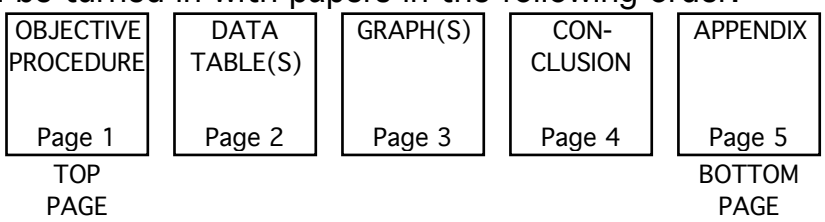
A lab has 6 main parts

1. **Objective** A question or questions to be answered
2. **Procedure** A picture labeling the set up and the locations of measurements
3. **Data Table** An organized way of communicating what was done and calculated in the lab. All data tables follow a prescribed format.
4. **(Graph)** A pictorial representation of the data. All graphs follow a prescribed format.
    a. (Not always required.)
5. **Conclusion** Answers the conclusion in single sentence or two.
6. **(Error Analysis)** Describes possible sources of error. (Not always required.)

Rules for Every Lab

1. Every piece of paper that is turned in must be initialed by every member of a group. A groups member's signature indicates that the work is acceptable to her standards and that what grade that is received on this page is acceptable. Failure to have ALL signatures on all pages will reduce the lab grade by 5 points.
2. Neatness counts!
3. Everyone must do a data table on every lab. If there are 3 members in your group and 3 data tables need to be made, then each member will be responsible for a data table.
4. Every data table will be done on the provided "generic" tables. They should be done to the standards set for in the data table section of this document. It is *preferred* that they be written in dark pencil. Use white out to correct any mistakes made in pen. This way mistakes can easily be corrected.
5. Everyone must do a graph. If there are 3 members in your group, then 3 graphs need to be made. The graph can be done in dark pencil, but the actual lines on the graph should done in a pen color that will clearly show up.
6. Every graph should be done to the standards set forth in the appropriate section of this document.
7. Labs are not to leave the classroom without special instructions. When you are done for the day, the lab should go in one of your group member's mailbox. If you arrive the next day without a persons piece of the lab, then you must work without the lab under the same deadlines as everybody else. No extensions will be given because a group member is not here and they have a vital piece of the lab.
8. Late labs will lose 8 points for every *day* late. Not class period late, but day late.
9. All labs will be turned in with papers in the following order.



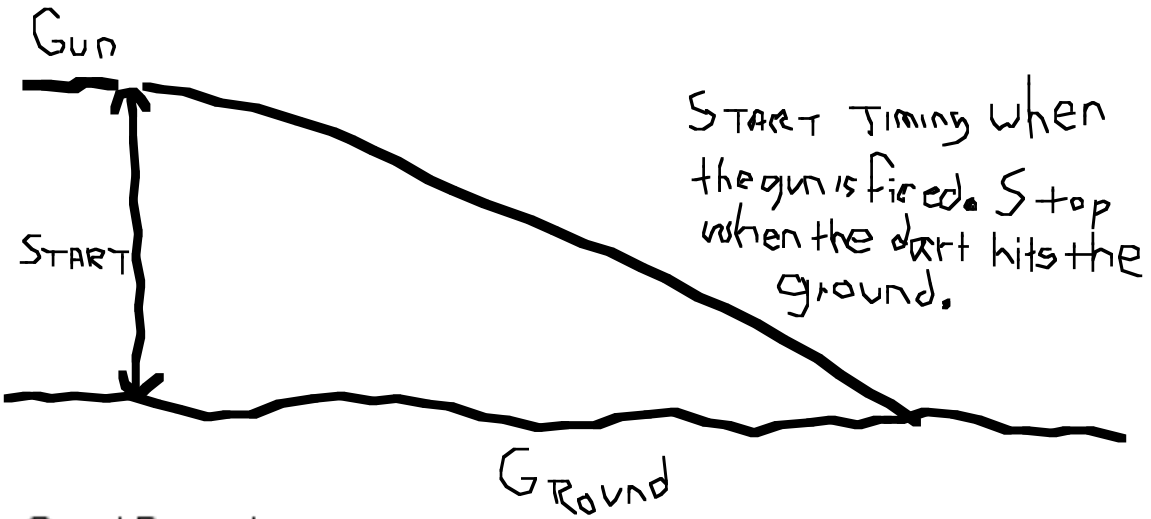
How to do a procedure

The procedure will consist of a labeled picture that uses as few words as possible. In other words, do not give a long description of what happened or a set of instructions. The graphic should show exactly what is measured and where. It is literal.

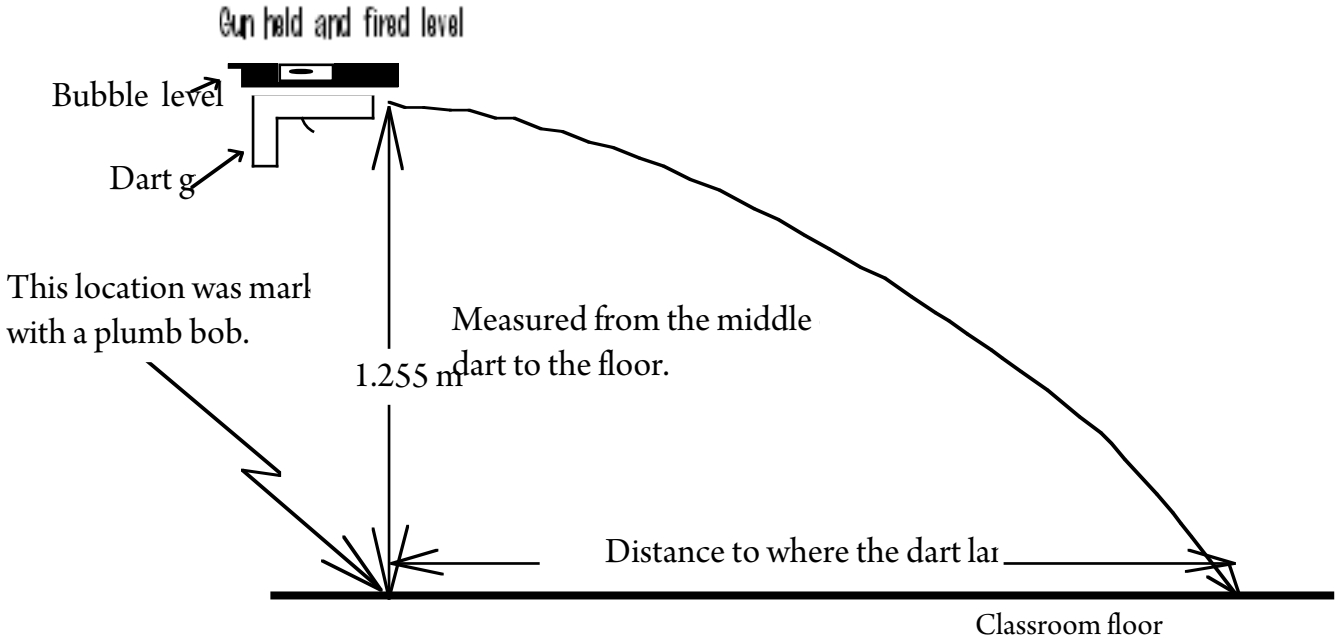
Example:

Below are two procedures for a lab where a soft tipped dart gun is fired level.

Bad Procedure



Good Procedure

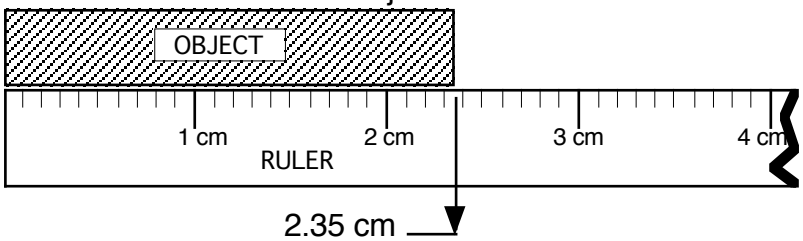


What's so good about the "Good Procedure?"

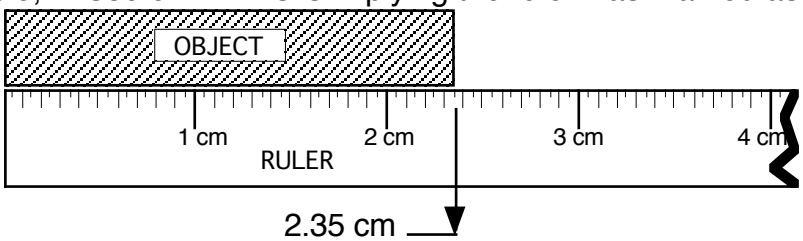
- It's neat. Every possible line is drawn with a straight edge. The lettering is printed neatly on a light colored pencil line that is eventually erased.
- Measured distances and times are clearly marked where they start and stop from.
- Path of the dart more precisely represents the actual path a dart takes.
- The label "Classroom floor," is more descriptive of the labs location than "ground."
- It is complete enough for a person to duplicate the set up and then the data in the data table.

102. I Significance

Below is a ruler that is used to measure an "object" used in lab.



The "5" is estimated from the ruler. When this information is written down it cannot be written down as, for example, "2.350 cm." This is implying the ruler was marked as shown below.



This is implying that the ruler was marked down to the 5's spot, (hundredth's place), and the 0, (thousandth's place), was estimated. The last decimal on the number should be the estimated number. **In calculations extra decimal places should not be added.**

II Significant Figures (Lite)

Much of the time, a calculator displays 10 or more digits. But if your calculations were from physical measurements, then many of those decimals are probably not reliable. The goal is to be able to identify the reliable and estimated digits in your measurements and calculations.

Significant figures are made up of the digits you are absolutely sure of and an estimated digit. The estimated number is because the whole number comes from a measurement and measurements are not exact. When identifying the number of significant figures, the "significant digit" farthest to the right is the estimated digit. Below are the rules for determining the number of significant figures in an expression.

1. **Non-zero digits and zeros between non-zero digits are always significant.**
   Examples:
   2006.....4 sig figs ..... "6" is estimated
   34.0001.....6 sig figs ..... "1" is estimated
   35.04002.....7 sig figs ..... "2" is estimated
   250.04.....5 sig figs ..... "4" is estimated
   806.....3 sig figs ..... "6" is estimated

2. **Leading zeroes before the first non-zero digit are not significant.**
   Examples:
   0.00<u>5</u>.....1 sig fig (underlined numbers) ..... "5" is estimated
   0.0000<u>650</u>.....3 sig figs (underlined numbers)..... "0" is estimated
   0.0000<u>43</u>.....2 sig figs (underlined numbers)..... "3" is estimated

3. **Trailing zeroes to the right of the decimal point are always significant.**
   Examples:
   15.00670.....7 sig figs ..... "0" is estimated
   21.0.....3 sig figs ..... "0" is estimated
   34.5000.....6 sig figs ..... "0" is estimated

4. **Trailing zeroes left of the decimal point are ambiguous**
   Examples:
   4300.....Was this measured to the tens or ones place?
   56 000.....Was this measured to the hundreds, tens or ones place?
   300.....Was this measured to the tens or one's place?

   These numbers need to be expressed in scientific notation showing the significance. For example, all these ambiguous numbers are expressed with 3 sig figs.
   4300.....4.30×10^3 ..... "0" is estimated"
   56 000.....5.60×104..... "0" is estimated
   300.....3.00×102..... "0" is estimated

5. **Counting numbers are exact. There are missing estimated digits and do not affect a calculation's significance.**
   Examples:
   A gross of donuts.....144 donuts are counted out exactly
   3 feet equals 1 yard .....This is exact by definition
   1 in = 2.54 cm .....This is exact by definition
   A dozen eggs.....12 eggs are counted out -exactly (you can't have a 1/10 of an egg)

Identify how many significant figures are in each number AND circle the estimated number.

1. 340
2. 0.45
3. 0.630
4. 1.0010
5. 20
6. 200.4
7. 340.600
8. 5000
9. 43.0
10. 54.1
11. 67.004
12. 330
13. 0.005
14. 3.40
15. 0.000403
16. 0.02000
17. 30.45
18. 0.0009
19. 0.03000
20. 4030
21. 5003
22. 99.0
23. 58.005
24. 0.004
25. 34.00
26. 45.45
27. 202
28. 550
29. 402.2
30. 45.0
31. 0.00450
32. 0.00004
33. 4.004
34. 320
35. 10
36. 5
37. 31.0
38. 90
39. 2000
40. 4050
41. 0.003
42. 98.0
43. 35.02
44. 6.001
45. 30, 001
46. 20.4
47. 3
48. 4.0
49. 17.00
50. 2.5400
51. 80
52. 4005
53. 0.00040
54. 400.500
55. 34.002
56. 99.2
57. 400
58. 3506
59. 2.0030
60. 0.0400
61. 20.03
62. 0.40
63. 340
64. 1,000,000
65. 34, 004
66. 47,000.03
67. 25.0
68. 35.002
69. 7400
70. 0.0300
71. 45.0
72. 4
73. 3.00
74. 0.00030
75. 60.0
76. 200
77. 380
78. 909
79. 1000
80. 0.20000
81. 0.03004
82. 2.02005
83. 23.4
84. 8.00
85. 0.000
86. 45.03
87. 90.03
88. 8.40
89. 0.0303
90. 80

II Standard Deviation

Standard Deviation is the measure of the data's variation from the mean. The word "mean" is the scientific way of saying average. Say you massed 12 weights and their mean is 45.6 grams. The standard deviation is calculated to be 3.7 grams. This is saying that is the weights masses were taken randomly, then 68% of them would be within 3.7 grams of 45.6. To find the standard deviation

1. Put your calculator in the statistics mode. Usually this involves using the key labeled "**mode**." An "**S**" or an "**SD**" may appear on the calculator's display.
2. Enter the data. Look for the key that says "**DATA**" or has the symbol "**Σ**" or "**Σ+**" on it. Type a piece of data, then press the **Σ**, **Σ+** or "**DATA**" key. Repeat this process for each piece of data.
3. To get the standard deviation press the key marked "**s**" or "σ_{n-1}."
4. Before you enter another set of data clear the data entered in your calculator.

See the step by step instructions in the back of this packet on how to use your calculator's statistics functions to calculate the average and standard deviation.

III Plus or Minus Error

The plus or minus error is the standard deviation of all the means if the experiment were repeated over and over.

$$\pm \text{ Error} = \text{STANDARD DEVIATION}$$

This would be written as

$$\text{mean} \pm (\text{+/- error})$$

In out example this would be written as

$$45.6 \pm 3.7 \text{ grams}$$

IV Final Note

When looking at a set of data, throw out the highest and lowest data points.

V Practice

For the tables of values below calculate the mean and ± error for each column. Make sure you through out the highest and lowest data points.

	Data Column 1	Data Column 2	Data Column 3	Data Column 4	Data Column 5
	23	3	65.1	12	2.54
	45	4	45.6	23	3.45
	64	6	88.3	43	5.6
	34	7	33.6	46	6.43
	54	8	35.9	54	3.45
	46	3	44	34	3.55
	36	4	75.3	16	4.31
	81	2	34.8	21	7.32
	34	8	78.1	32	6.88
	54	1	56.8	32	5.32
	56	9	43.2	34	4.89
	76	3		54	
		4		33	
		5			
		6			
Avg ± Stdev					

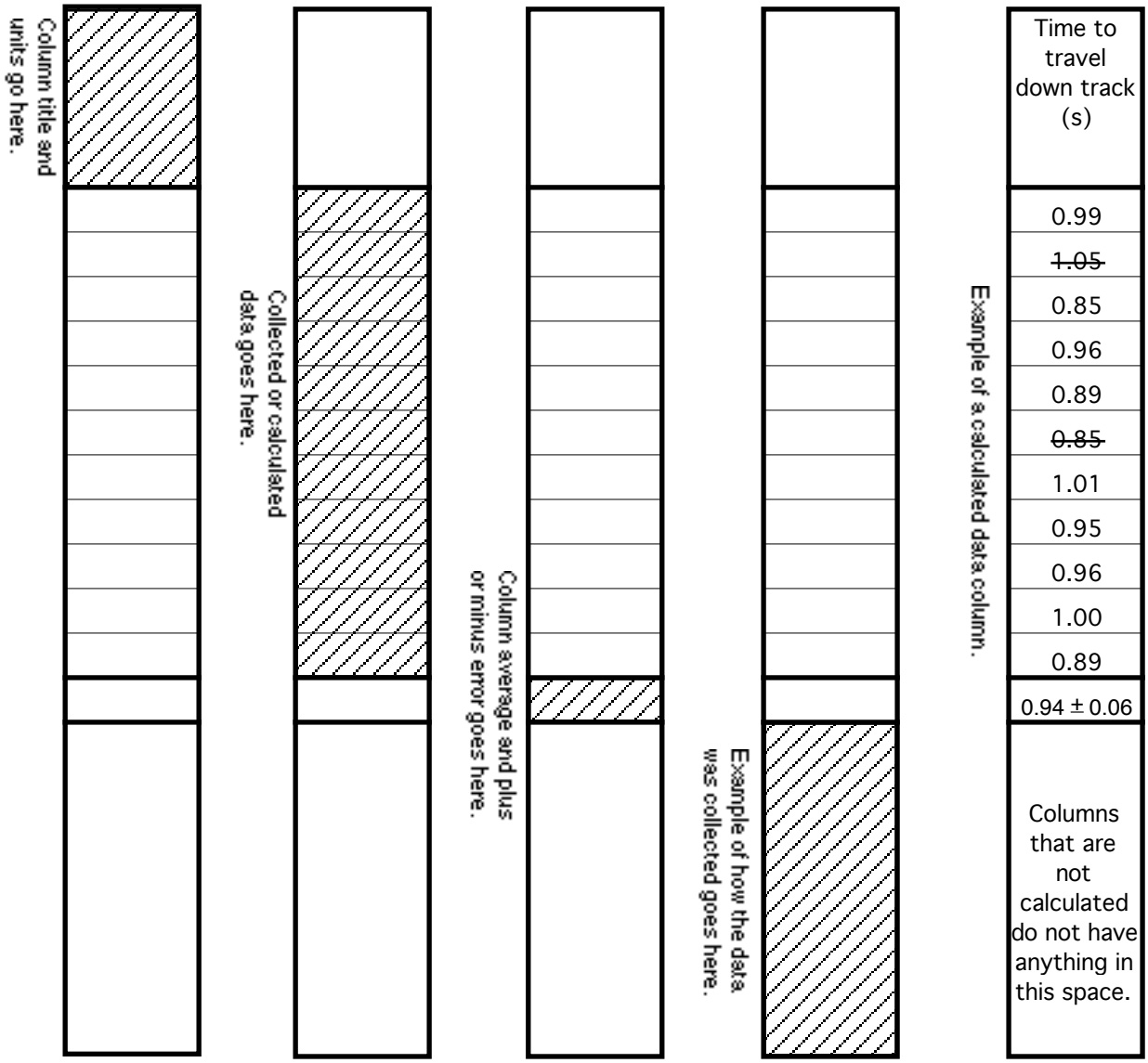
How to create a good data table

The data table consists mainly of a collection of columns. The are two kinds of columns. Columns that display data that is directly collected in a lab and columns that show information that is calculated from the collected information.

Columns of collected data

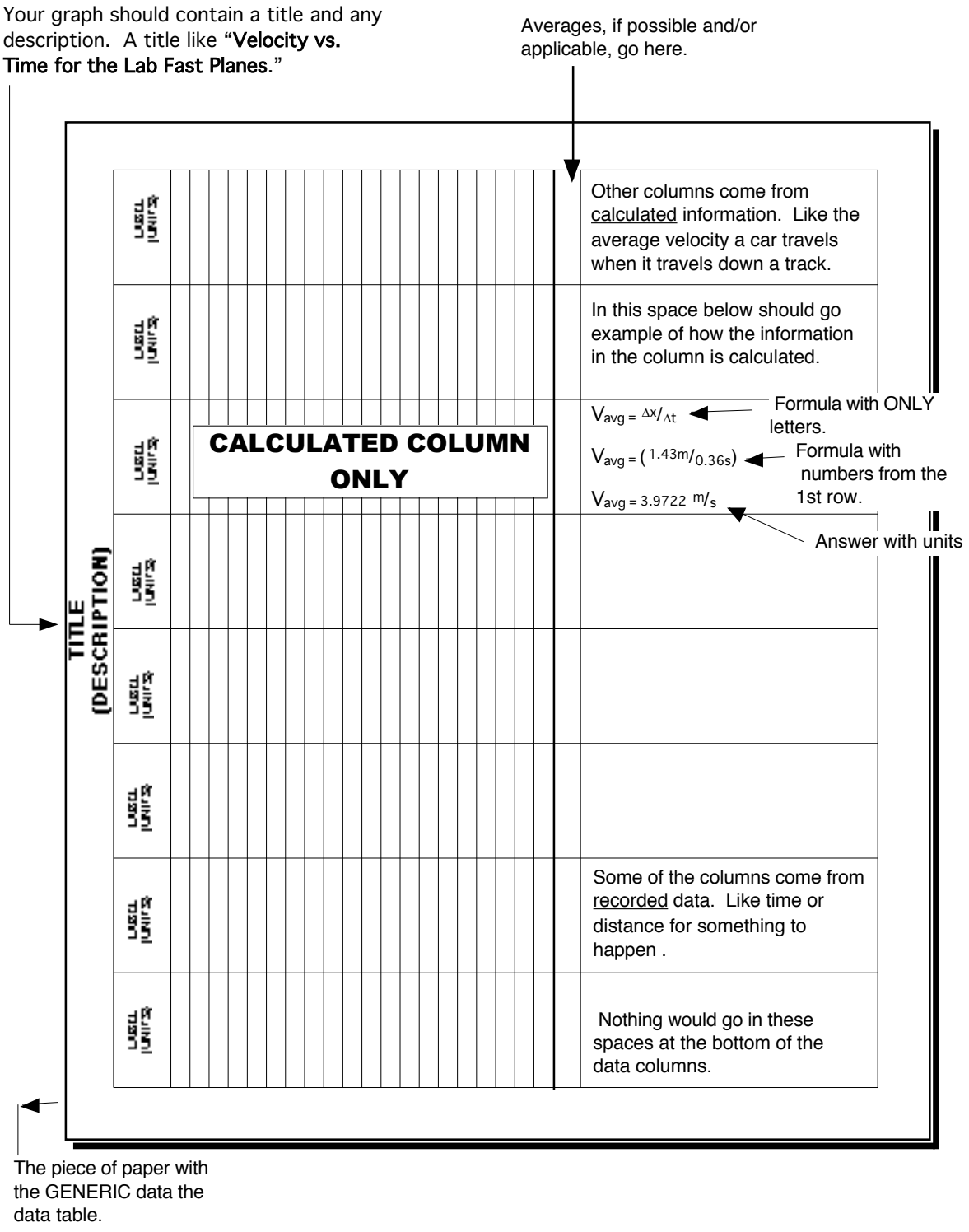
These columns contain information that was measured in an experiment. There needs to be at least 10 pieces of data to work with. The high and low data measurements are to be thrown out. This means there must be at least 12 collected measurements. If a high or low data measurement is duplicated several times, throw out only one of the measurements. This is indicated on the lab by writing the measurement down, but drawing a line through it.

A data table's column is made up of 4 parts.



Doing a good data table

– using the "generic" data table. –



EXAMPLES OF A LABEL ARE: DISPLACEMENT, VELOCITY, FINAL VELOCITY, ACCELERATION, FORCE, MASS, TIME, ETC.

EXAMPLE OF A UNIT ARE: (m), ($^{m}/_{s}$), ($^{m}/_{s}2$), (N), (kg), (s), (lb), (ft), (in), (mile), etc.

Example, small, data table

In an experiment, a car rolls down a hill starting from rest. The velocity at the bottom is measured with a special probe. Below is the data table from this fictitious experiment.

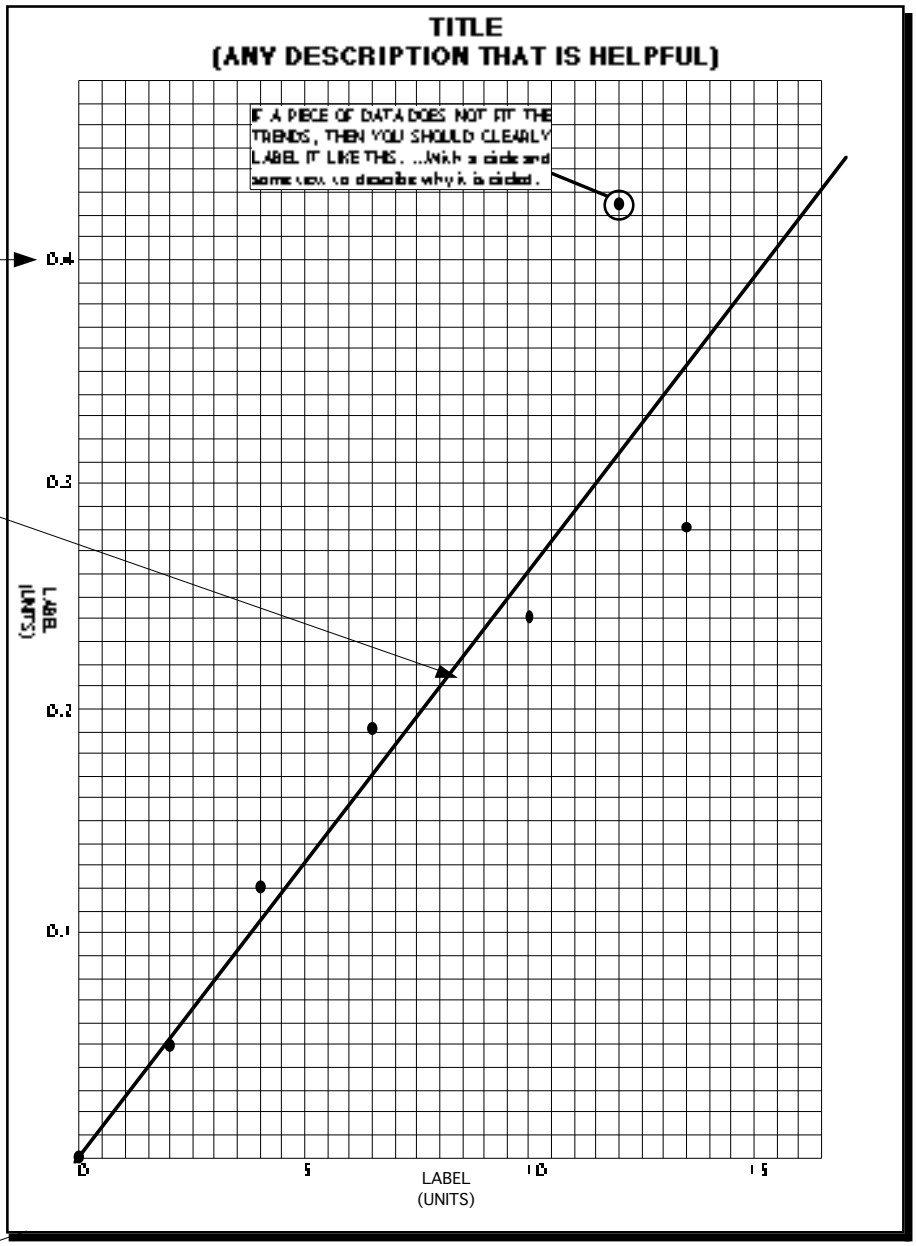
Velocity …at the bottom of the hill (m/s)	Kinetic Energy …at the bottom of the hill (J)		
9.00	3.24		
9.45	3.57		
9.35	3.50		
9.66	3.73		
9.58	3.67		
~~9.00~~			
~~9.71~~			
9.50	3.61		
9.63	3.71		
9.17	3.36		
9.27	3.43		
9.53	3.62		
9.41 $\pm$ 0.27	3.55 $\pm$ 0.16		
	$KE = \frac{1}{2}mv^2$ $KE = \frac{1}{2}(0.0800kg)\left(9.00\frac{m}{s}\right)^2$ $KE = 3.24\ J$		

QUESTIONS: Answer on a separate sheet of paper.

91. Why are there two blank rows in the "kinetic Energy" column?
92. Where does the number, "9.41," in the bottom of the velocity column come from?
93. What does the number, "0.27," in the bottom of the velocity column measure?
94. Why is the bottom row in the velocity column empty?
95. Why is there information in the bottom of the kinetic energy column?
96. What three parts must be written for every example problem at the bottom of a column?
97. How is data that is dropped identified in the column?
98. Write out the label for the first column.
99. Write the unit for the first column.
100. What numbers represent the error in their respective columns?
101. Why are the numbers, 0.27 and 0.16 not written with 3 sig figs like the other numbers?

Doing a good graph

Your graph should contain a title and any description. A title and description like "**Velocity vs. Time for the Lab Fast Planes.**"



THE GRAPH SHOULD BE DRAWN TO TAKE UP AT LEAST 2/3'S OF THE GRAPH PAPER.

The number divisions should be clearly marked and make sense.

All data and lines connecting the data must be clearly marked.

Draw your line through the 0,0 point is that is known as a starting value, without significant figures.

Piece of graph paper

EXAMPLES OF A LABEL ARE: DISPLACEMENT, VELOCITY, FINAL VELOCITY, ACCELERATION, FORCE, MASS, TIME, ETC.

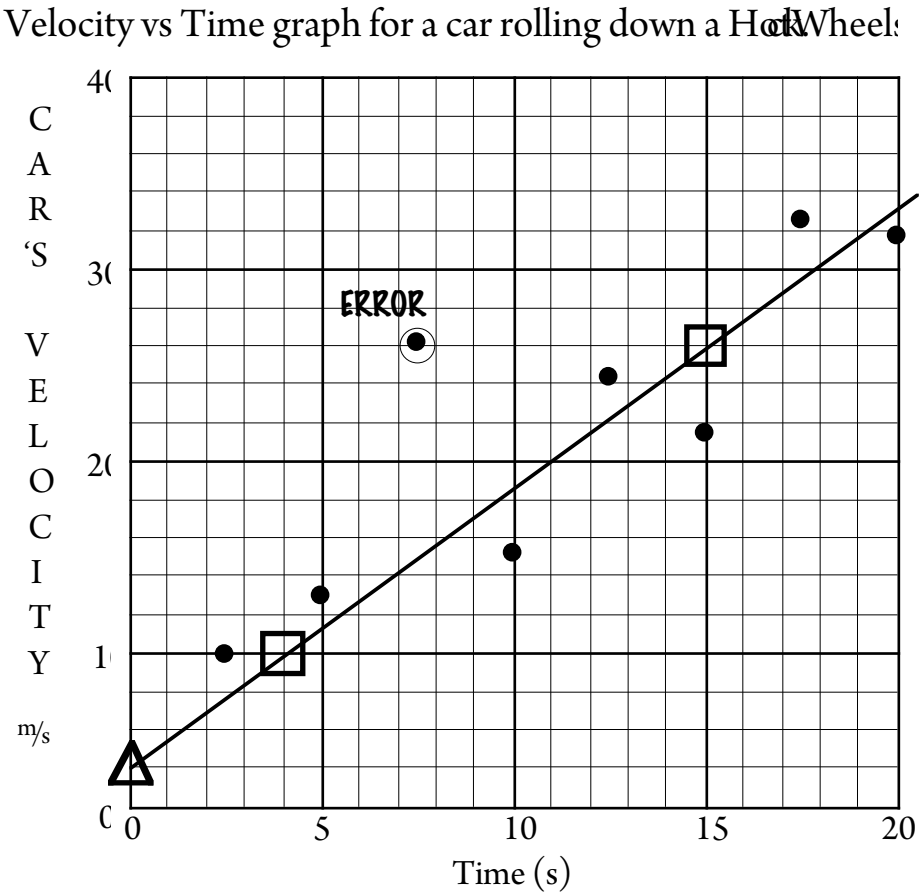
EXAMPLES OF A UNIT ARE: (m), (m/s), (m/s^2), (N), (kg), (s), (lb), (ft), (in), (mile), etc.

Write the equation for the line in terms of the labels on the axis. See the next page for an example.

EXAMPLE: Graphing the line's equation

In an experiment a car traveled down a horizontal track. The car started from rest and accelerated at a constant speed. In this experiment, students recorded the car's velocity every 2.50 seconds. The data and the least squares best fit line is shown below.

The task is to write the proper equation for the line in terms of the graphs variables and then figure out what is wrong with the best fit line.



The two points for the determining the slope have boxes around them.

$$\text{slope} = \frac{\text{RISE}}{\text{RUN}} = \frac{\Delta y}{\Delta x} = \frac{(26\ -\ 10)}{(15\ -\ 4)} = \frac{16}{11}\frac{\text{m}}{\text{s}^2}$$

The y-intercept is where the line crosses the y-axis. This is located at 2.0 (That's the triangle on the graph.) In math class the formula would be written as $y = mx + b$ or $\mathbf{y = \left(\frac{16}{11}\right)x + 2}$. But on the graph y and x mean something, y is the velocity, v, and the x-axis is time, t. In this lab the equation would become

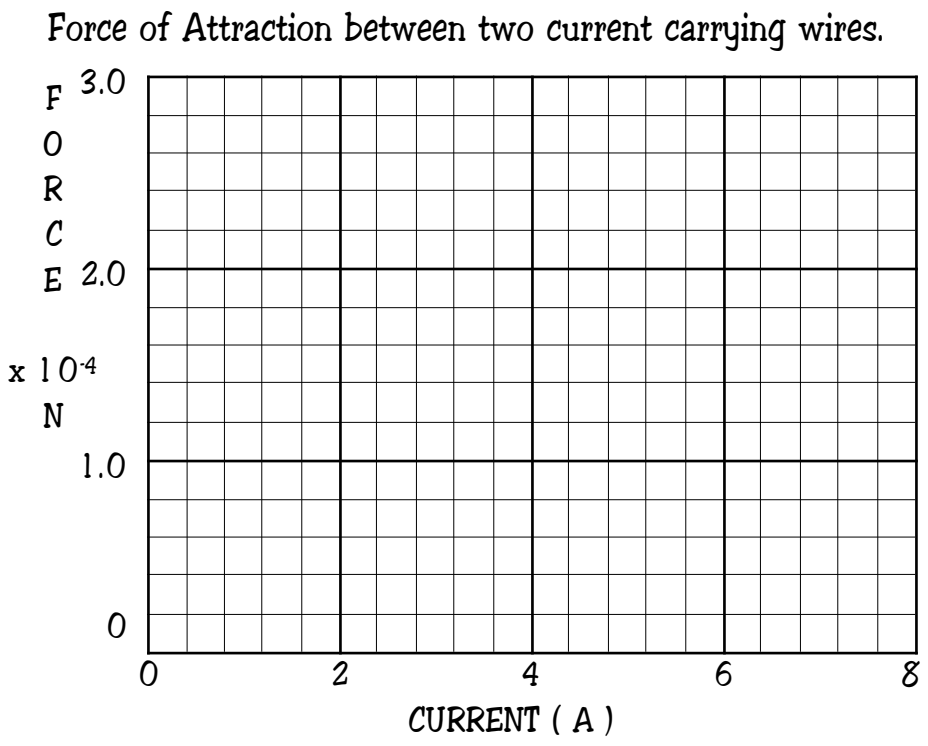
$$\boxed{\upsilon = \left(\frac{\mathbf{16}}{\mathbf{11}}\right)\mathbf{t + 2}}$$

What's wrong with the graph? It is drawn incorrectly. The experiment says that the car started from rest. Starting from, "rest," is not a guess. So the lower left end of the line should go through (0,0). This will change the equation.

Example mini-graph #1

In this experiment two wires are parallel to each other. They are connected to a device for controlling the flow of electrons through each wire. This flow is called a current and is measured in Amps, abbreviated with a, "A." (Think of this "flow of electrons" as being similar to the flow of water in a river.) The electron flow is adjusted for each trial of the experiment. These two wires are attracted to each other. The force of attraction between them is measured in the table below. Plot the date on the provided graph and write the formula for the line. Note that the units on the vertical axis are already multiplied by 10^{-4}.

Current …in each wire (A)	Force …of attraction between the wires (F)
0.0	0.00×10^{-4}
1.0	0.40×10^{-4}
2.0	0.90×10^{-4}
3.0	1.10×10^{-4}
4.0	1.80×10^{-4}
5.0	1.90×10^{-4}
6.0	2.50×10^{-4}
The high and low values have already been removed from the list above.	



Questions: (Answer on a separate sheet of paper)

103. What is the equation of the line you drew?
104. How does this equation reflect the both axes on the graph?
105. What are the units of slope from this graph?
106. Is your y-intercept at (0,0)? Why or why not?

Curve of best fit

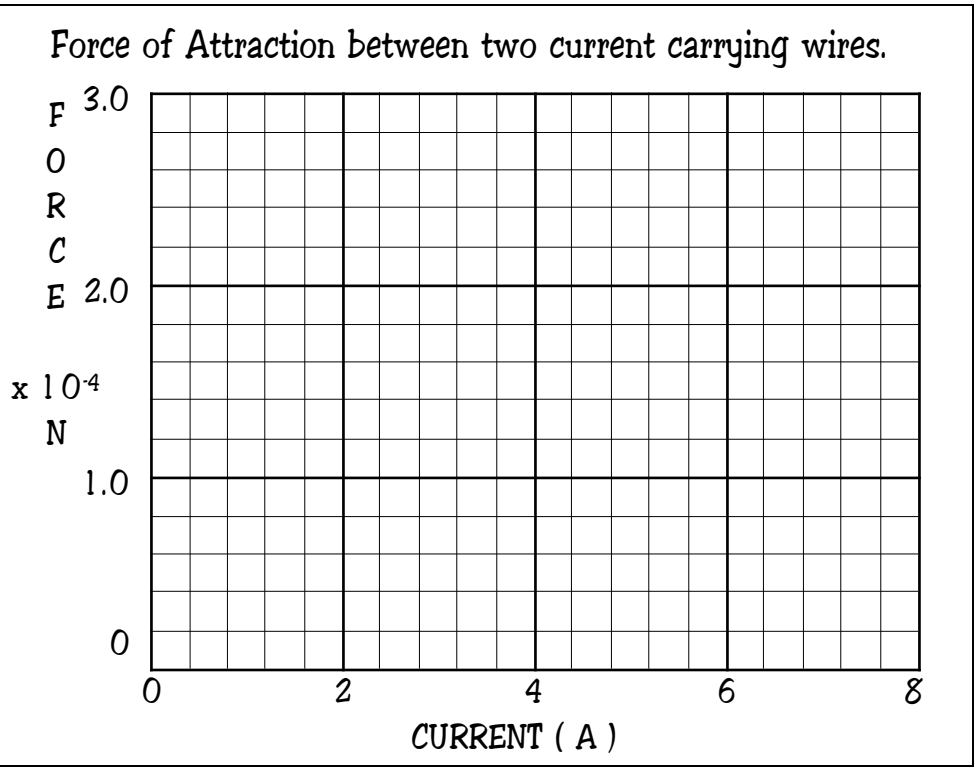
This can be calculated using the functions in a graphing calculator. This is called a linear regression line. (See the section at the end of this document to see how to do this on a graphing TI calculator.)

One of the most important numbers here is the regression coefficient. The calculator represents this number as "r." The closer $\mathbf{r^2}$ is to "1" the better your line represents the data. (In the research world this number has to be further compared to the number of data pairs- but not for us.)

Example mini-graph #2

In this experiment two wires are parallel to each other. They are connected to a device for controlling the flow of electrons through each wire. This flow is called a current and is measured in Amps, abbreviated with a, "A." (Think of this "flow of electrons" as being similar to the flow of water in a river.) The electron flow is adjusted for each trial of the experiment. These two wires are attracted to each other. The force of attraction between them is measured in the table below. Plot the date on the provided graph and write the formula for the line. Note that the units on the vertical axis are already multiplied by 10^{-4}. Read the section at the end of this document about finding the line for a collection of data and plot the line from the formula the calculator gives you.

Current …in each wire (A)	Force …of attraction between the wires (F)
0.0	0.00×10^{-4}
1.0	0.40×10^{-4}
2.0	0.90×10^{-4}
3.0	1.10×10^{-4}
4.0	1.80×10^{-4}
5.0	1.90×10^{-4}
6.0	2.50×10^{-4}
The high and low values have already been removed from the list above.	



Questions: (Answer on a separate sheet of paper)

107. What is the equation of the line the calculator gave you?
108. What is the regression coefficient squared?
109. How closely (percentage) is does your slope and y-intercepts compare from mini graph #1?
110. Why are these numbers different?

Using an "old" calculator to calculate the mean and standard deviation

Do the following on your calculator to calculate the mean and standard deviation of 3,5 & 7. (The example below does not show how to use a graphical calculator.)

Put the calculator in statistics mode.

mode ### → UNDERNEATH THE DISPLAY IS A LIST OF KEYS AND WHICH MODE THEY PUT THE CALCULATOR IN. CHOOSE THE ONE THAT SAYS STAT, OR STAT1

OR

2nd STAT

Enter the data.

3	Σ	5	Σ	7	Σ
	Σ+		Σ+		Σ+
	DATA		DATA		DATA
	M+		M+		M+

Calculate the mean.

2nd
INV
Shift
Alpha
$\bar{x}$ Usually the mean key is located above another key

The display should say **2.333333333**

Calculate the standard deviation.

2nd
INV
Shift
Alpha
s
σ_{n-1}

The display should say **2**

Before entering a new set of data clear the statics memory. This is done usually by pressing some of the keys below.

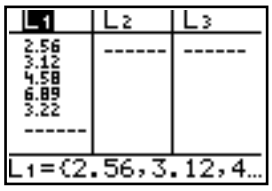
CA OR 2nd CLA OR Sometimes you have to take it out of statics mode.

CLEARING THE LIST -METHOD 1

- The goal is to erase the list of numbers in List #1, L_1.
- Press "**Stat**" in the 3rd row from the top and the 3rd column from the left. This is the menu you will see.
- Select "**ClrList**"

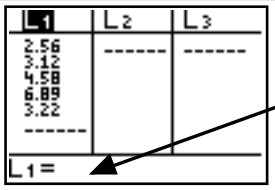
- Tell the calculator which list the erase. In this example tell it to erase L_1." L_1" is located in blue above the number "1."

- The screen will look like this. Press **Enter**.



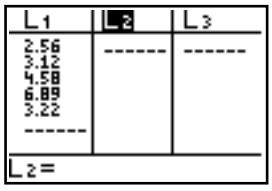
CLEARING THE LIST -METHOD 2

- The goal is to erase the list of numbers in List #1, L_1.
- When in the edit mode of the statistics, use the blue arrow keys to move the cursor to the top of the list. It will be highlighted.



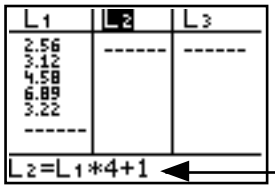
- Press the Clear key. DO NOT PRESS **ENTER** YET.
The list of numbers at the bottom of the screen will disappear.

When you press **Enter**, the list will disappear.

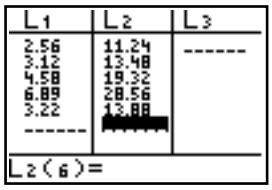


DOING MATH WITH A LIST OF NUMBERS AT A TIME

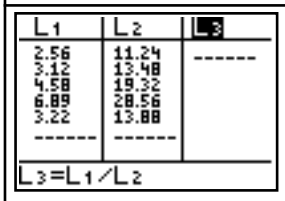
- The goal is to take all the numbers in L_1 and multiply them by 4 add 1 and put the answers in L_2. This might be a possibility when you need to use the formula y = 4x + 1 and all the "x" values are in the L_1 list.



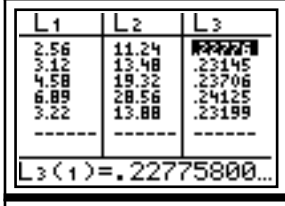
- Use the arrow key to move to the top of an empty list, L_2 in this example.
- Type "L_1 * 4+1" It will show up at the bottom of the screen.



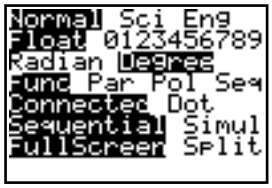
- Press Enter and each value in L_1 will be multiplied by 4 and 1 added. The row by row answer will be placed in L_2.



- Another example: Take the values in L_1, divide them by the values in L_2 and place the answer in L_3.

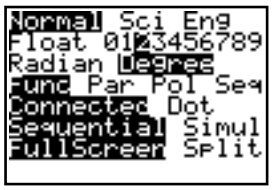


- Answer

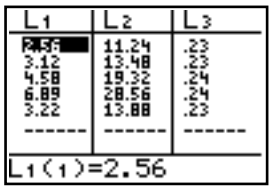


ROUNDING NUMBERS IN A LIST

- The goal is to round all the numbers in a list to 2 decimal places.
- Press the **Mode** key.



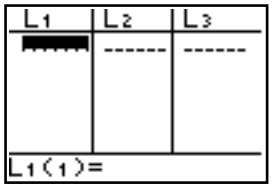
- Use the arrow keys to highlight the "2" in the second row. Press **Enter** then **Quit**.



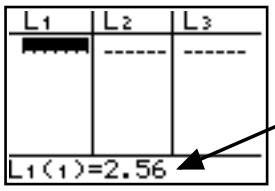
- Look at the lists. They will now be rounded to two decimal places.

STATISTICS

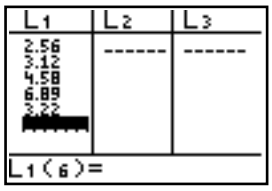
- The goal is to find the average and plus or minus error of 2.56, 3.12, 4.58, 6.89 and 3.22.
- Press "Stat" in the 3rd row from the top and the 3rd column from the left. This is the menu you will see.
- Select "Edit"



- This is the screen you will see after selecting :"Edit."

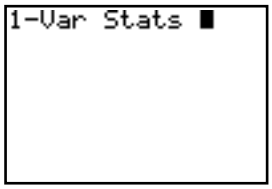


- Type the first number, "2.56"
- Notice that the number shows up at the bottom of the screen



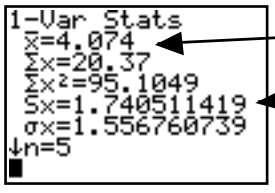
- After each number press enter.
- The list will look like this when all the numbers are entered.
- Note that the bottom of the list shows the entry number you are on.

- After all the numbers are entered, Press the **Stat** button again.
- Select **CALC** and **1-Var Stats**. Press **Enter**.

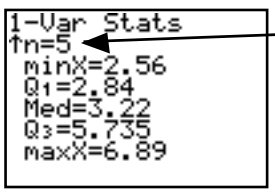


- The screen will look like this.
- The calculator is waiting for you to tell it which list to perform the statistics on. Type "L1." It is in blue above number "1."

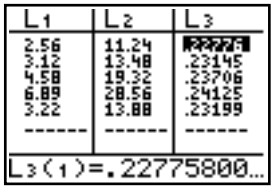
- The screen will look like this.
  Press **Enter**.



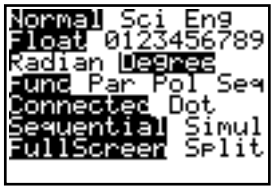
- This is the average of the list of numbers.
- This is the "plus or minus" value.
  The answer to the question is 4.07 ± 1.74 to two decimal places. Note that the average and the plus or minus must both have the same number of decimal places.



- This is number of entries in the list.

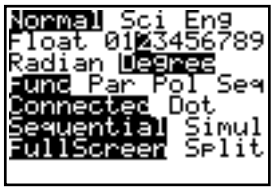


- Answer

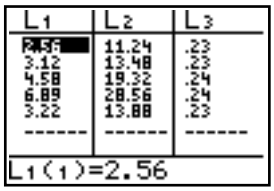


ROUNDING NUMBERS IN A LIST

- The goal is to round all the numbers in a list to 2 decimal places.
- Press the **Mode** key.



- Use the arrow keys to highlight the "**2**" in the second row. Press **Enter** then **Quit**.



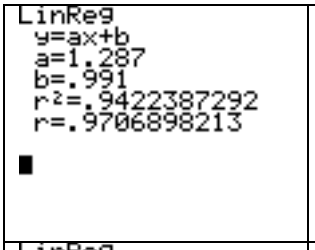
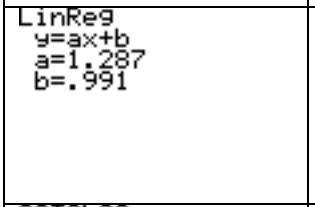
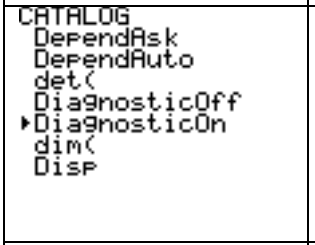
- Look at the lists. They will now be rounded to two decimal places.

Finding the "line of best fit" for a collection of data	
TI-84 & 84 plus ONLY	
CATALOG DependAsk DependAuto det(DiagnosticOff ▸DiagnosticOn dim(Disp	• In order to get the correct information, you will need to make sure the diagnostics are turned on. Here is how to do that. • Press 2nd, then CATALOG. "CATALOG" is above the 0, • Scroll down to Diagnostics On. • After selecting it press the enter key again. This will tell the calculator to calculate the regression coefficient
TI- 82, TI-83 , TI-83 plus, TI-84 & TI-84 Plus	
EDIT CALC TESTS 1:Edit… 2:SortA(3:SortD(4:ClrList 5:SetUpEditor	• The goal is to find the line of best fit fro the data for the following pairs (1, 2.56), (2, 3.12), (3, 4.58), (4, 6.89), (5, 7.11). • Press "Stat" in the 3rd row from the top and the 3rd column from the left. This is the menu you will see. • Select "Edit"
L1 L2 L3 L1(1)=	• This is the screen you will see after selecting :"Edit."
L1 L2 L3 1 L1(1)=1	• Type the first number, "1" • Notice that the number shows up at the bottom of the screen
L1 L2 L3 1 1 2 3 4 5 L1(6)=	• After each number press enter. • The list will look like this when all the numbers are entered. • Note that the bottom of the list shows the entry number you are on.
L1 L2 L3 2 1 2.56 2 3.12 3 4.58 4 6.89 5 7.11 L2(6) =	• Move the cursor to the top of the second column. • Begin entering the data.
EDIT CALC TESTS 1:1-Var Stats 2:2-Var Stats 3:Med-Med 4:LinReg(ax+b) 5:QuadReg 6:CubicReg 7↓QuartReg	• Press 2nd then Quit. • Press the "STAT" button and use the arrow keys to move the cursor over to the menu item, CALC.
EDIT CALC TESTS 1:1-Var Stats 2:2-Var Stats 3:Med-Med 4:LinReg(ax+b) 5:QuadReg 6:CubicReg 7↓QuartReg	• Move the cursor down the list to LinReg (ax+b). This will generate an equation for the "best fit" line and some additional statistics.

LinReg(ax+b) ■	• The command screen will look like this. Without touching any other buttons, the calculator will compare the items in L1 and L2.

TIPS, TRICKS & SHORTCUTS

CATALOG DependAsk DependAuto det(DiagnosticOff ▸DiagnosticOn dim(Disp	• To scroll down to a letter section of the catalog listing, press the letter you want to jump to <u>WITHOUT</u> pressing the ALPHA key.
EDIT CALC TESTS 1:1-Var Stats 2:2-Var Stats 3:Med-Med 4:LinReg(ax+b) 5:QuadReg 6:CubicReg 7↓QuartReg	• Shortcut: If you press the number next the menu item, the calculator will automatically select this menu item.
LinReg(ax+b) L1, L5	• Suppose you want to analyze the data in L1 as the "x" data and L5 as the "y" data. You would enter the two lists as shown with a comma between them.
L1 L2 L3 1 1 2.56 ------ 2 3.12 3 4.58 4 6.89 5 7.11 ------ ------ L1 ={1,2,3,4,5}	• To clear a list of data, move the cursor to the top of the column, ABOVE THE NUMBERS. Press the CLEAR button followed by ENTER.
L1 L2 L3 3 1 2.56 ------ 2 3.12 3 4.58 4 6.89 5 7.11 ------ ------ L3 =L2²■	• To perform a math operation, like squaring, on a list of numbers, move the cursor to the top of the list where the answer is to appear. Move the cursor above the numbers. Type the operation and press enter. In this screen shot, the numbers in list 2 have been squared and will be placed in list 3.

	• "a" is the slope • "b" is the y-intercept • "r^2" is the regression coefficient squared. THIS IS IMPORTANT. The closer r^2 is to "1.00" the better your fits the data to minimize error.
	• What if your screen looks like this instead? • To remedy this, you will need to turn on the diagnostics. See the next row.
	• Press 2^{nd}, then CATALOG. "CATALOG" is above the 0, • Scroll down to Diagnostics On. • After selecting is press the enter key again. This will tell the calculator to calculate the regression coefficient

Lab Title: _____ Name(s) _____

Date: _____

Variables measured only once: _____

Generic data table version 1 1/09/2001