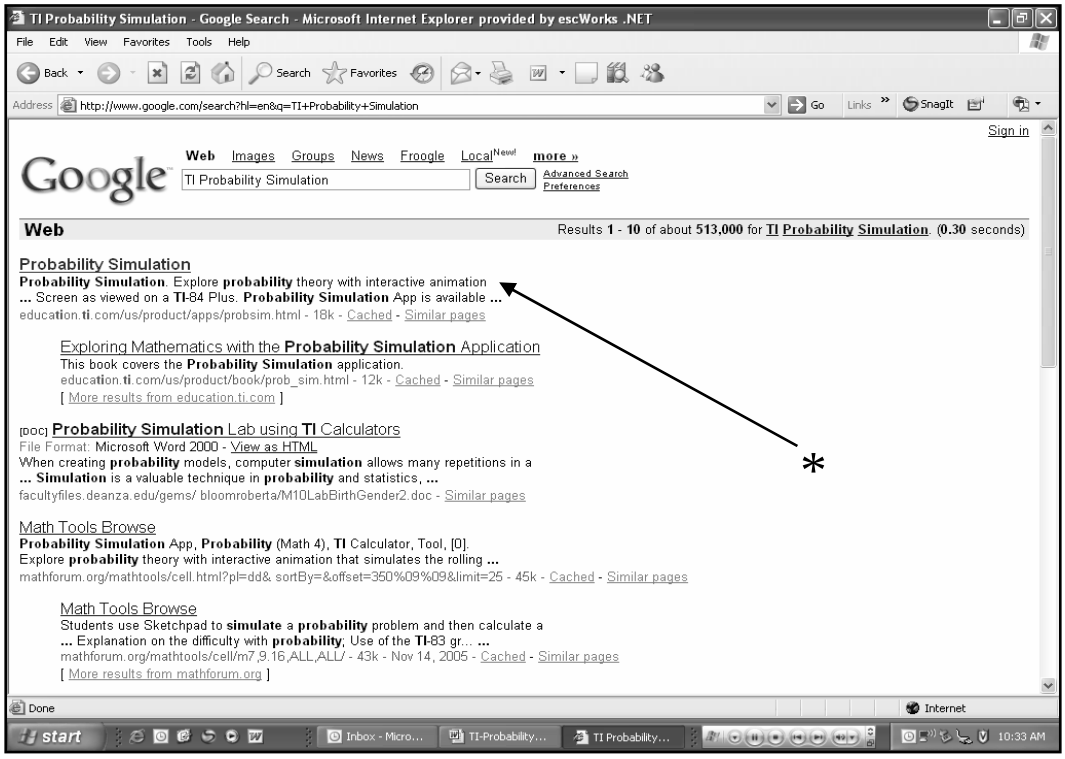
9. Drag the **TI Connect _eng.exe** icon to the trash can, and delete.

Technology Tutorial: Loading TI Probability Simulator APPS

The TI Probability Simulation APPS is an application software with interactive animation of the following probability situations: tossing coins, rolling dice, drawing marbles, spinning spinners, drawing cards, and generating random numbers. The TI Probability Simulator APPS requires the TI-73 Operating System 1.6.

Advance Preparation

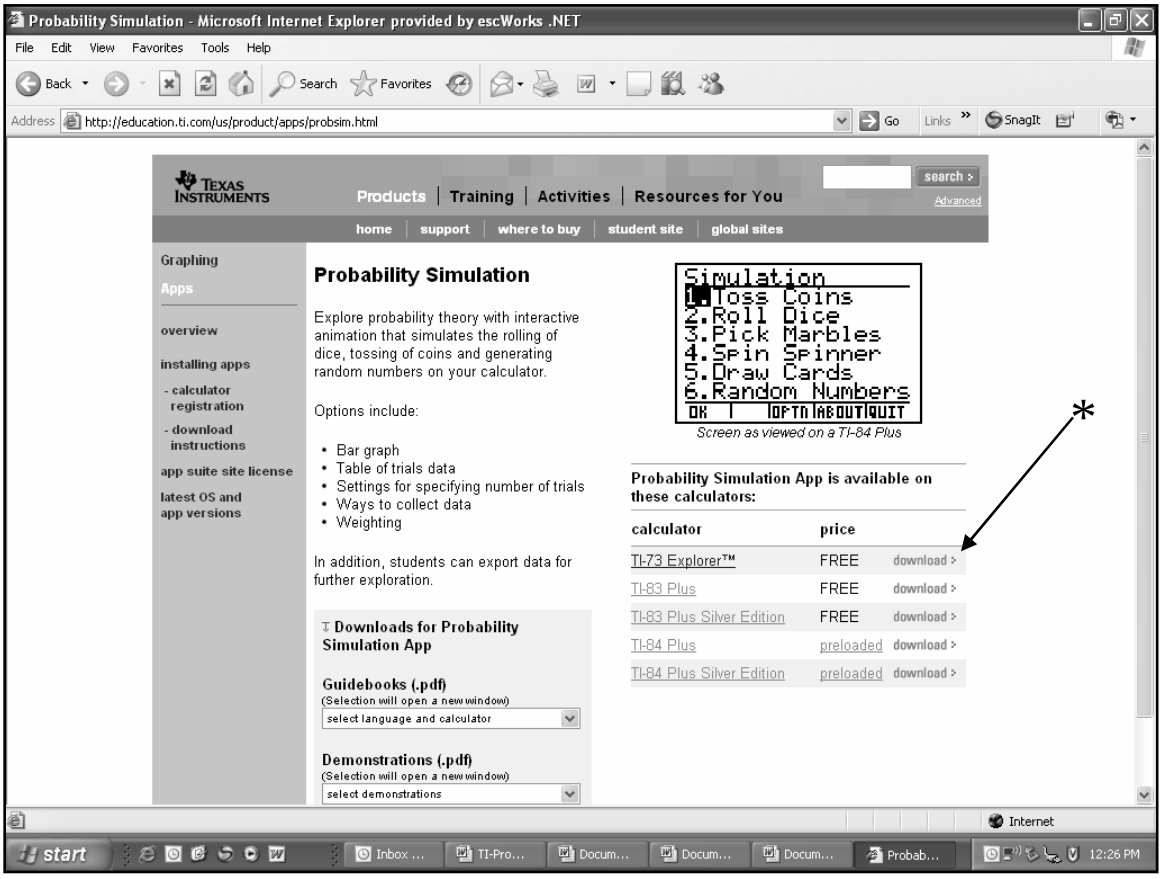
- Check for TI Connect software on computer; if not loaded, load using Technology Tutorial **Loading TI Connect**.
- If the computer has TI Interactive, make sure it is version 1.3 or higher.
- Connect a TI-73 calculator to a computer with internet access using a **TI Silver Graph Link**. Be sure to turn on the calculator.
- Google and Bookmark the website (appearance of the Texas Instruments website may differ): http://education.ti.com/us/product/apps/probsim.html



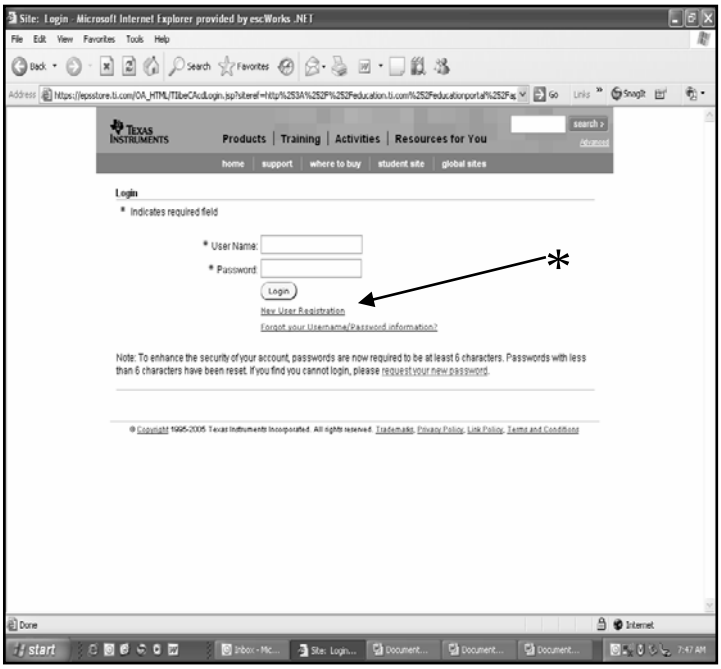
1. TI requires a registration/login process to the website. Registration/Login process follows:

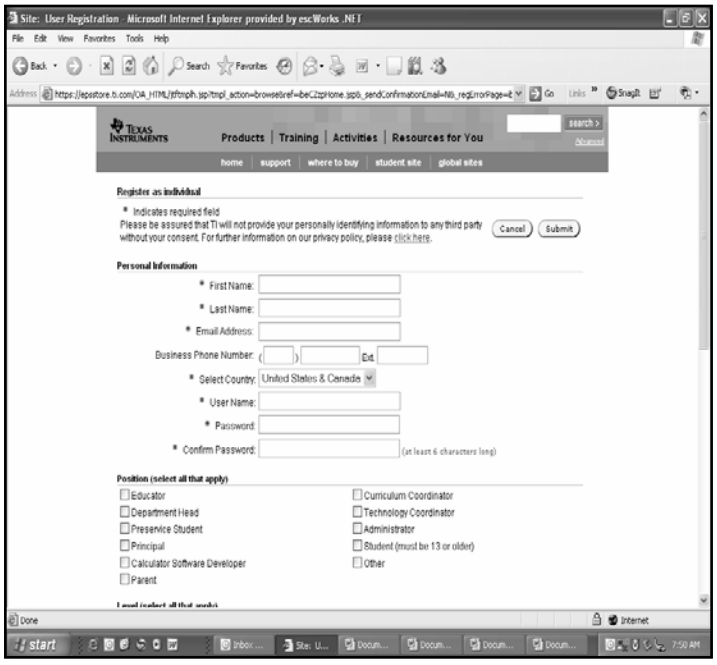
   A. Google/Browse to website, if bookmarked use bookmark: http://education.ti.com/us/product/apps/probsim.html

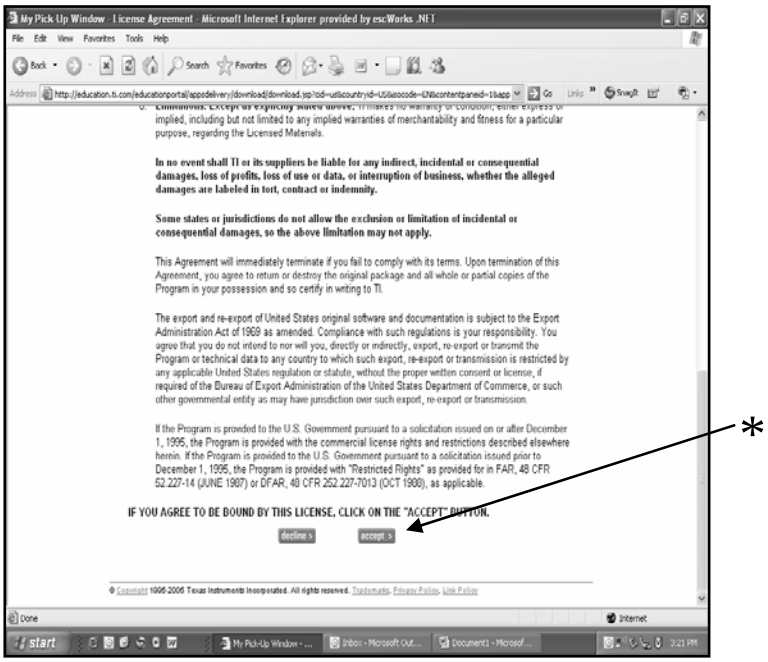
B. Select **download** for the appropriate calculator. For Example: TI-73 Explorer (*) was selected. If a **Security Alert** window pops up click **OK**.



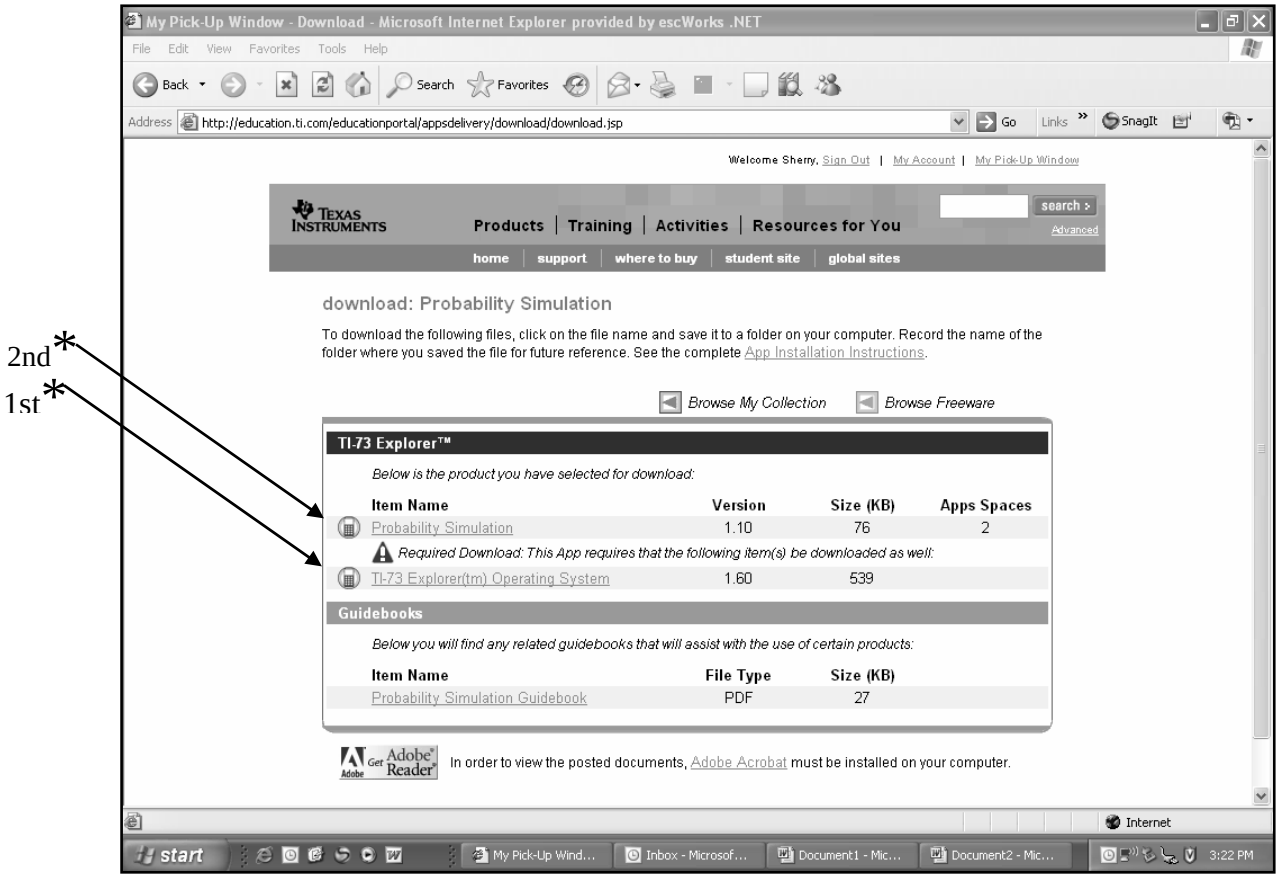
C. The registration/login process will begin at this point. Select **New User Registration** (*) or input **User Name** and **Password**. Personal information and an agreement with terms will follow for new users, as illustrated below (*). If a **Security Alert** window pops up click **YES**.



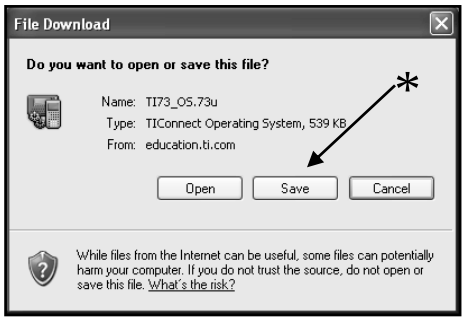


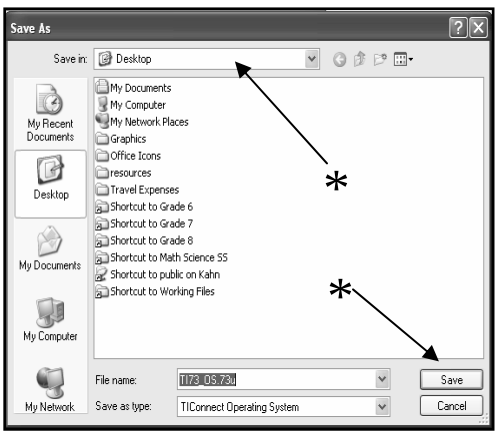


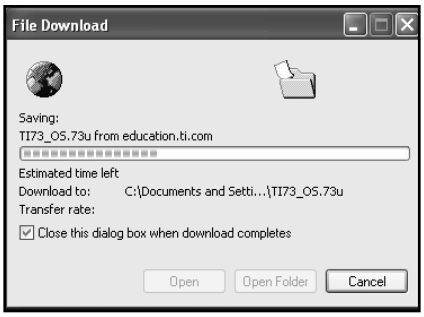
2. You will need to download the **TI-73 Explorer(tm) Operating System** first, followed by the **Probability Simulation** (*). For Example: **TI-73 Explorer(tm) Operating System** was selected first.



3. Select the **TI-73 Explorer(tm) Operating System,** select **Save** (*), and save to the **Desktop**. Download will begin.



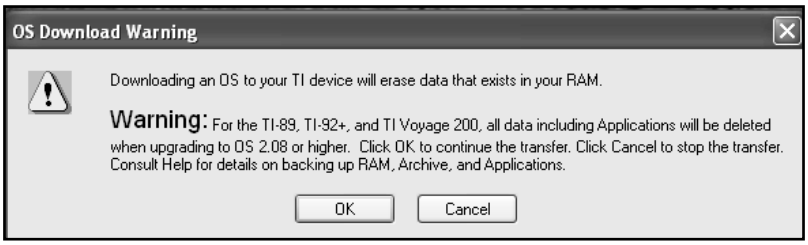




4. Once download is complete, minimize the window, **My Pick-Up…**. A **TI Operating System** icon  will appear on the desktop.

5. Click and drag the **TI Operating System** icon  onto the **TI Connect** icon  .

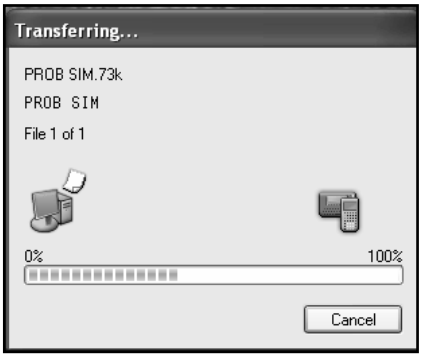
6. A **OS Download Warning** will appear, click **OK**. (*Note: all applications on the calculator will be deleted when upgrading to the new operating system.)*



7. Transferring of the operating system to the TI-73 calculator will begin. While the operating system is transferring, the graphing calculator will read: Receiving Calculator Software. This process will take about 5 to 10 minutes. Once you have downloaded the operating system, the calculator will read: Validating Calculator Software followed by Graph Explorer Software 1.60 title screen.

8. Maximize the window, **My Pick-Up**. Repeat steps 2-5 for downloading the **Probability Simulation**. If a **Document and Setting** window pops up click and **OK**, then restart download by selecting the **Probability Simulation** again.

9. Transferring of the **Probability Simulation APPS** will begin and the TI-73 calculator will read: Receiving Pro Sim APP. This process will take about 1 minute.



10. Check to see if you have downloaded the **Probability Simulation APPS** correctly onto the calculator, by selecting the APPS key on the calculator. If the download was successful a new application titled **Prob Sim** will be in the list.

11. Drag to trash the **TI Operating System** and the **Probability Simulator** icon to the trash can and delete.

Technology Tutorial: TI-Interactive: The Big Question Presenter(s) Spreadsheet

Create a Presenter(s) Spreadsheet before starting the activity. This will enable the presenter(s) to flow between each group's data efficiently.

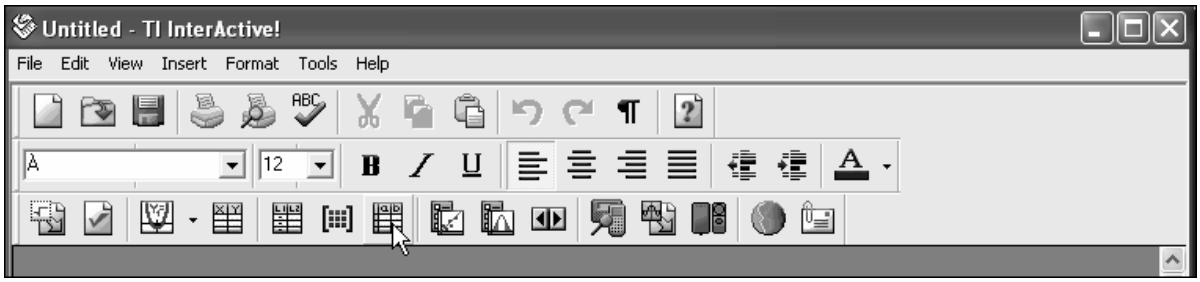
Advance Preparation

- Load TI-Interactive 1.3 software (will need to be purchased) onto computer: See TI-Interactive instructions manual.
- Load TI-Connect 1.5 software onto computer: See Loading TI Connect Technology Tutorial.

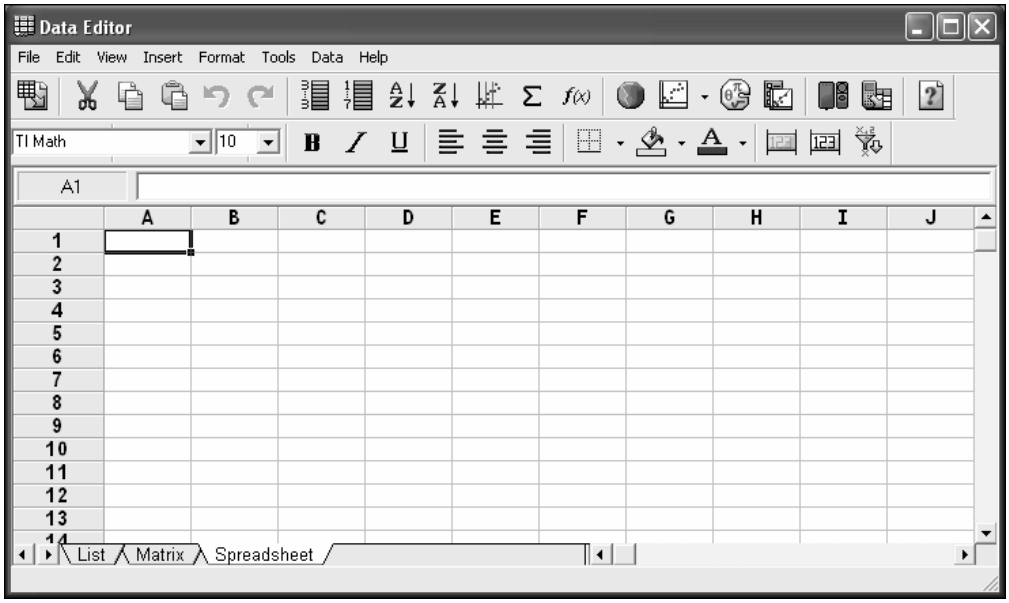
Create Presenter(s) Spreadsheet

1. Open TI-Interactive  .

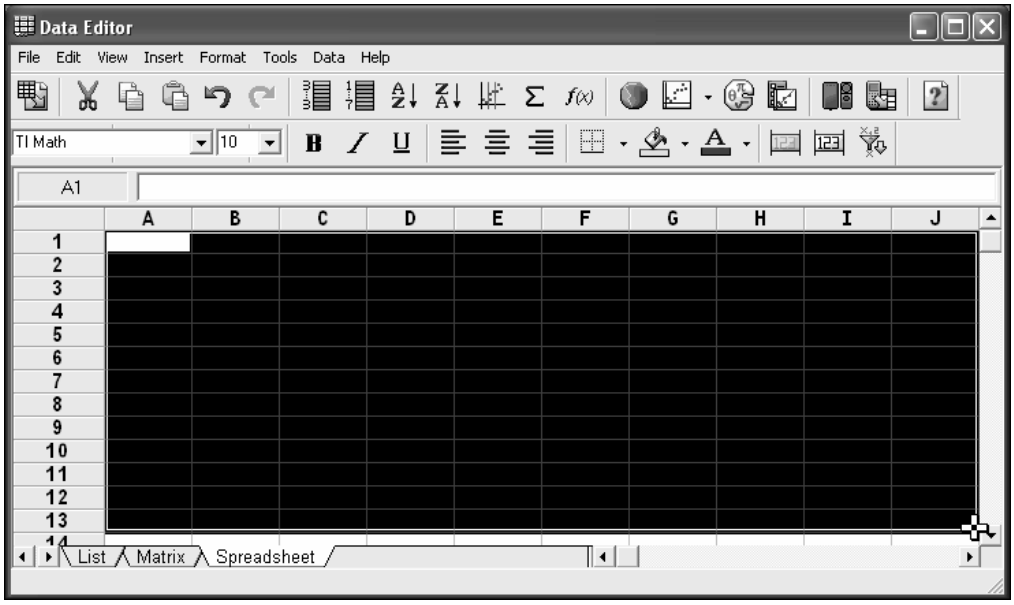
2. In the toolbar select the **Spreadsheet** icon  .



3. A spreadsheet will be activated in the form of a **Data Editor**.

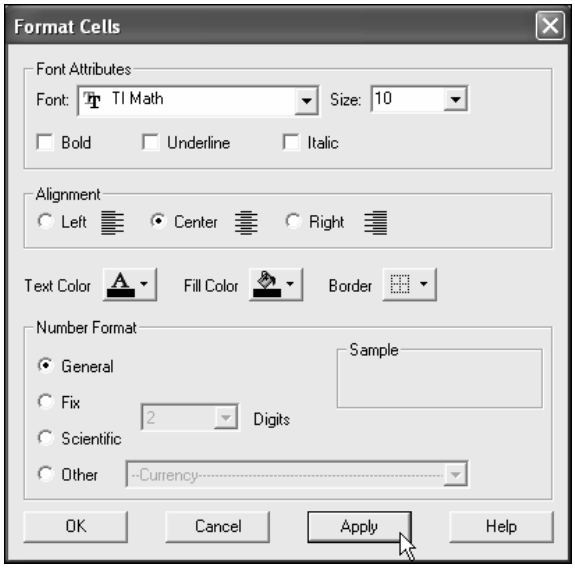


4. Starting with cell **A1** click and drag to the lower right-hand side of the spreadsheet until all cells are highlighted.

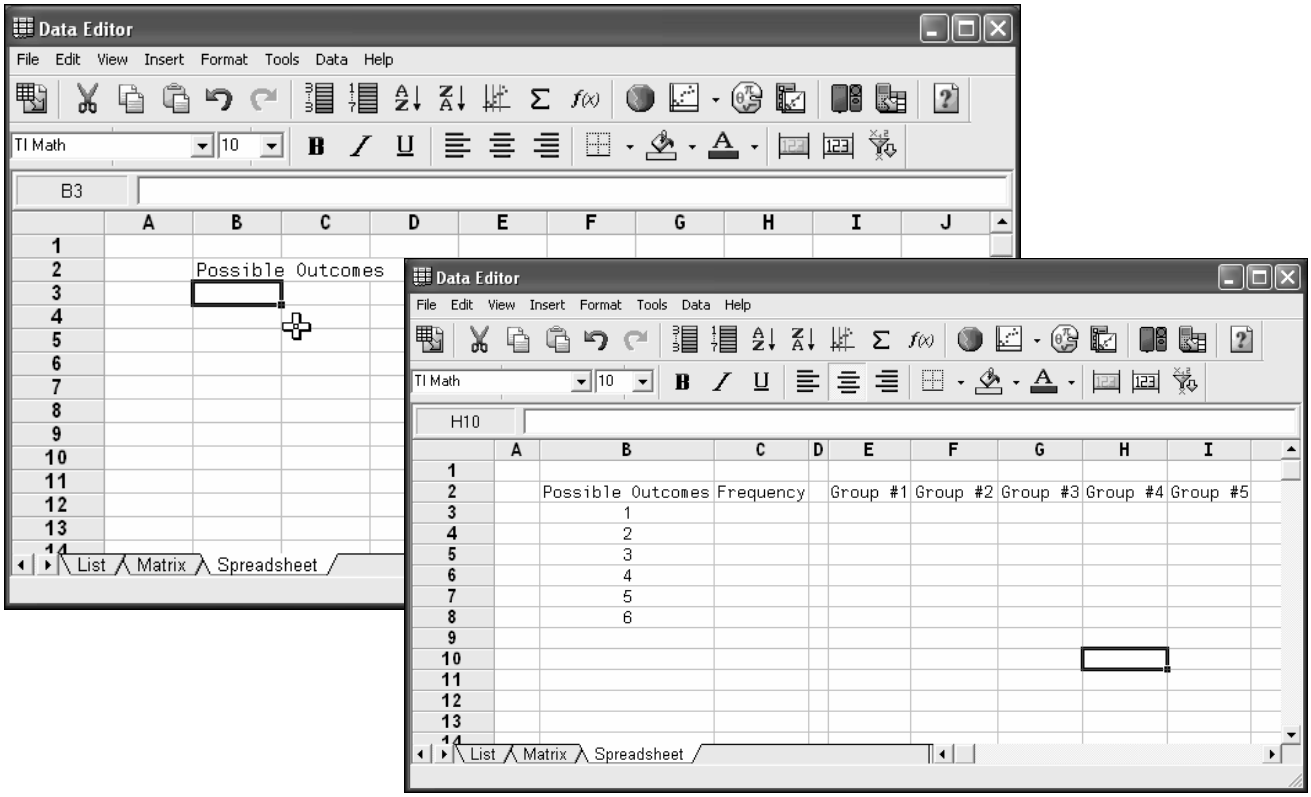


5. In the tool under the **Format** menu select **Cells**.

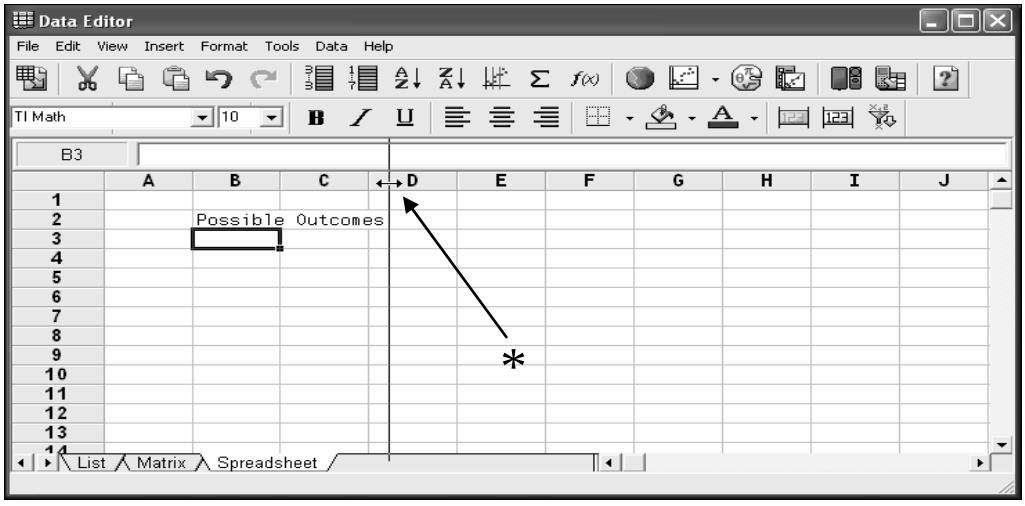
6. Set Alignment to **Center** and Number Format to **General**, select **Apply** and then **OK**.



7. Click on cell **B2** and type in **Possible Outcomes**, then **Enter**. Continue until you have set up all labels and groups. Some columns may need to be resized; instructions for resizing are below illustration. *Note: if more than five groups are needed just include another column labeled accordingly. Also, if fewer than five groups participate in the activity, having extra columns set up will not affect the outcome of the calculations. It is better to have too many groups set up, than too few.*

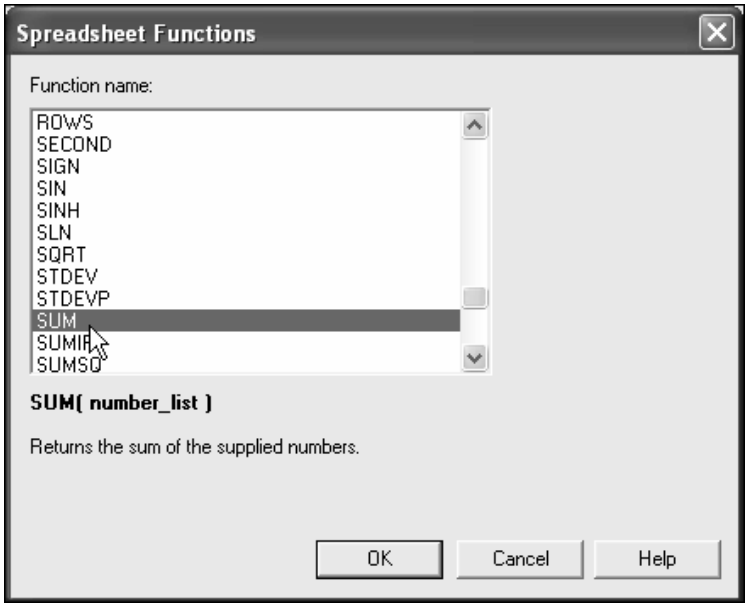


To resize column width or roll height: move curser into the column labels (or roll labels) when the curser changes from a pointer to a **two sided arrow** (*) and a **resizing line** appears, click and drag to the desired size.

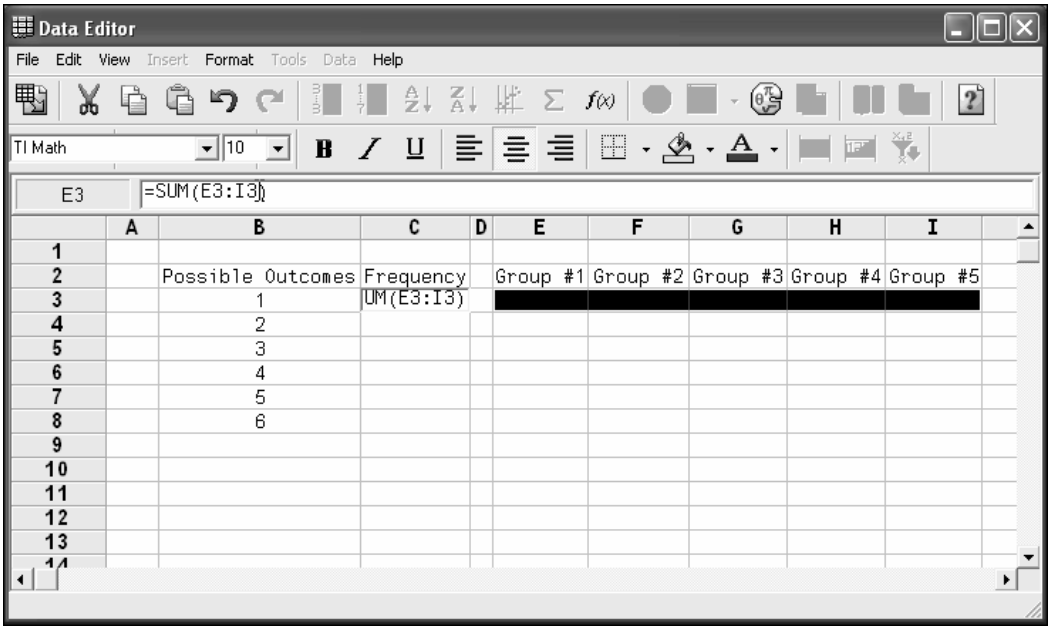


8. Click on cell **C3**, in the toolbar select **Functions ($f(x)$).**

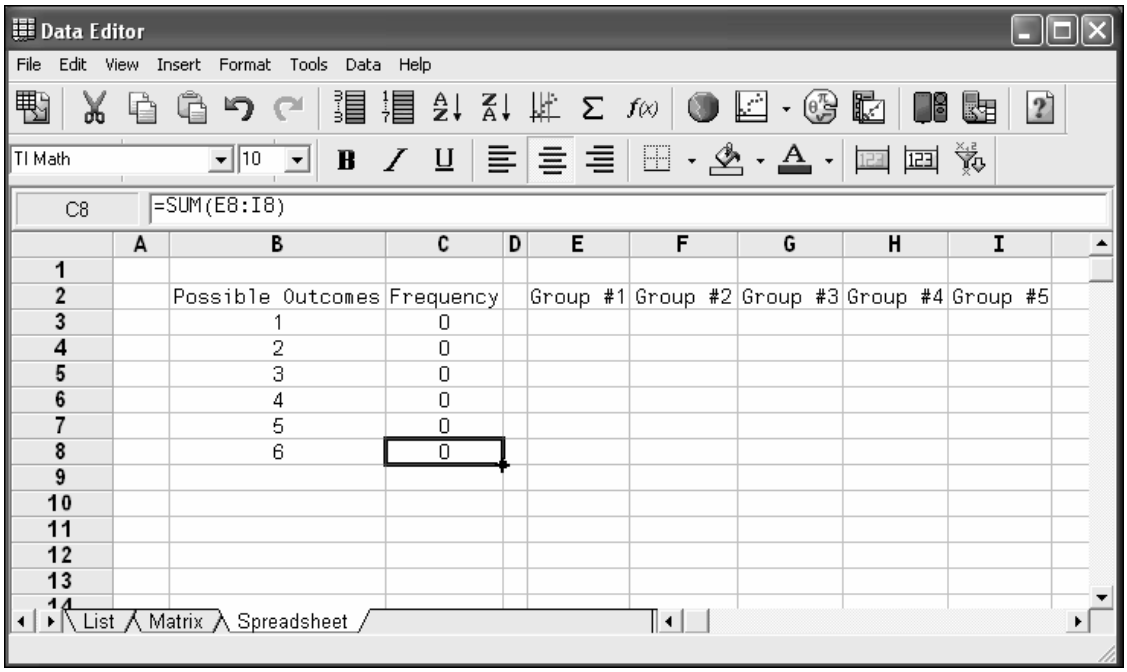
9. Scroll down to **SUM**, and then click **OK**.



10. Highlight cells **E3** to **I3**. *Note: There will be changes in the Sum formula as you highlight the cells.* Enter a close **()**) parentheses and then **Enter**. *Also, the sum will be zero at this time.*

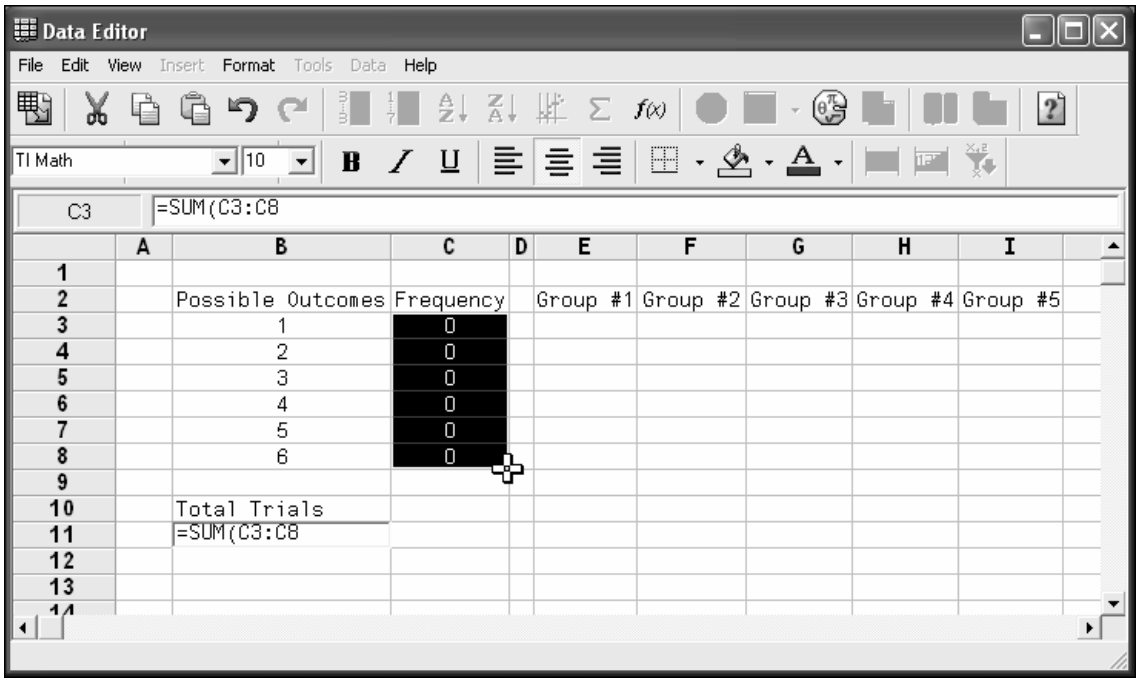


11. Repeat steps 9-11 for cells **C4**, **C5**, **C6**, **C7**, and **C8** using the corresponding Group cells.



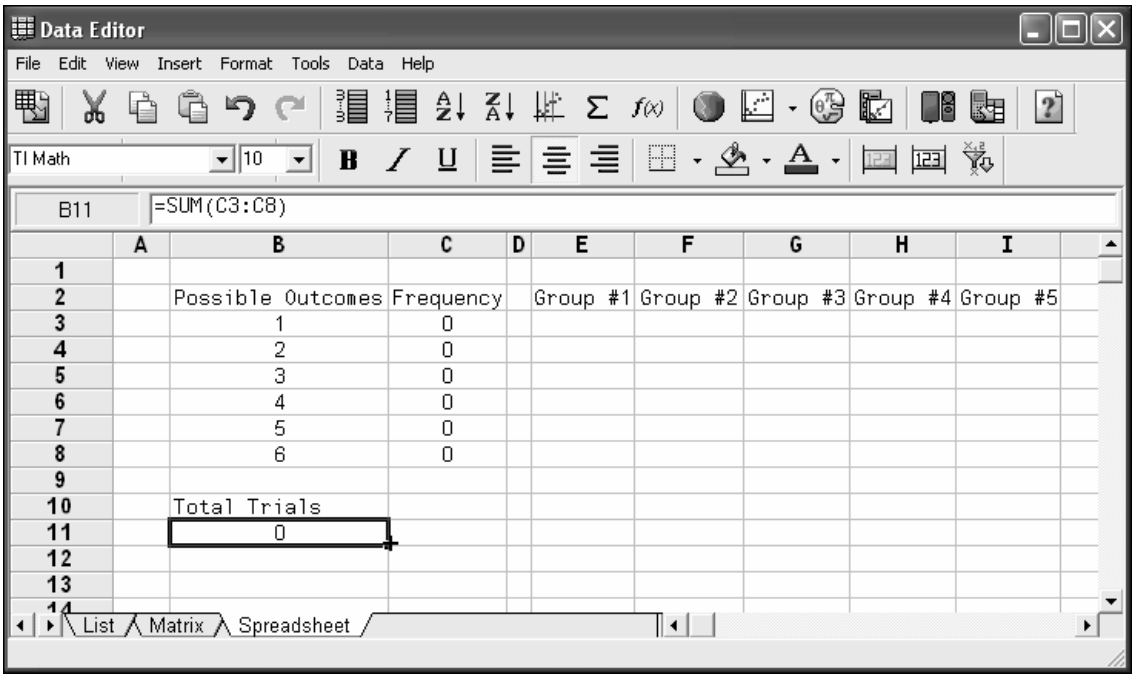
	A	B	C	D	E	F	G	H	I
1									
2		Possible Outcomes	Frequency		Group #1	Group #2	Group #3	Group #4	Group #5
3		1	0						
4		2	0						
5		3	0						
6		4	0						
7		5	0						
8		6	0						
9									
10									
11									
12									
13									

12. Click on cell **B10**, and input label, **Total Trials**. Click in cell **B11** and use the sum formula to total the frequency column, this will require highlighting cells **C3-C8**. Enter a close **())** parentheses and then **Enter**

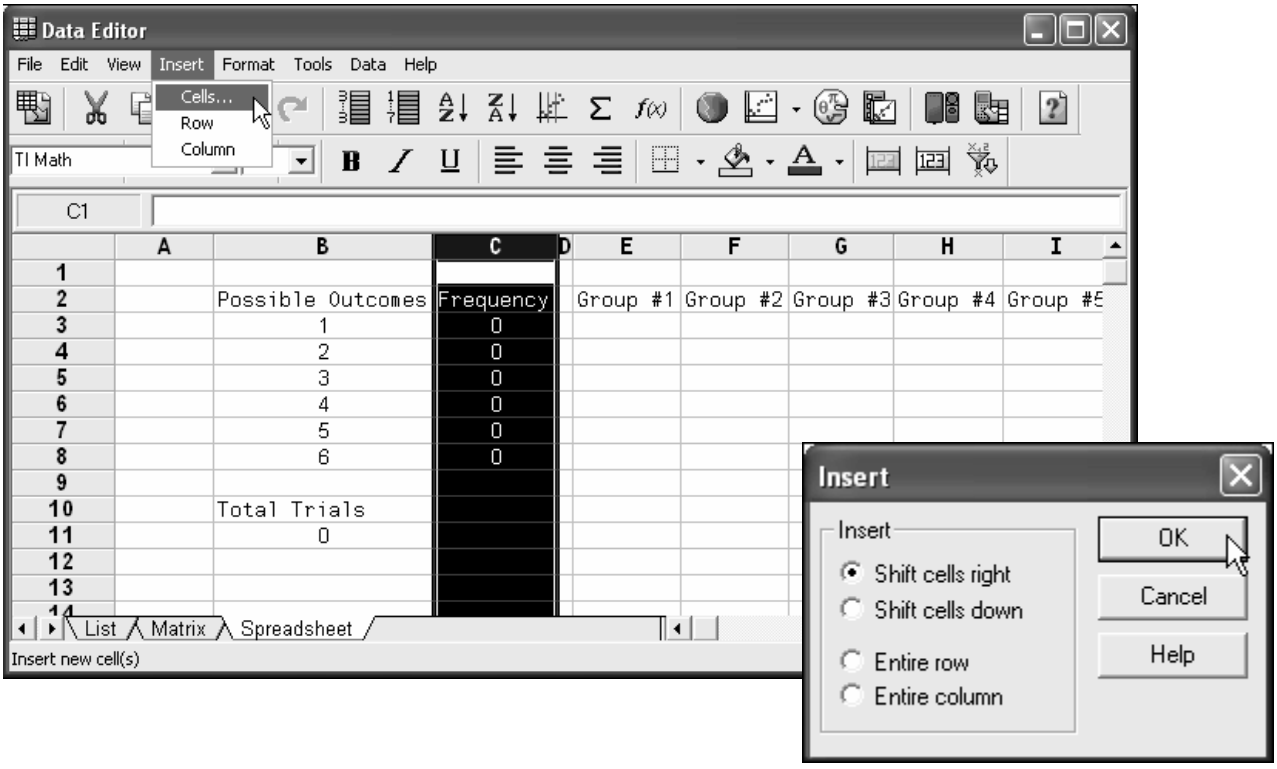


	A	B	C	D	E	F	G	H	I
1									
2		Possible Outcomes	Frequency		Group #1	Group #2	Group #3	Group #4	Group #5
3		1	0						
4		2	0						
5		3	0						
6		4	0						
7		5	0						
8		6	0						
9									
10		Total Trials							
11		=SUM(C3:C8							
12									
13									

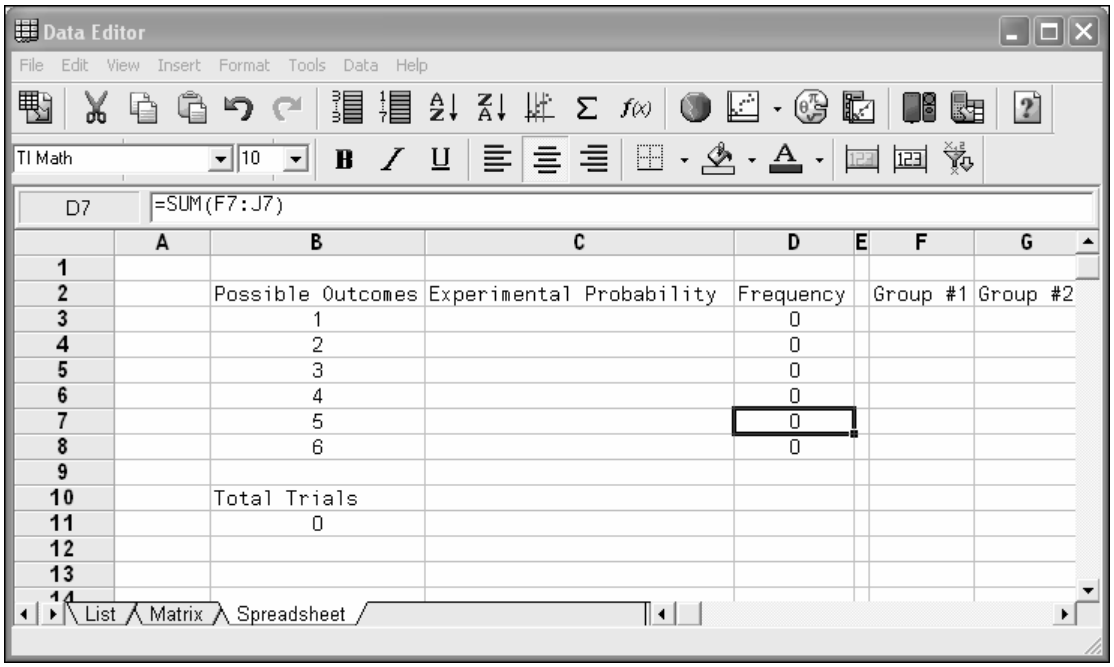
13. Table with formatted cells.



14. Click on the C column. In the toolbar under the **Insert** menu select **Cells**. In the pop-up menu select **Shift cells right** and click **OK**.

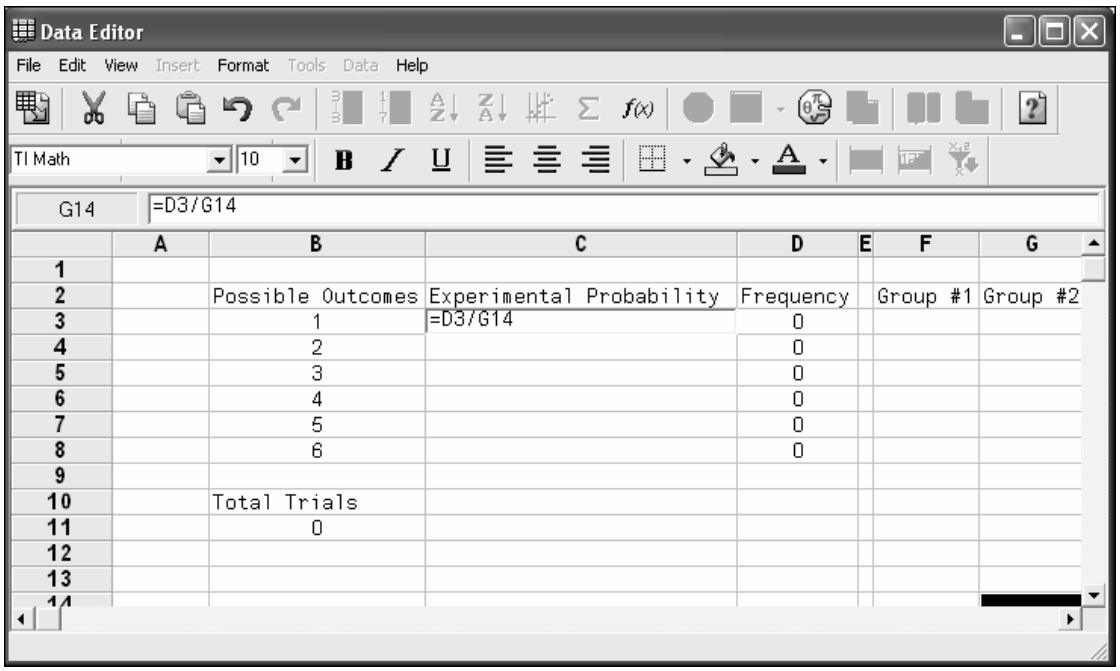


15. Resize new column as explained in step 7, and input label **Experimental Probability**.



	A	B	C	D	E	F	G
1							
2		Possible Outcomes	Experimental Probability	Frequency		Group #1	Group #2
3		1		0			
4		2		0			
5		3		0			
6		4		0			
7		5		0			
8		6		0			
9							
10		Total Trials					
11		0					
12							
13							

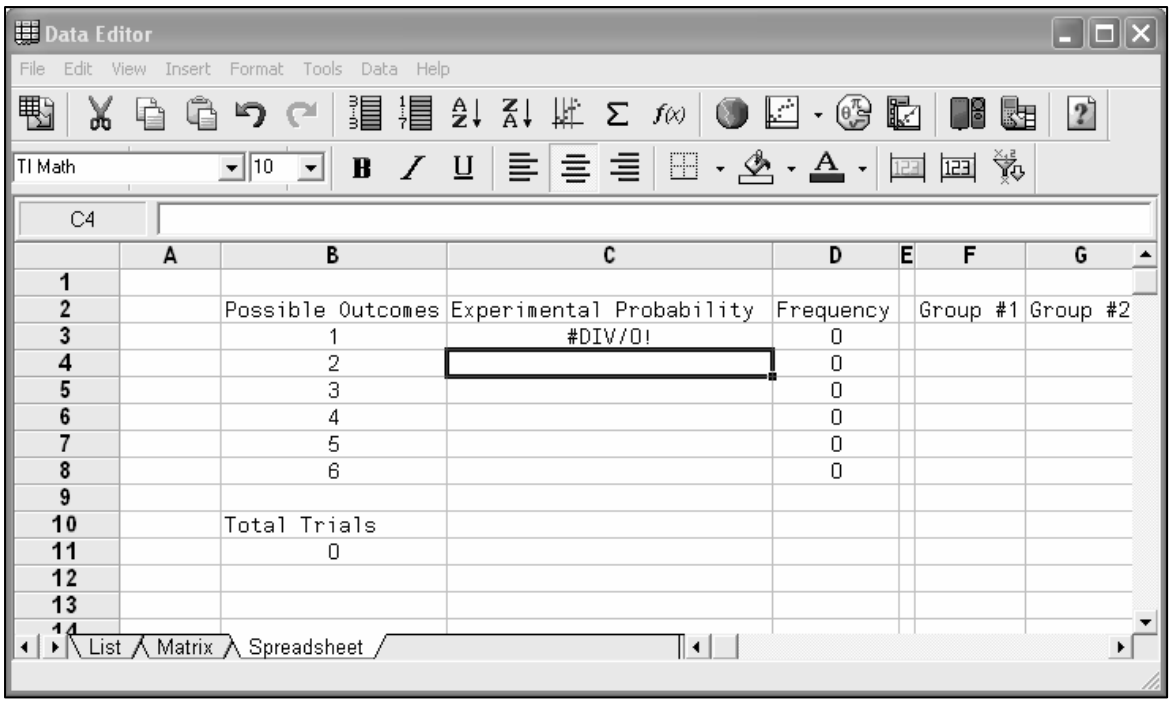
16. Click in cell **C3.** Enter = followed by clicking on cell **D3, backslash** and **cell G14,** and then **Enter**



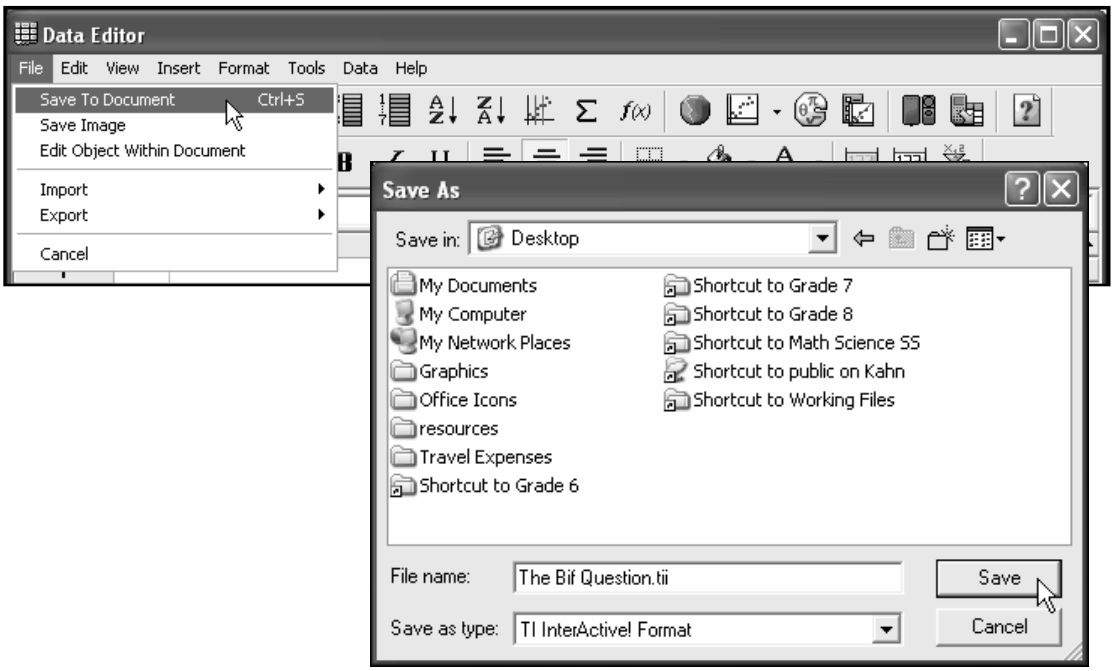
	A	B	C	D	E	F	G
1							
2		Possible Outcomes	Experimental Probability	Frequency		Group #1	Group #2
3		1	=D3/G14	0			
4		2		0			
5		3		0			
6		4		0			
7		5		0			
8		6		0			
9							
10		Total Trials					
11		0					
12							
13							

17. Repeat step 16 for cells **C4, C5, C6, C7**, and **C8** using the appropriate corresponding cells.

Note: Due to division by zero an error message will appear until data has been entered.



18. In the toolbar under the **File** menu select **Save To Document**. Save to the **Desktop** as **The Big Question**.



Technology Tutorial: TI-Interactive - The Big Question Graph

Create a Presenter(s) Spreadsheet before starting the activity. This will enable the presenter(s) to flow between each group's data efficiently.

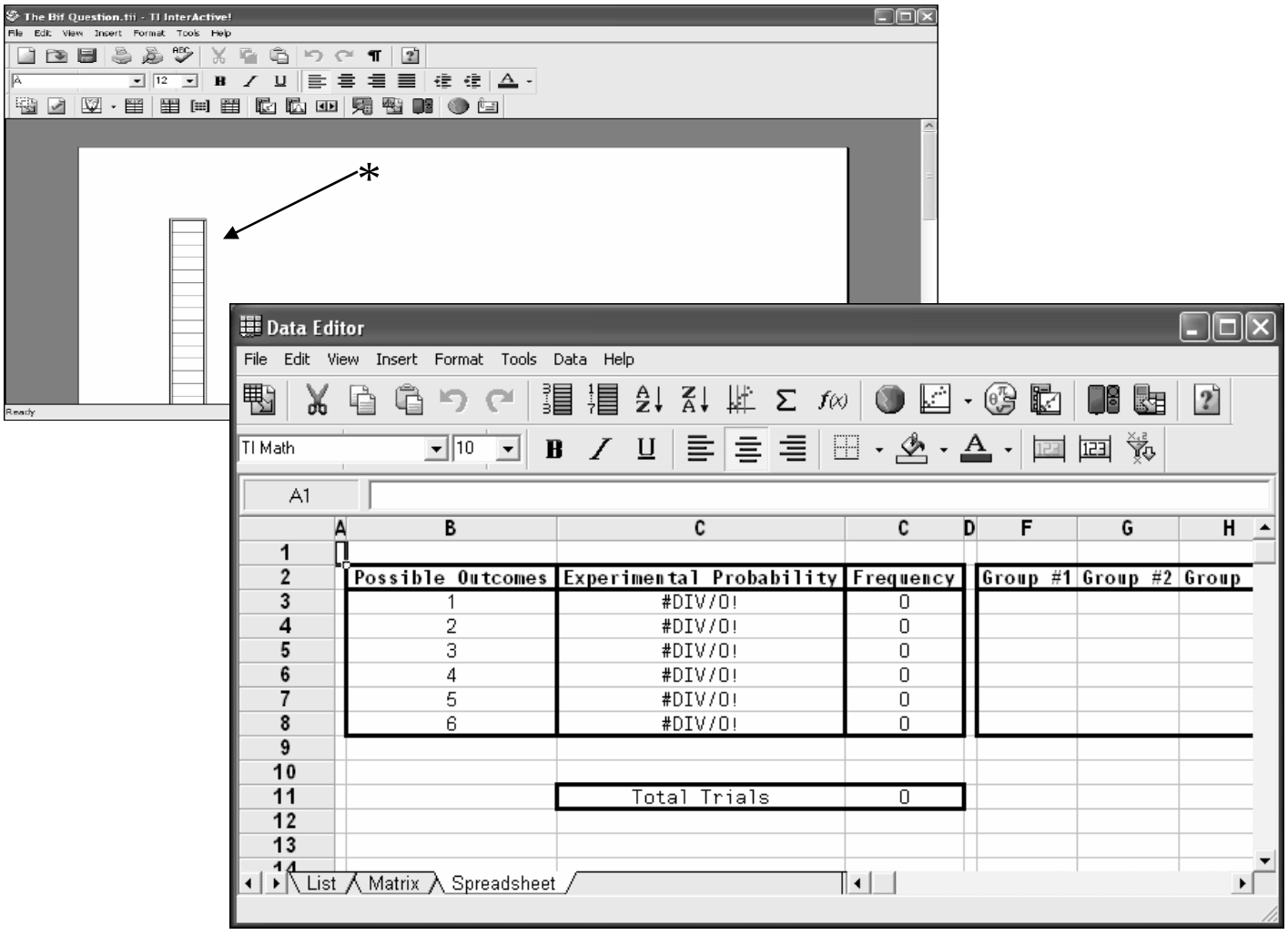
Advance Preparation

- Create The Big Question Presenter(s) Spreadsheet using the Technology Tutorial: The Big Question Present(s) Spreadsheet.

Create Presenter(s) Graph

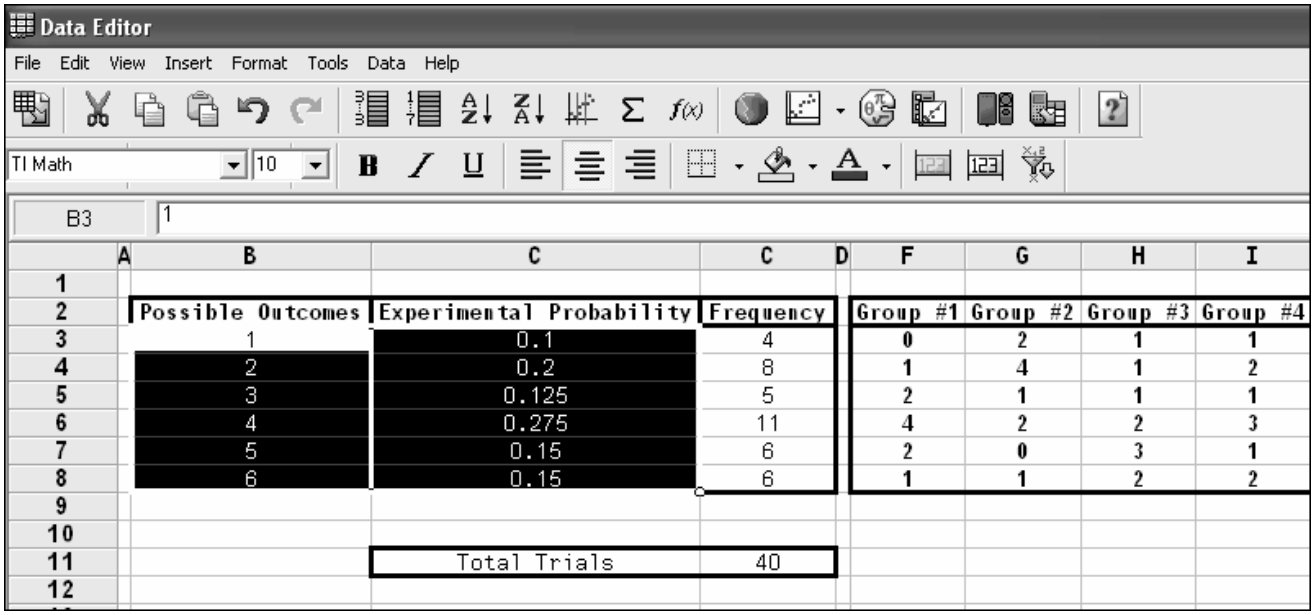
1. Open TI-Interactive: **Middle School-Explore Explain 3 Spreadsheet.tii** o**r The Big Question** spreadsheet (if formatted by presenter.)

2. Double click on the graphic (*).



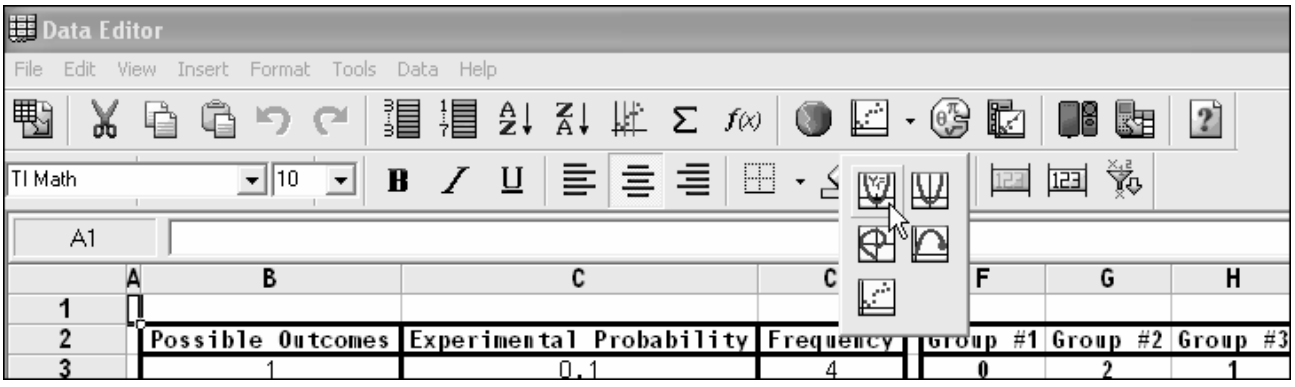
	A	B	C	C	D	F	G	H
1								
2		Possible Outcomes	Experimental Probability	Frequency		Group #1	Group #2	Group
3		1	#DIV/0!	0				
4		2	#DIV/0!	0				
5		3	#DIV/0!	0				
6		4	#DIV/0!	0				
7		5	#DIV/0!	0				
8		6	#DIV/0!	0				
9								
10								
11			Total Trials	0				
12								
13								
14								

3. Have one group at a time input their results for each outcome. Once two or three groups have inputted data, highlight the **Possible Outcomes** and **Experimental Probability** columns, by clicking on cell **B3** and dragging to cell **C8**.
(If using TI-83 calculators, data may be collected using a linking device between the computer and a calculator. Steps for linking and importing data can be found at the end of this tutorial.)

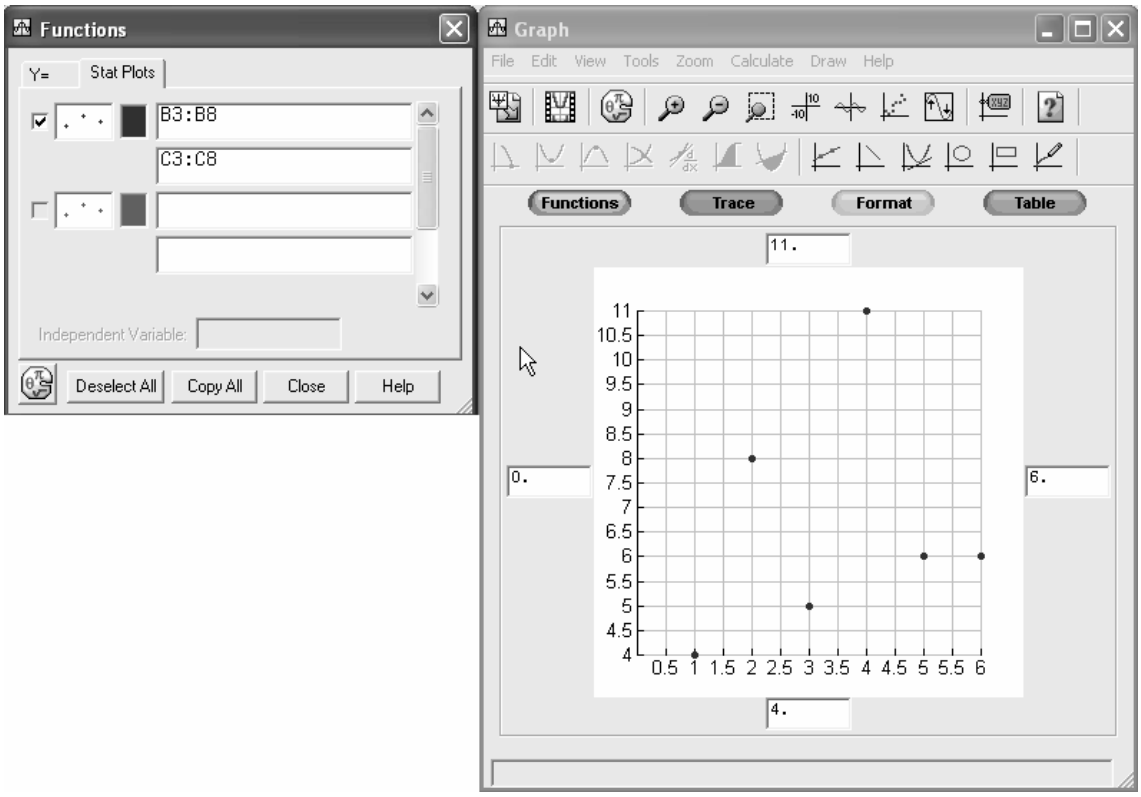


	Possible Outcomes	Experimental Probability	Frequency	Group #1	Group #2	Group #3	Group #4
3	1	0.1	4	0	2	1	1
4	2	0.2	8	1	4	1	2
5	3	0.125	5	2	1	1	1
6	4	0.275	11	4	2	2	3
7	5	0.15	6	2	0	3	1
8	6	0.15	6	1	1	2	2
11		Total Trials	40				

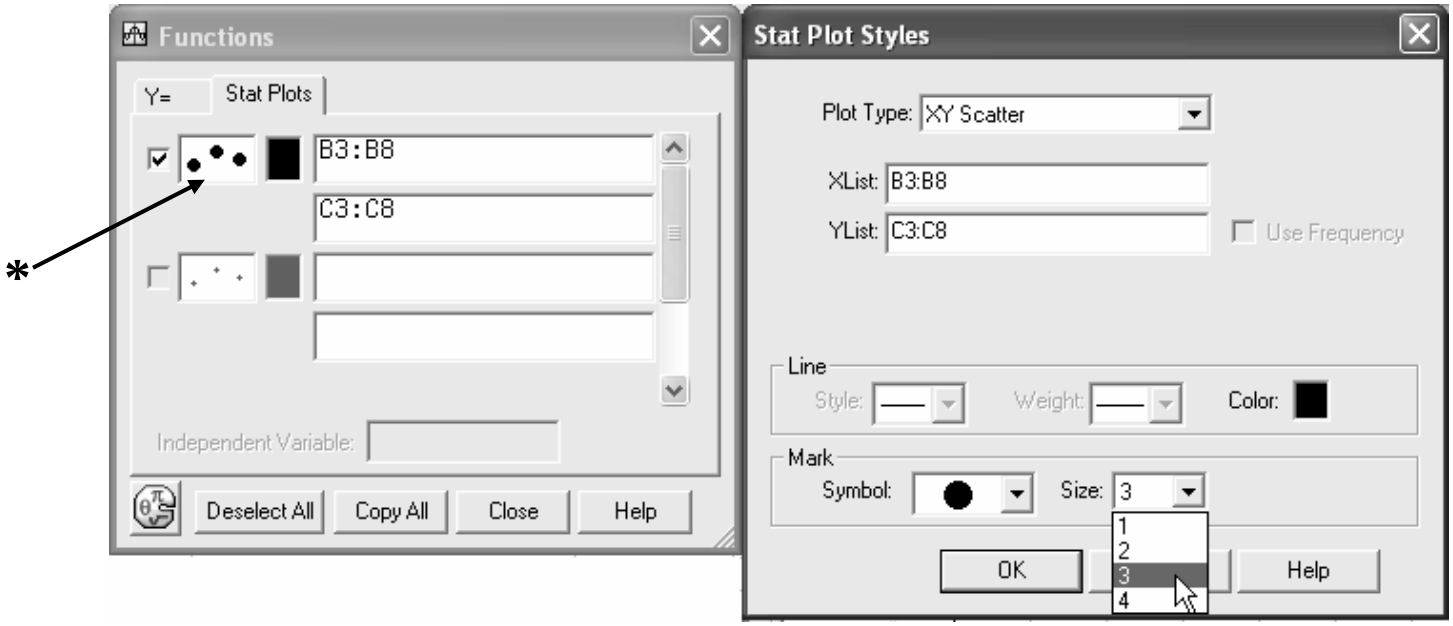
4. In the toolbar select the **Graph** icon  . *Note: The graph icon may look different based on the last type of graph created*. In the **Graph** menu select the **Y=** graph icon  .



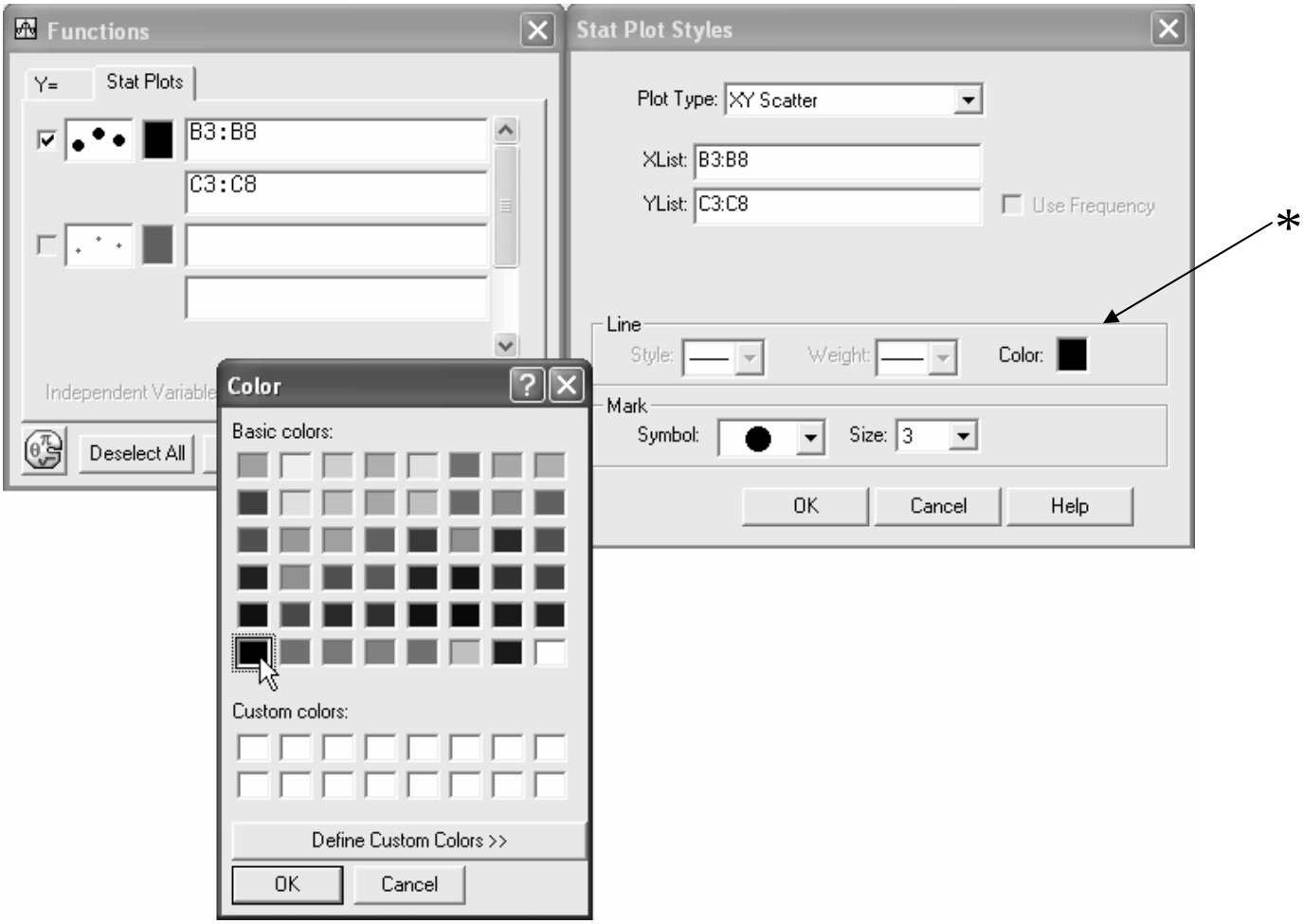
5. Notice the sample shows data plotted, and corresponding cell ranges set under **Stat Plots** in the **Functions** window.



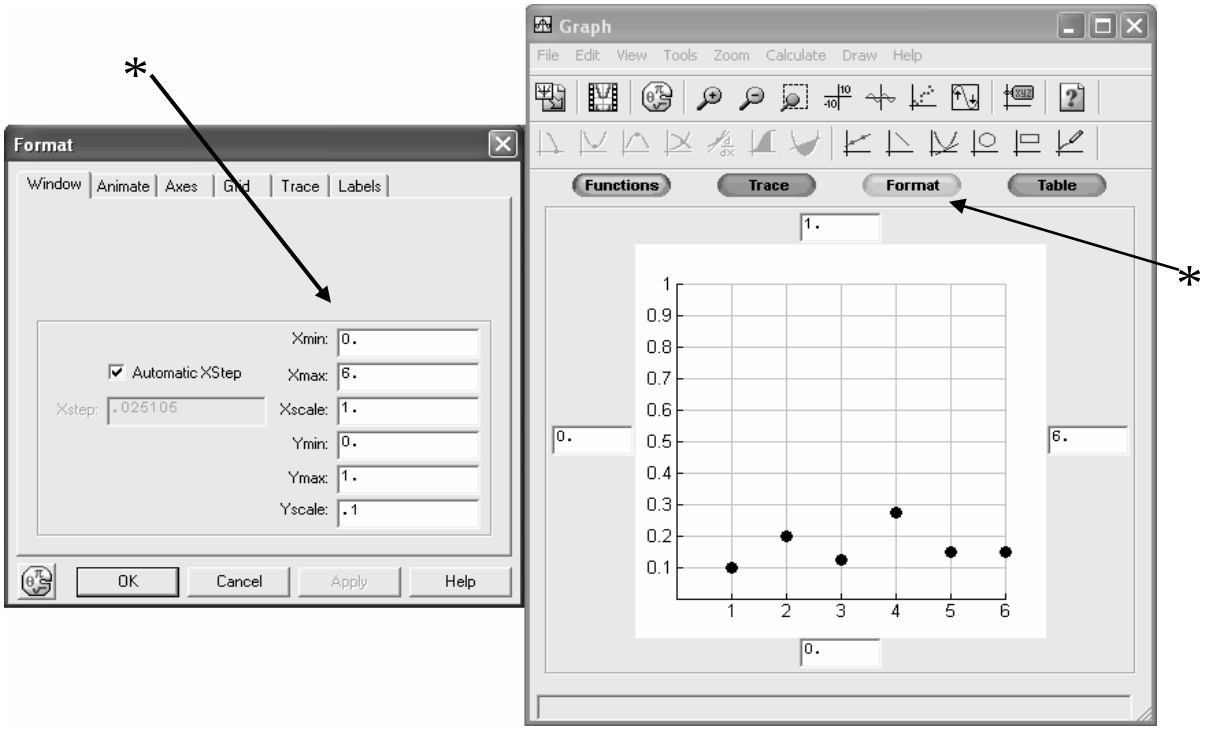
6. Reset point size by clicking on the **Point Selection Box**, and selecting **3** in the **Size** drop-down menu.



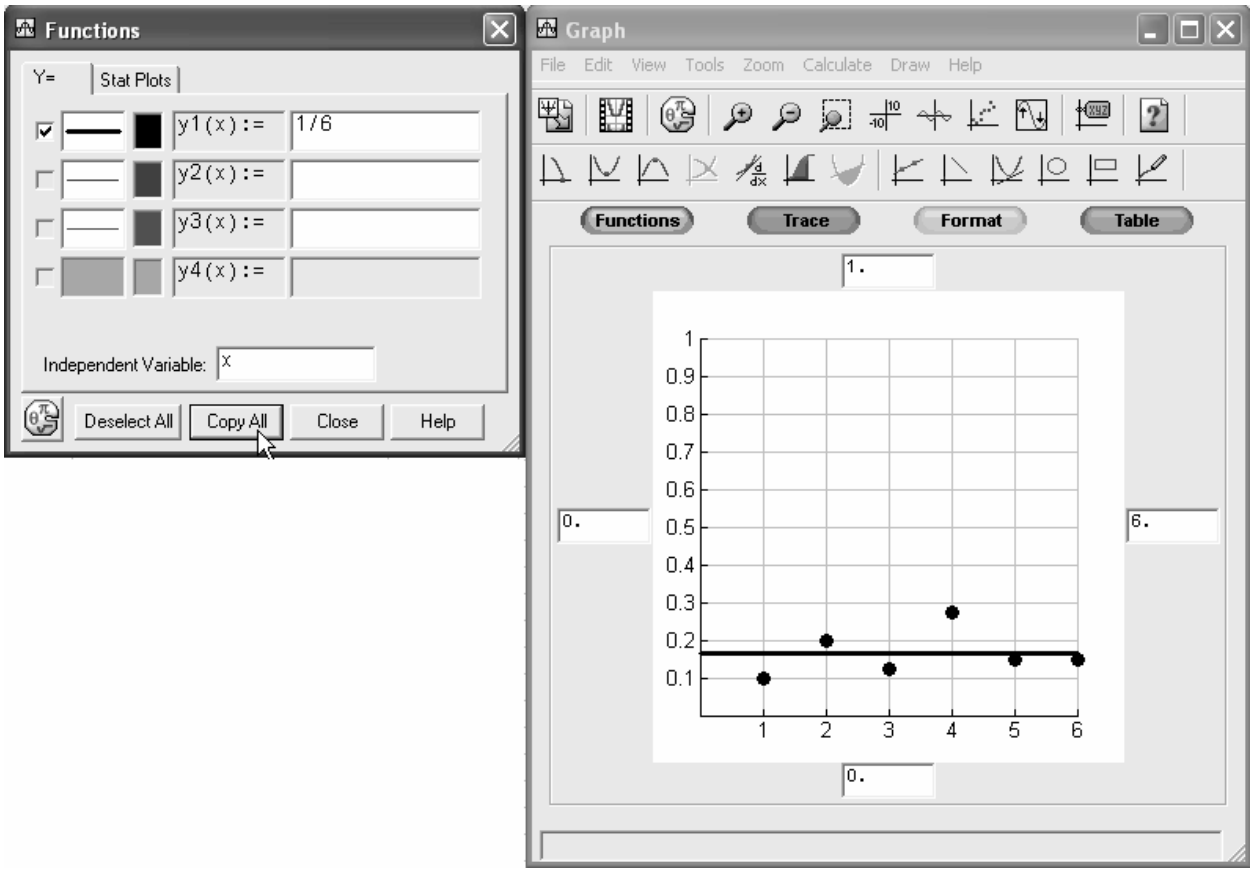
7. Reset point color by selecting **Black** in the **Color** drop-down menu.



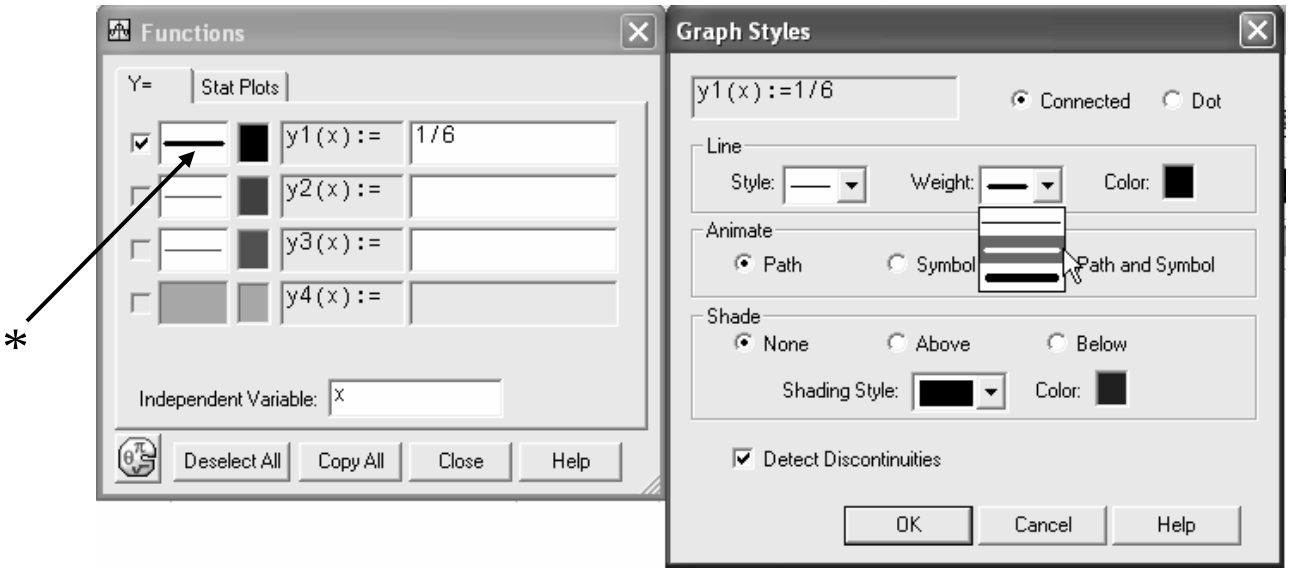
8. Click **Format** (*), under **Window** set the x- and y-axis minimums and maximums as shown, click **Apply**, and then **OK**.



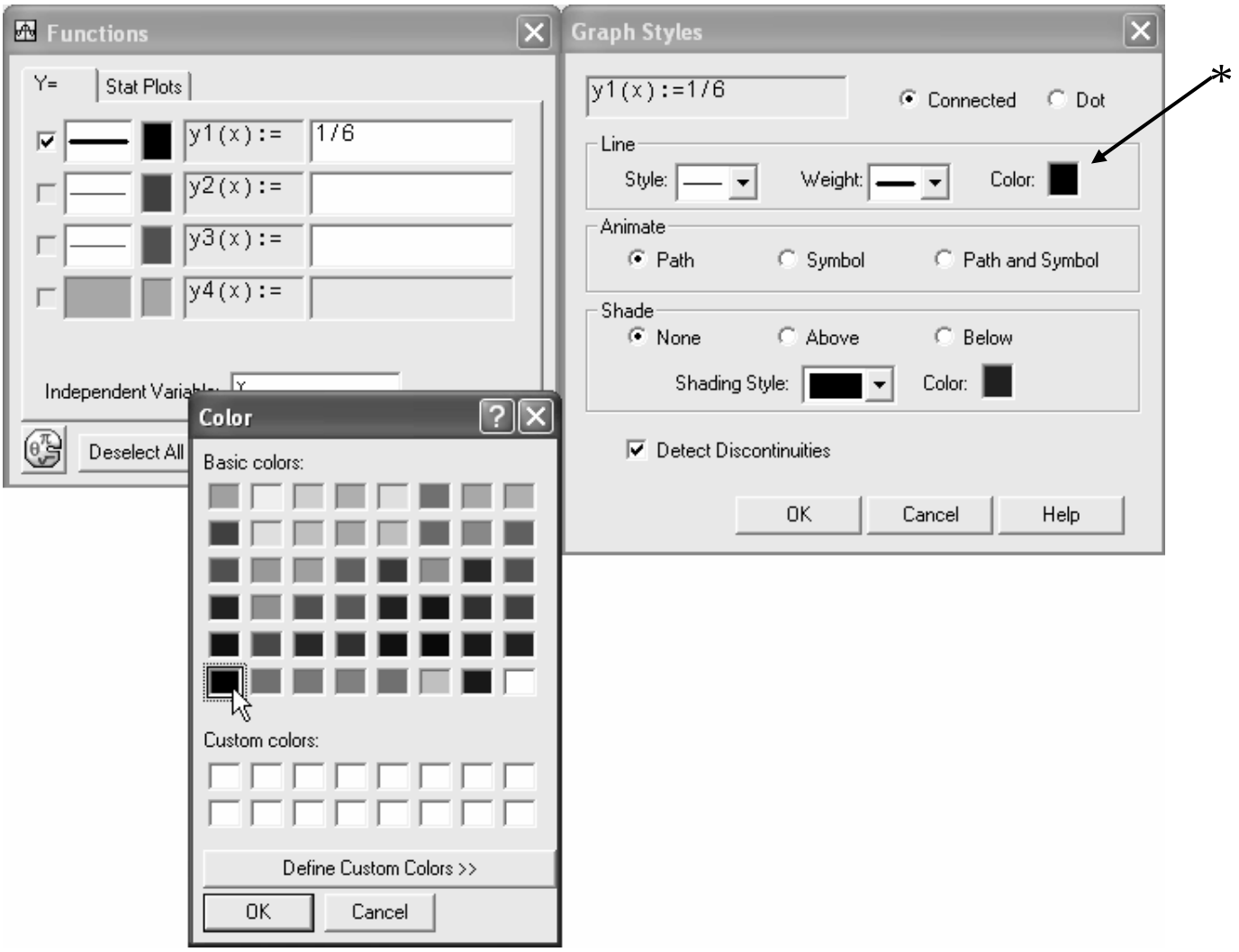
9. Under **Y=** in the **Function** window input the appropriate function. The leader notes for this activity discuss function.



10. Reset the line width by clicking on the **Line Selection Box**, and selecting **the second width choice** in the **Weight** drop-down menu.



11. Reset line color by selecting **Black** in the **Color** drop-down menu.



12. Have another group input their data, continue process as classroom discussion continues

13. Close **Middle School-Explore Explain 3 Spreadsheet.tii** or **The Big Question** using the close box  .

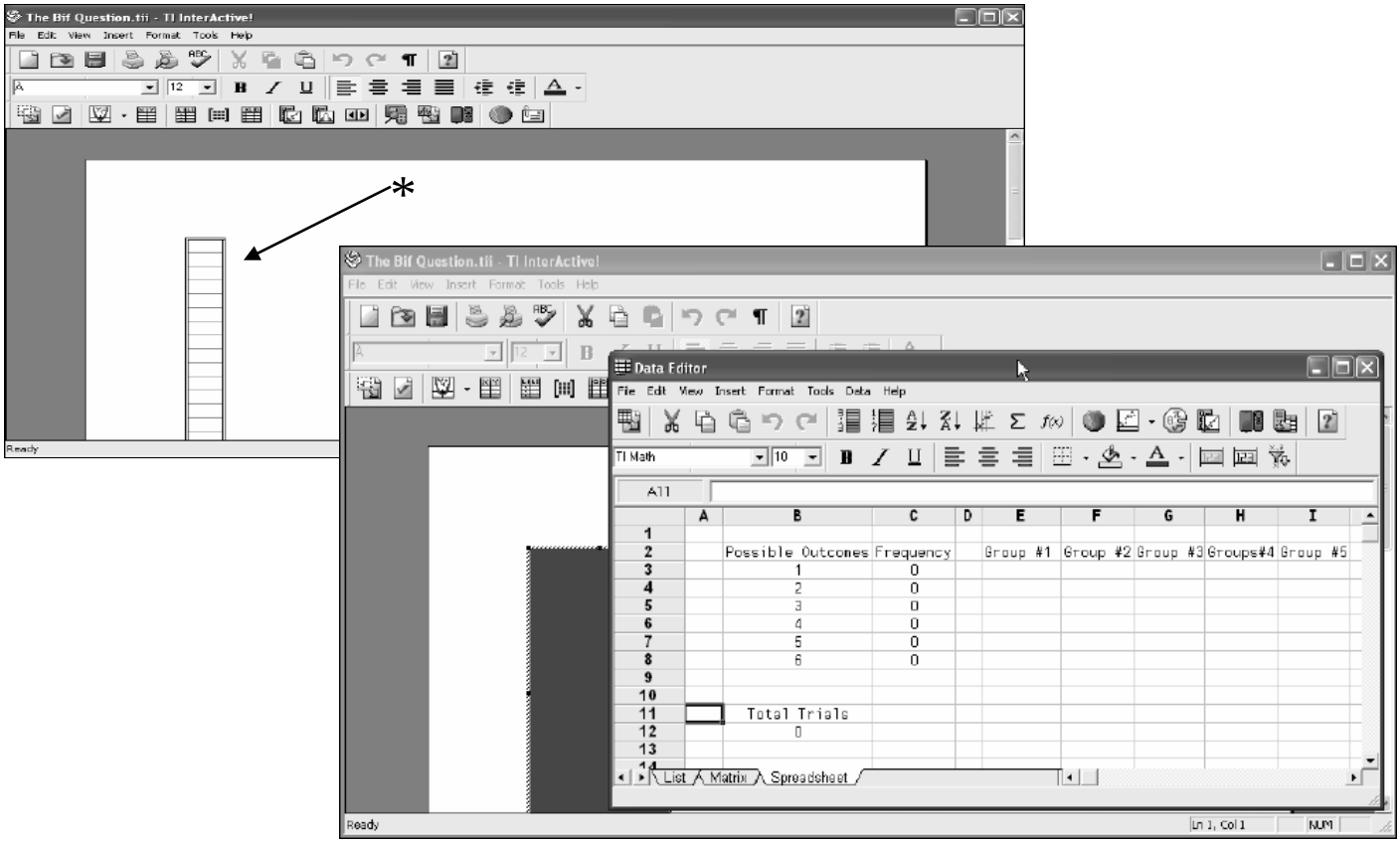
Importing Data using a Linking Device

One at a time each group of participants will connect their calculator to the computer using a TI-Graph Link USB. Make sure the calculator in turned on, and at home screen.

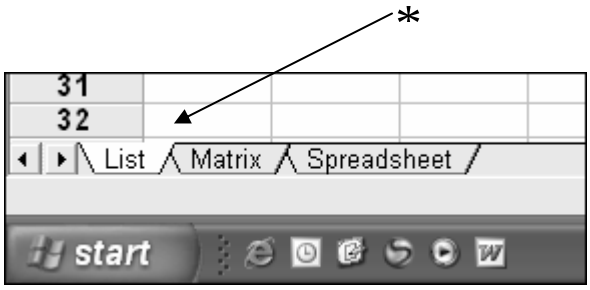
*Note: Graphic of tables may differ, but procedure is the same.

1. Open TI-Interactive: **Middle School-Explore Explain 3 Spreadsheet.tii** or **The Big Question** spreadsheet (if formatted by presenter.).

2. Double click on the graphic (*).



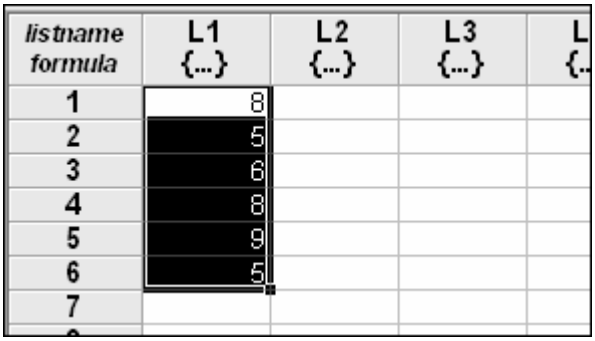
3. Select the **List** tab at bottom of spreadsheet.



4. Select the **Import TI Device Data** icon on the **Toolbar**.

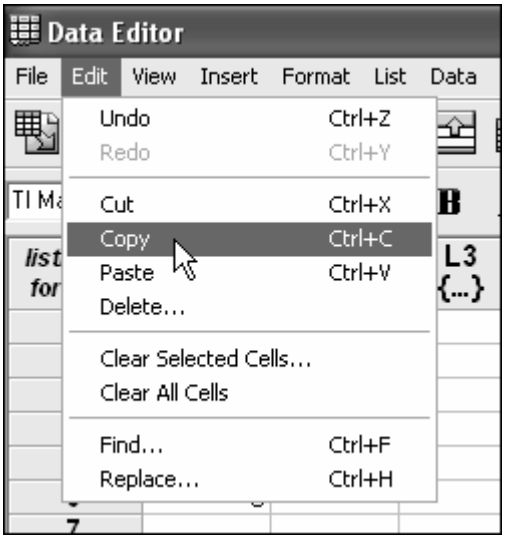
Follow instruction and select the list that contains the data you intend to import. (Instructions will vary here depending on what type of calculator the participants use.)

5. Data will import into the appropriate list: In the example, data were in **L1** of the calculator; therefore they were imported into **L1** in the list editor.

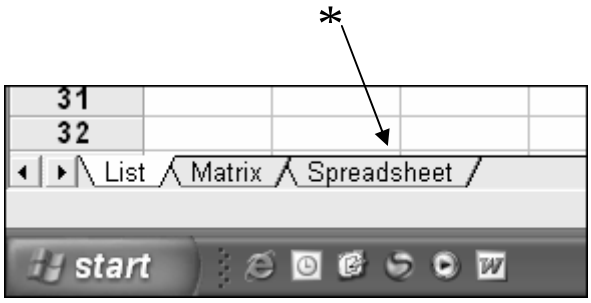


listname formula	L1 {...}	L2 {...}	L3 {...}	L {..
1	8			
2	5			
3	6			
4	8			
5	9			
6	5			
7				

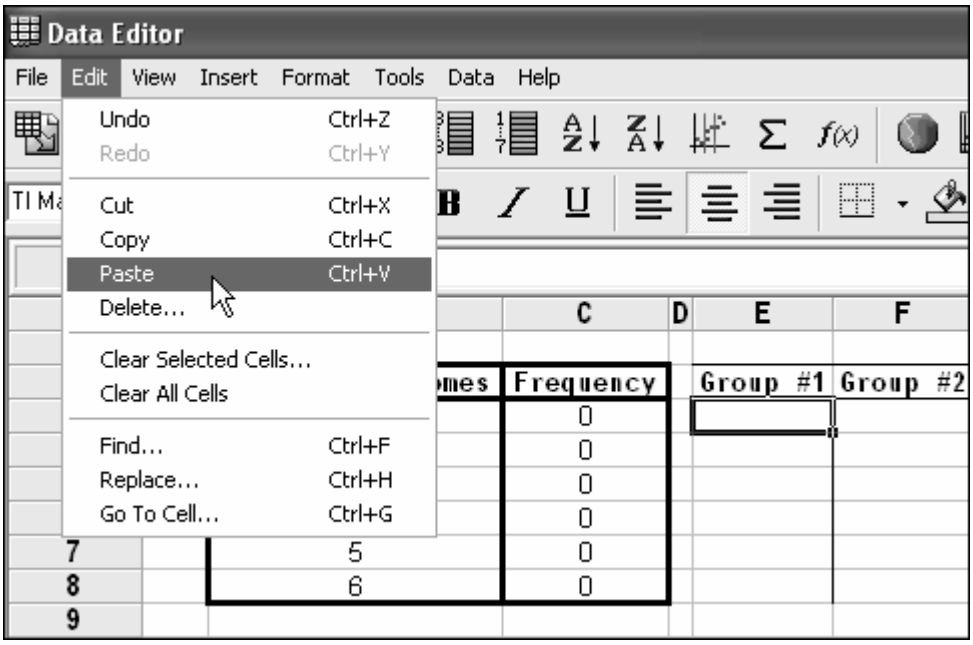
6. Highlight data as shown above and select **Copy** in the **Edit** menu.



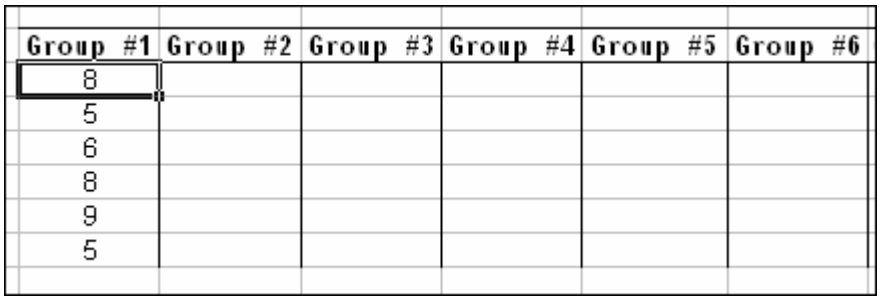
7. Select the **Spreadsheet** tab.



8. Highlight the first cell under the appropriate Group, and select **Paste** under the **Edit** menu.



9. Data will be imported into the appropriate cells.



Technology Tutorial: Trials, Trials, Trials Activity

The following is an example: participants may create a table and labels independent of this example. Therefore participants table and graph will vary.

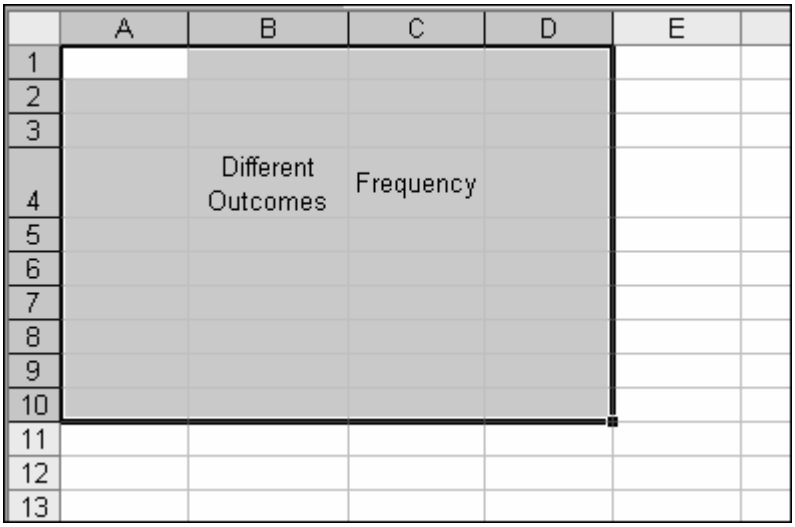
Creating the Table

1. Open an Excel document.

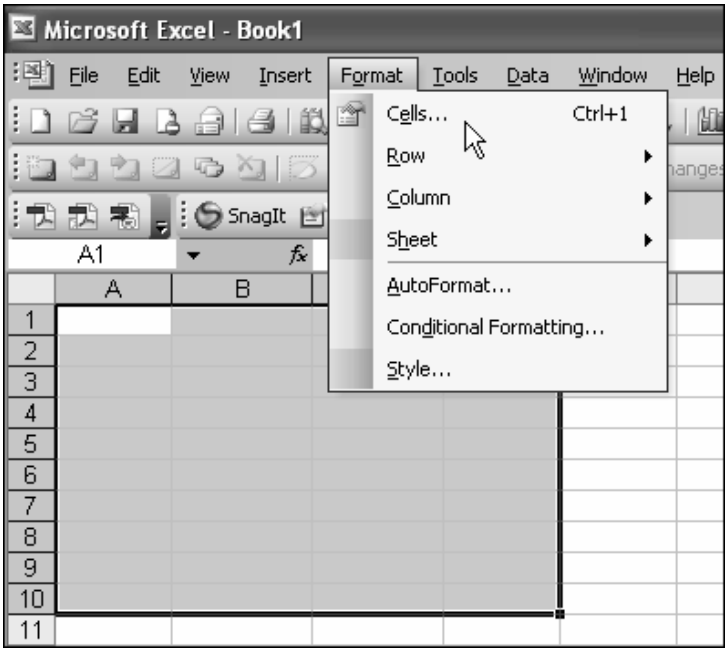
2. The following illustration is the product created in steps 3-7.

	A	B	C	D
1				
2				
3				
4		Different Outcomes	Frequency	
5		1		
6		2		
7		3		
8		4		
9		5		
10		6		
11				

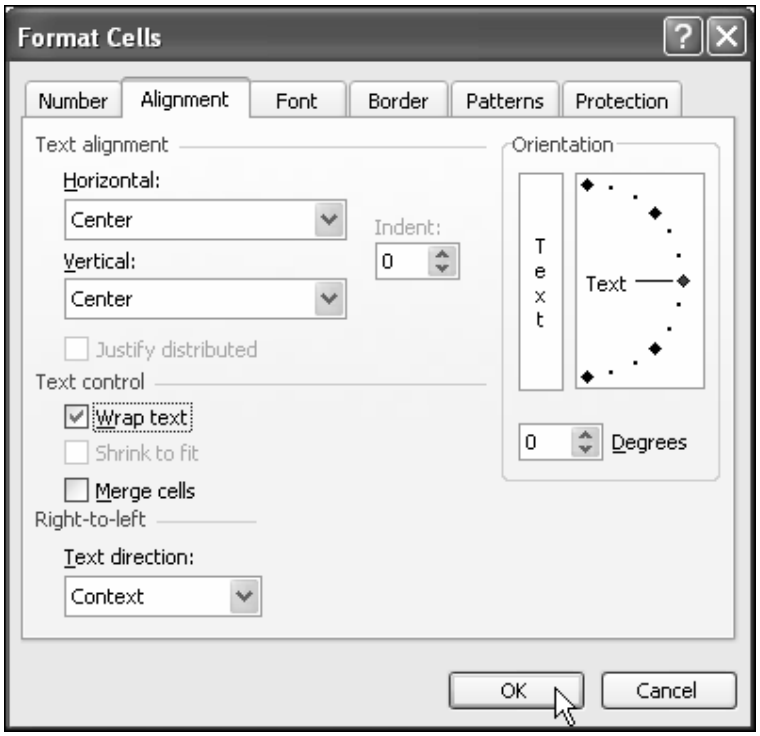
3. Click on cell **A1** and drag to cell **D10**.



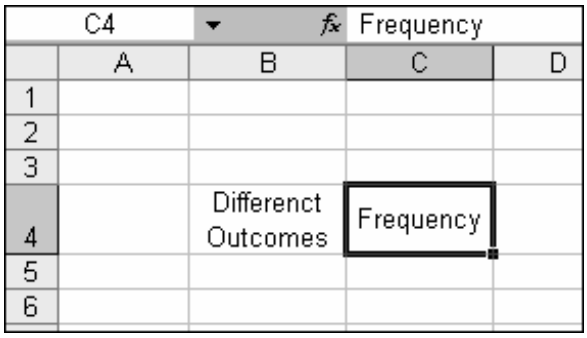
4. In the toolbar under the **Format** menu, select **Cells**.



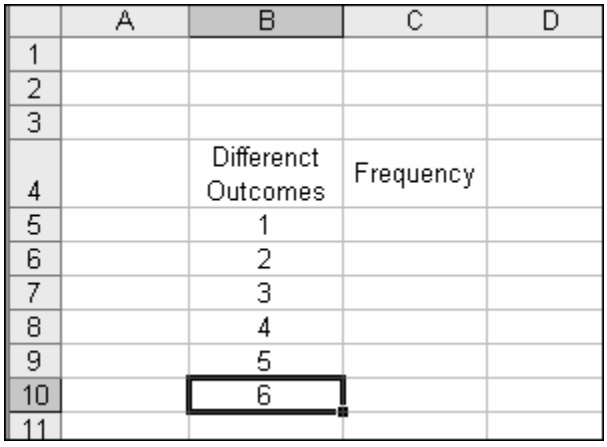
5. Under the **Alignment** tab, use the pop-down menu under the Horizontal and Vertical text alignment to select Center. Select **Wrap Text** by clicking in the box under text control. Click **OK**.



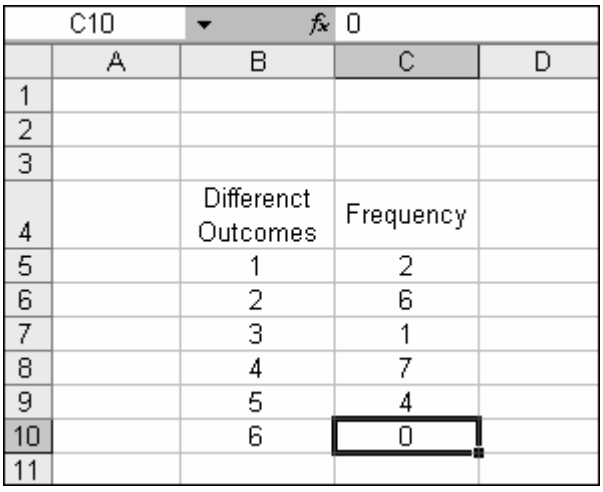
6. Click cell **B4** and enter **Different Outcomes,** and click on **cell C4** and enter **Frequency**. If needed, adjust the size of the cells by clicking on the line to the left of the column and dragging the line left or right as needed. (Short cut: Use the down arrows on your keyboard to move down the column.)



7. Click on cell **B5** and enter **1**, continue entering **2-6** in the cells below as illustrated.



8. Table is complete and ready to input data from the **Group Activity Sheet: Simulation #1** frequency table. Input data using cells **C5-C10**. (*Example uses the data found in the leader notes.*)



Creating the Graph

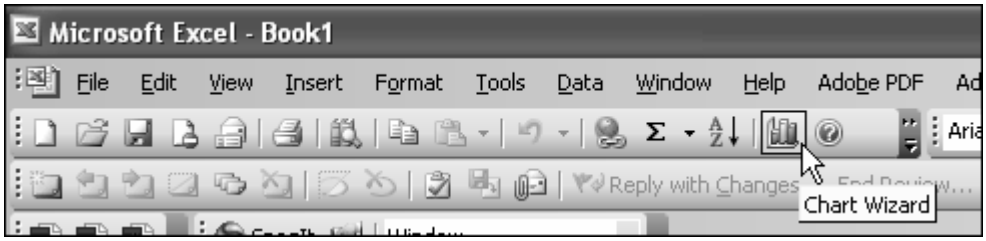
Participants may select the type of graphical representation of their choice; therefore, two possible types of graphs appear: **Bar Graph**, and **Pie Graph**. You may want to experiment with others.
More than one graph may be created and displayed side by side.

Bar Graph

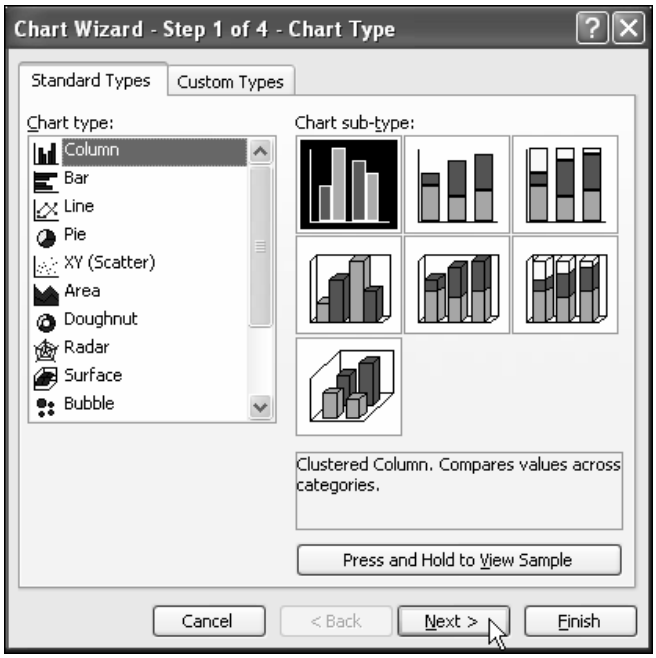
1. Click and drag curser over the data to highlight. The example has cells **C5-C10** highlighted.

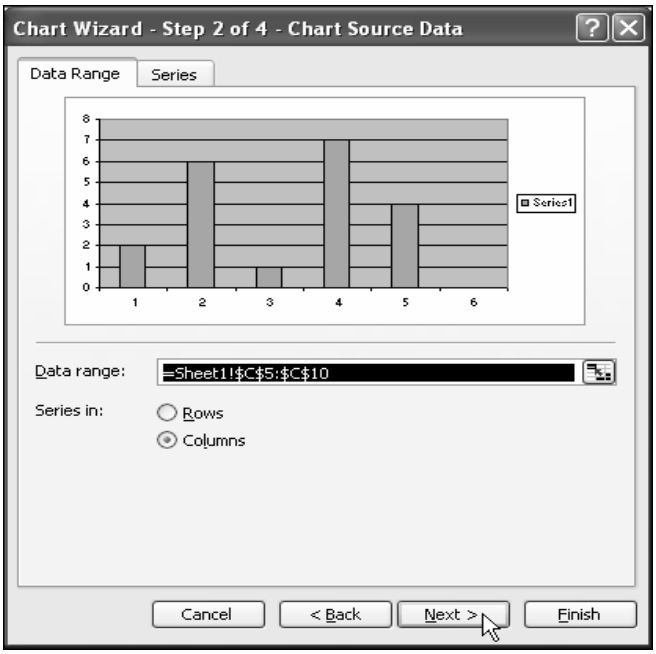
Differenct Outcomes	Frequency
1	2
2	6
3	1
4	7
5	4
6	0

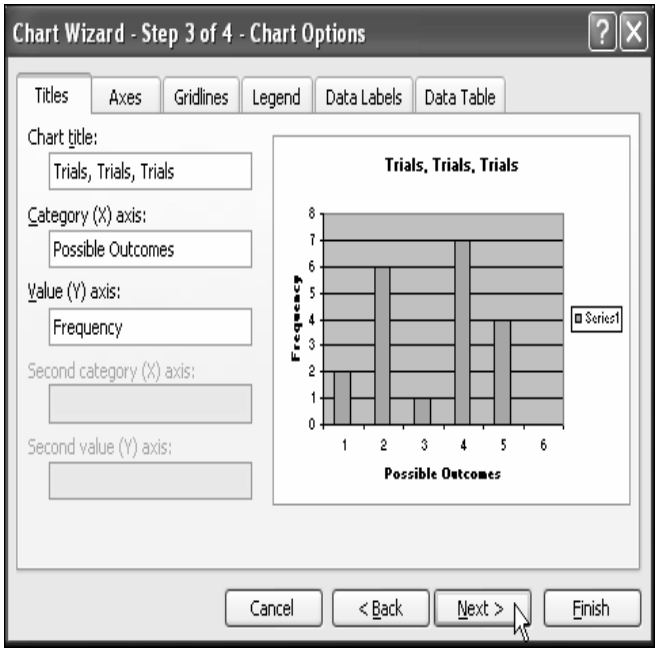
2. Select the Chart Wizard  in the toolbar.

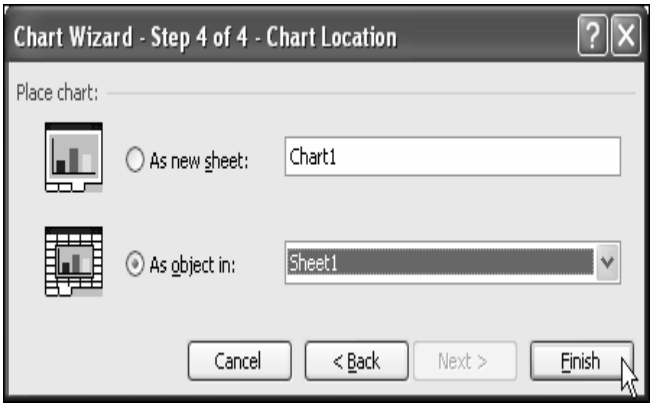


3. **Step 1**: Select the **Column** chart type, then click **Next**.
   Step 2: Since the data was highlighted first click **Next**.
   Step 3: Input a **Chart tile** (Trials, Trials, Trials), **Categories (X) axis** (Possible Outcomes), and **Categories (Y) axis** (Frequency), then click **Next**.
   Step 4: Select **As object in**, and then **Finish.**

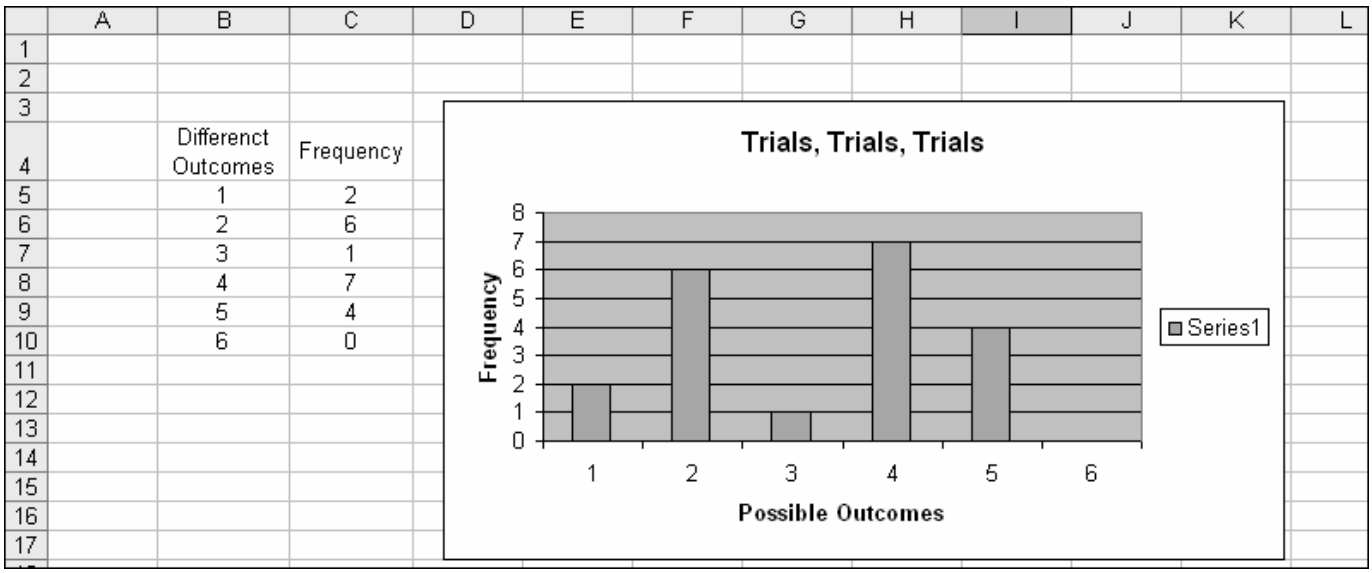








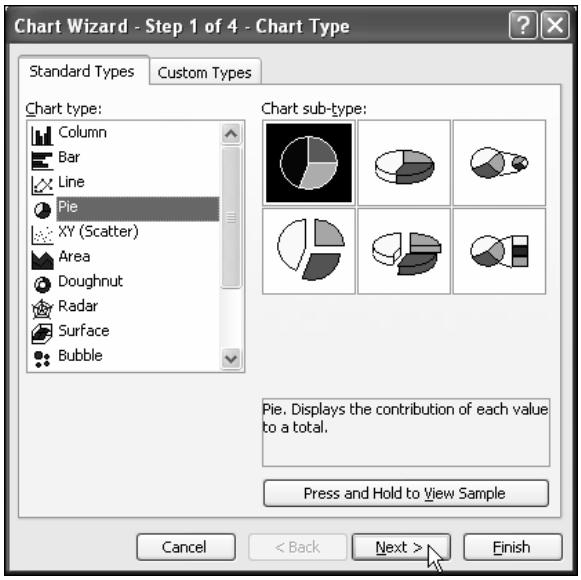
4. A graph will appear on the spreadsheet.

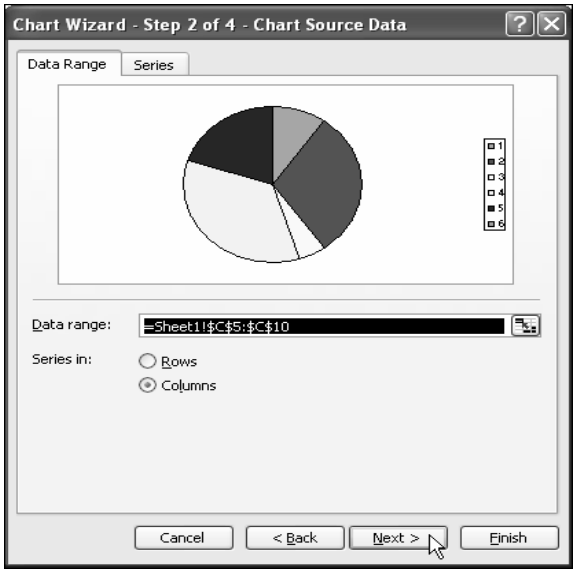


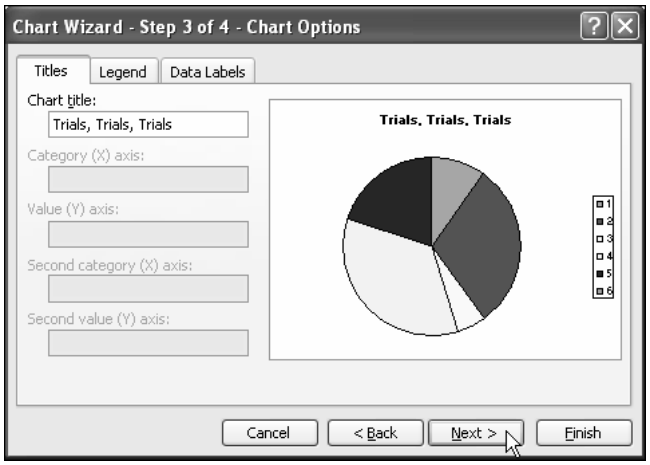
Pie Graph

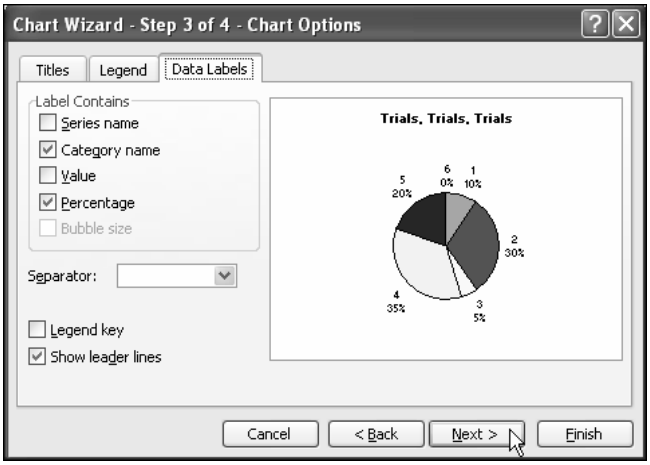
1. Complete steps 1 and 2 of the Bar Graph on page 4.

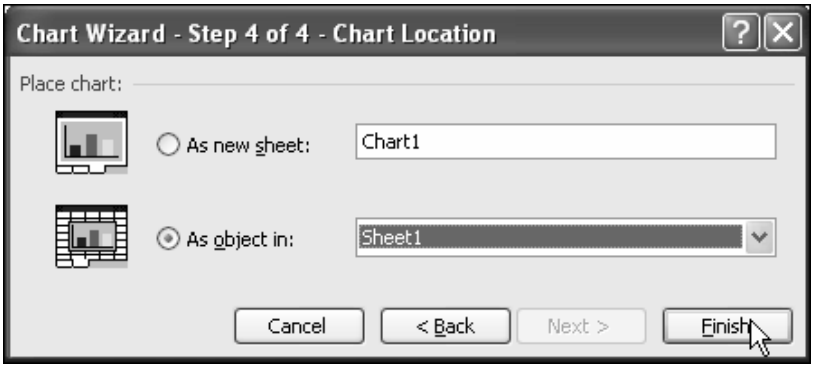
2. **Step 1**: Select the **Pie** chart type, and then click **Next**.
   Step 2: Since the data was highlighted first click **Next**.
   Step 3: Input a **Chart tile** (Trials, Trials, Trials), then select the **Data Labels** tab and check **Category name**, **Percentage** and click **Next**.
   Step 4: Select **As object in**, and then **Finish.**



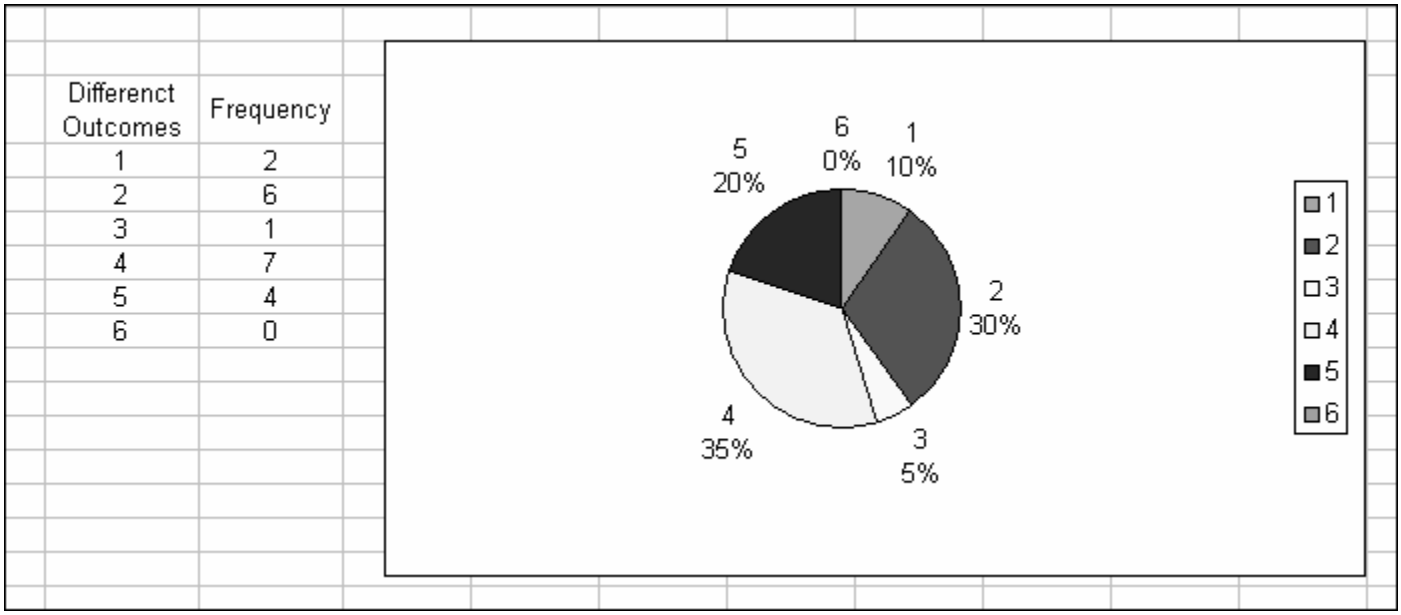








3. A graph will appear on the spreadsheet.



Differenct Outcomes	Frequency
1	2
2	6
3	1
4	7
5	4
6	0

Technology Tutorial: TI-73: Trials, Trials, & More Trials Activity with APPS

Notice there are two different sets of **Simulation Cards**. **The best scenario is to use Simulation Card Set 2 With APPS Program**. Card set 2 with APPS Program requires the **Probability Simulator APPS**, you can perform the activity without the simulator using Card Set 2 without APPS Program.
The following is an example: participants will generate different data independent of this example. Therefore participant's data and list will vary.

Advanced Preparation

Check all calculators for the **Probability Simulator APPS** by checking the APPS list for **Pro Sim**.

If the applications list does not contain the Probability Simulator APPS, then refer to the Technology Tutorial **Loading TI Probability Simulator APPS** and load the application software.

Trials, Trials, & More Trials with Probability Simulator

1. Press ON.

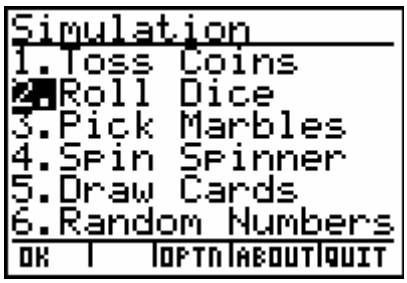
2. Press APPS.

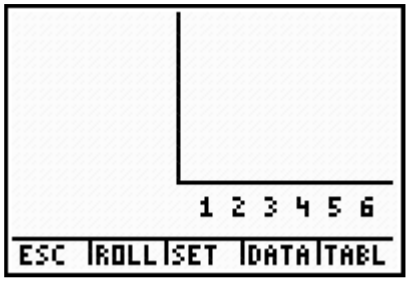
3. Select the Probability Simulator, **Prob Sim.** Press ENTER twice.

4. Follow the instructions below for each specific simulation.

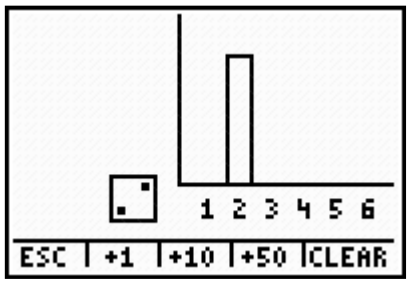
Number Cube

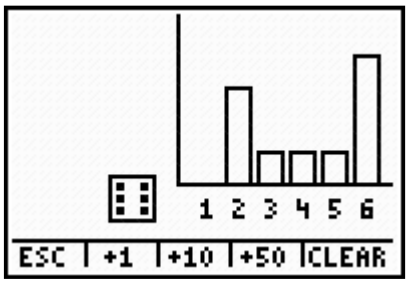
A. Select **Roll Dice**. Press ENTER.





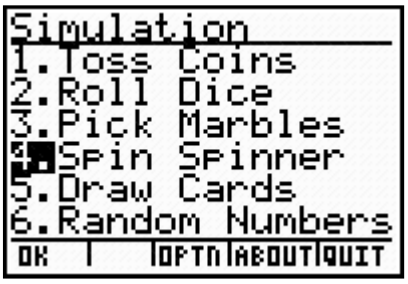
B. Press WINDOW which will activate the first roll of the die. Continue pressing WINDOW until you have recorded 10 rolls.

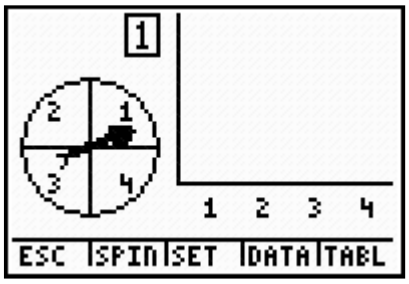




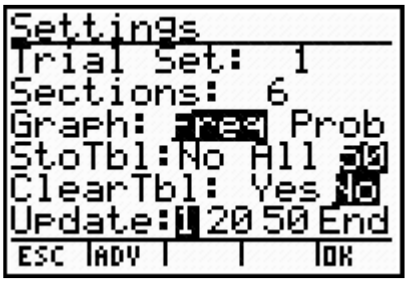
Spinner

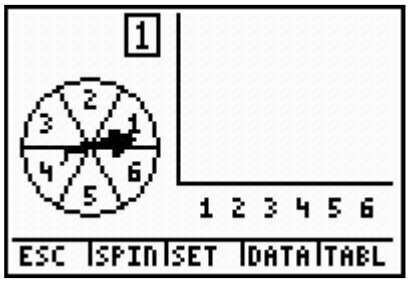
A. Select **Roll Dice**. Press ENTER.



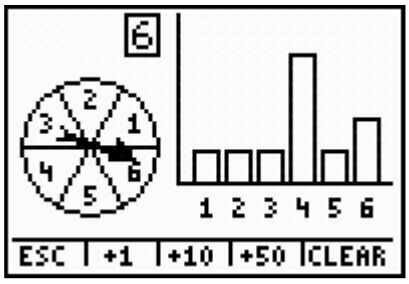


B. Press [ZOOM] to activate settings. Using the arrow keys: set **Sections** to 6 and **Graph** to Freq. Press [GRAPH].

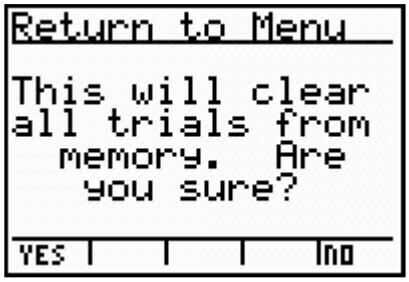




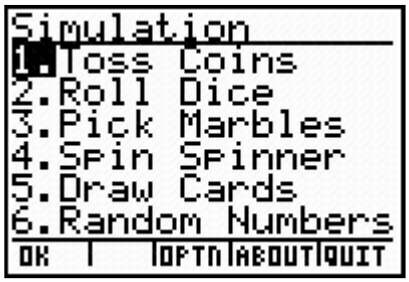
C. Press [WINDOW] which will activate the first spin. Continue pressing [WINDOW] until you have recorded 10 spins.



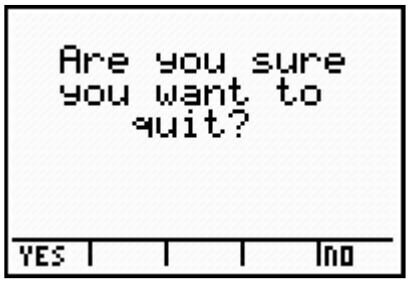
5. To quit Probability Simulation: Press [Y=].



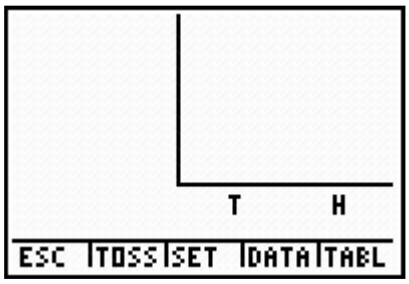
6. Press [Y=].



7. Press GRAPH.



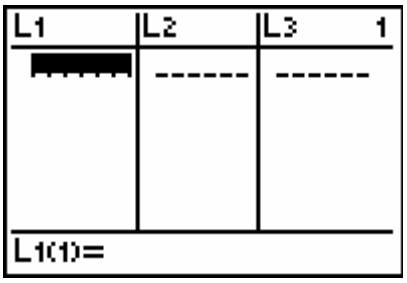
8. Press Y=.



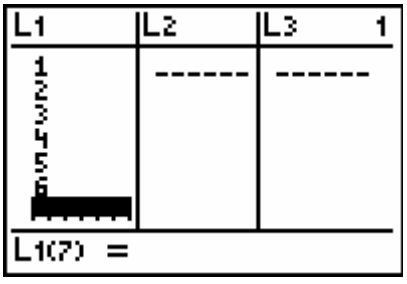
Creating a Line Plot

1. Press ON.

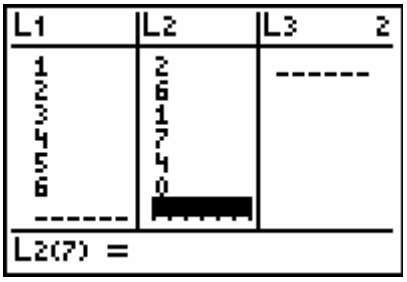
2. Press LIST.



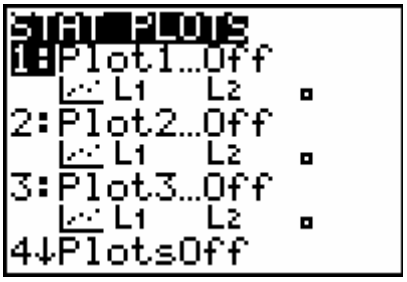
3. Input the possible outcomes into **L1** (list 1**)**, one at a time. Press ENTER each time.



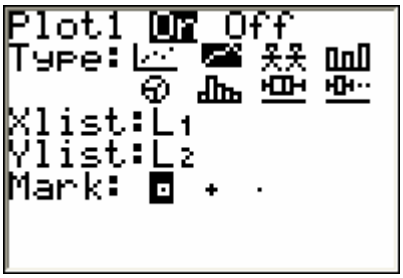
4. Curser over to **L2** (list 2) using the arrow key ▶. Input the frequency of each possible outcome one at a time. Press ENTER each time.
   Record frequencies in the **Groups Activity Sheet: Simulation #2** table.
   In this example: 2, 6, 1, 7, 4, 0 will be the frequencies of the six possible outcomes



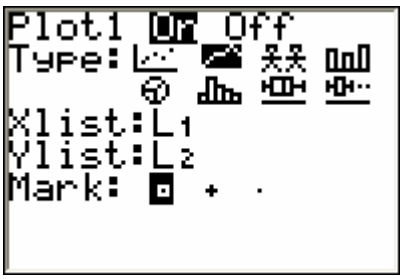
5. Press 2nd Y=.



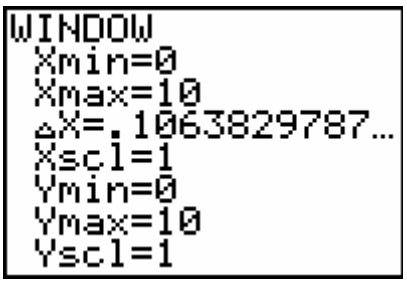
6. Select **Stat Line**. Press ENTER.



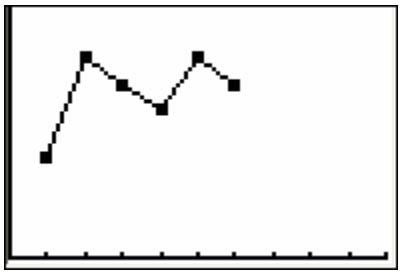
7. Using the curser keys and ENTER, select Plot 1 **On**, Type **Line Plot**, Xlist **L1**, and Ylist **L2**.



8. Press [WINDOW]. Set window using illustration.



9. Press [GRAPH].



10. To quit: Press [2nd][MODE].

11. Press [2nd][ON].

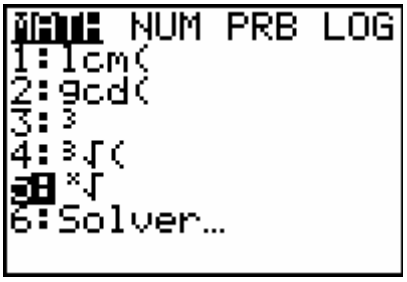
Technology Tutorial: TI-73: Trials, Trials, & More Trials Activity with No APPS

Notice there are two different sets of **Simulation Cards**. **The best scenario is to use Simulation Card Set 2 With APPS Program**. Card set 2 with APPS Program requires the **Probability Simulator APPS**, the activity can be done without the simulator using Card Set 2 without APPS Program.
The following is an example: participants will generate different data independent of this example. Therefore participant's data and list will vary.

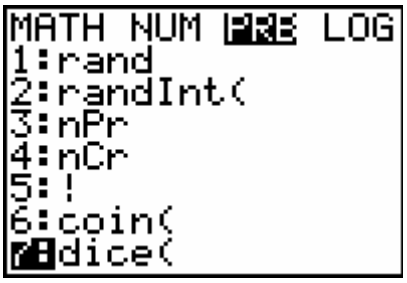
Trials, Trials, & More Trials with No Probability Simulator

1. Press [ON].

2. Press [MATH].



3. Curser over to the [MATH] **PRB** menu using the [▸] key.

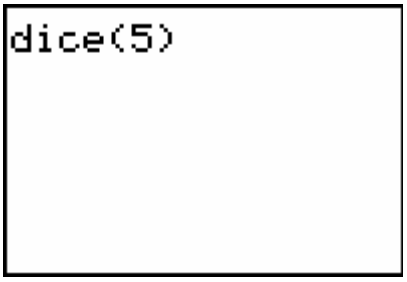


4. Follow the instruction below for each type of simulation.

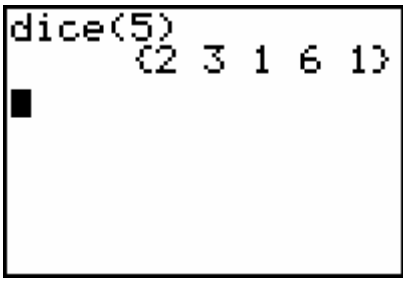
Number Cube

A. Select **dice(**. Press ENTER.

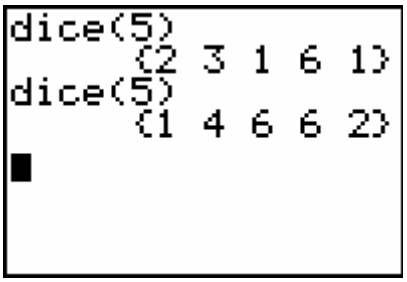
B. To simulate 5 rolls of a die: Enter 5).



C. Press ENTER, which will generate the first 5 rolls.

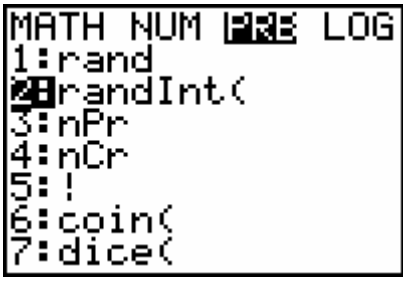


D. Press ENTER, to generate the next 5 rolls.

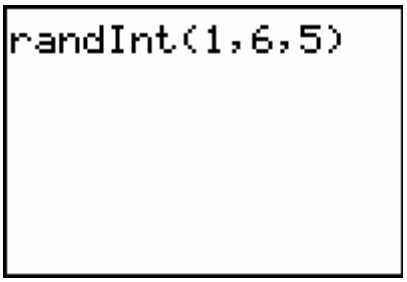


Number Generator

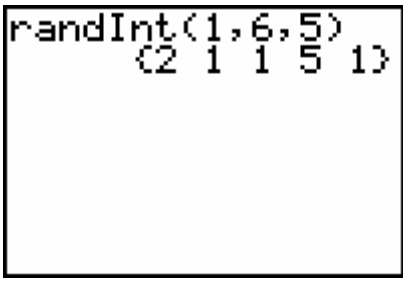
A. Select **randInt(.** Press ENTER.



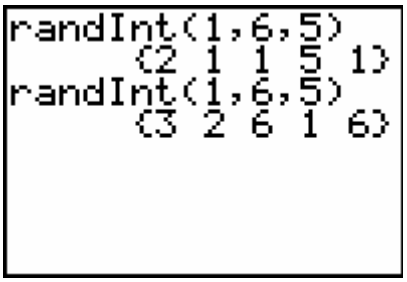
B. To generate 5 random integers between 1 and 6: Enter 1,6,5).



C. Press ENTER which will generate the first five numbers.



D. Press ENTER which will generate the next five numbers.

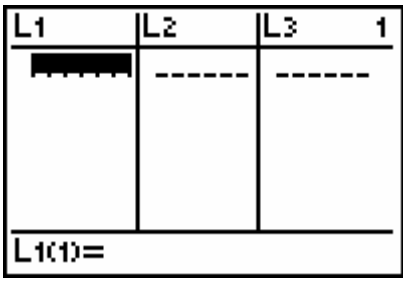


5. To quit: Press 2nd ON.

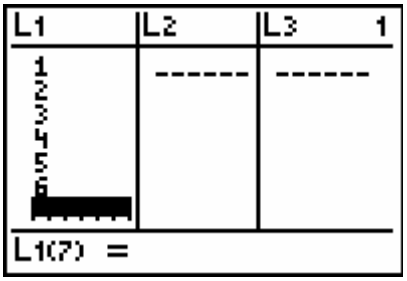
Creating a Line Plot

1. Press [ON].

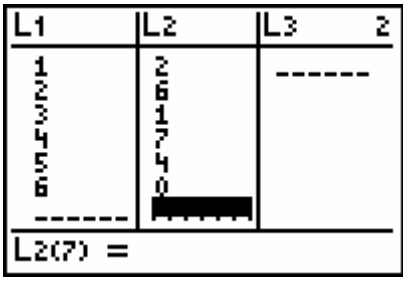
2. Press [LIST].



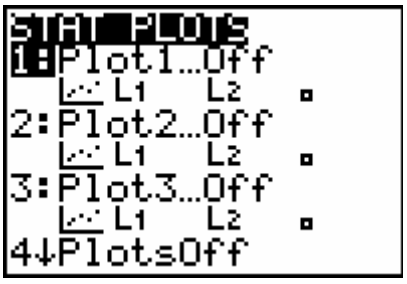
3. Input the possible outcomes into **L1** (list 1**)**, one at a time. Press [ENTER] each time.



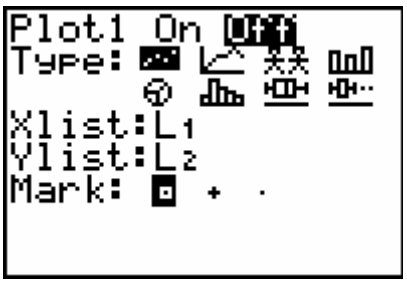
4. Curser over to **L2** (list 2) using the arrow key [▶]. Input the frequency of each possible outcome one at a time. Press [ENTER] each time.
   Record frequencies in the **Groups Activity Sheet: Simulation #2** table.
   In this example: 2, 6, 1, 7, 4, 0 will be the frequencies of the six possible outcomes



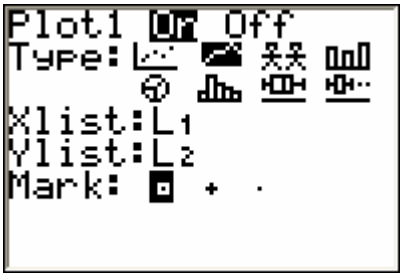
5. Press [2nd][Y=].



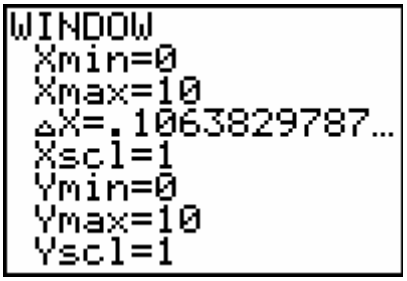
6. Select **Stat Plot** 1. Press [ENTER].



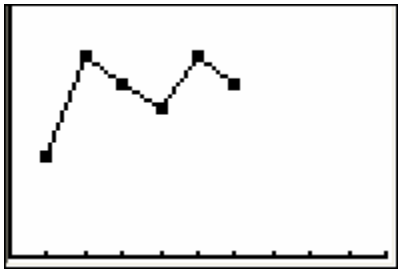
7. Using the curser keys and [ENTER], select Plot 1 **On**, Type **Line Plot**, Xlist **L1**, and Ylist **L2**.



8. Press [WINDOW]. Set window using illustration.



9. Press [GRAPH].



10. To quit: Press [2nd][MODE].

11. Press [2nd][ON].