

The graphing calculator is a powerful tool that allows a student to do many important things that contribute to the understanding of Elementary Statistics. At Pasadena City College, we recommend the TI-84 Plus CE-T.

In this activity students will become more comfortable with their graphing calculator and begin to learn the kinds of things that graphing calculators can do for a Statistics student.

1. First, turn your calculator on. When your calculator is first turned on, it will give a screen not unlike other calculators, but with many lines so that you can see what you have done in the calculator previously.
2. We need to reset the calculator in case a previous user changed settings. If you know that your calculator is brand new, this is not something you need to do.
 - a. Press **2nd** then **±** order to get to the **mem** screen.
 - b. Scroll down using the circular arrow keys until you get to 7:Reset...and then press **enter**.
 - c. Press **enter** for 1:All RAM...
 - d. Under RESET RAM scroll to 2:Reset and then press **enter**. Press **enter** again to end up back on the main screen.

Basic Operations

3. Get yourself back to the main screen by pressing **2nd** and then **MODE** to **quit**. For the following, see if you can find the buttons needed in order for the calculator to do the following operations, and put the answer in the space provided.

- a. Add the ages of everyone in your group: _____
- b. Subtract the student ID numbers from two people in the group. _____
- c. Multiply 62 and -56: _____
- d. Divide 919.88 by 12.2 _____
- e. Evaluate the following expressions:

i. $27^2 =$ _____ ii. $87^3 =$ _____ iii. $13^5 =$ _____

In order to get the exponents of 3 and 5, which button did you need?

f. Evaluate t^2 if

i. $t = 6$ _____ ii. $t = -6$ _____

You should get the same answer. Which symbols do you need to use? and

g. See if you can calculate $\sqrt{27.5625} =$ _____ What symbol is $\sqrt{\quad}$? _____

4. Evaluate the following.

$$\frac{5^2 + 78 - 43^3}{4} =$$

5. Sometime it can be helpful to see fractions the way we write them.

a. Press **alpha** and then **y=**, hopefully you will see the option for **n/d**. Use it to evaluate

$$\frac{\sqrt{5^3 - 25}}{2} =$$

b. Oops! I meant to have you do something slightly different. Instead of reentering the entire expression into your calculator, can you use the arrows to highlight the previous operation you put in, choose it, and then edit it in order to calculate the following?

$$\frac{\sqrt{5^3 - 25}}{2.5} =$$

Random Number Generator

6. Your calculator can generate random numbers, which can be helpful in statistical analysis. A.
A. First we need to "seed" your calculator. This will ensure that the same "random" numbers do not appear on everyone's calculator.

a. Enter a random number in the calculator on the main screen such as your student ID number or telephone number (no dashes).

b. Then press **STO->** and then **MATH**

c. Scroll to **PROB**, make sure that **1:rand** is highlighted and press **enter** twice. Now your calculator will generate different numbers than anyone else's calculator.

B. Now we will generate a set of ten numbers between 1-50 on the by doing the following:

a. Press **MATH**, then scroll to **PROB**, then choose **8: randIntNoRep(**

b. Tell the calculator to choose positive whole numbers between **1** and **50**, and have it choose ten numbers. Notice that pressing **Paste** will put your request on the main screen.

c. Have each member of the group generate 10 numbers, but **before** writing them down, choose the numbers from **two people** in the group. Then everyone writes them below.

Set 1:

Set 2:

Lists and Sorting

7. Another important feature of the graphing calculator is the use of lists. Lists allow us calculate many things about a data set.

a. Press **stat** and then **1:Edit...**

b. You should see L₁, L₂, and so on. These are your lists. Have everyone put the numbers in **Set 1** into L₁, and the numbers in **Set 2** into L₂. **Double check** that all the numbers are correct.

c. In L₃ put in the following five numbers:

67	85	23	65	10
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d. Now scroll until you highlight L₃, then press **del**. What just happened?

e. To fix this, press **stat**, then scroll to **5:SetUpEditor**, and then press **enter** twice. Go back to your lists and make sure all your lists are there.

f. A useful tool is to sort lists from smallest to largest numbers. You are going to sort L₁. Below are the steps you need to do this, but not in the correct order. See if your group can figure out how to sort the L₁, and label below each the order in which it should occur (1, 2, 3, 4, 5).

enter	2 nd	2:SortA(stat	1 (L ₁)

You know your answer is correct if you can go back to your list and see all your data in ascending (increasing in size) order. Sort the data in L₂ in ascending order as well.

What is the minimum value in L₁? _____

What is the maximum value in L₂? _____

Lists and Operations

8. Once you have your lists set up you can do many things with them.

a. Highlight L₄ and press **enter**. In this space, see if you can write $(L_1 - L_2)^2$, and then write the values produced in the space provided below.

b. Have your calculator generate fifty random numbers between 1 and 200. To store them in a list press **STO->**, and then L_5 .

This list is big! Even if you sorted the list, scrolling through to find certain values is a lot of work. Luckily, the graphing calculator can help us.

c. Use **list** (you'll need the **2nd** button) and then MATH to find the following for L_5 .

i. The minimum number in L_5 : _____

Which function did you use to find this? _____

ii. The maximum number in L_5 : _____

Which function did you use to find this? _____

iii. The total sum of the values in L_5 : _____

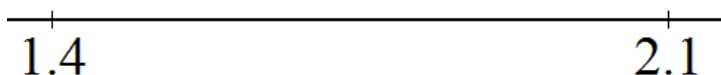
Which function did you use to find this? _____

d. See if you can figure out how to clear all the values in L_5 without deleting the list (like we did previously). Put the steps to clear a list below, starting from the main screen.

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Odds and Ends

9. Consider the following interval.



a. What is the length of this interval? _____

What work in your calculator did you do to get this answer?

b. What is the midpoint of this interval? _____

What work in your calculator did you do to get this answer?

c. Label the midpoint on the interval. Then find the midpoints between each of the endpoints and the midpoint, label those on the interval.

10. In your calculator, type a one and then type fifteen zeros. Press **enter**.

a. What does your calculator show? _____

b. This is your calculator's way of writing 1×10^{15} , which is scientific notation. When we write these numbers, we will need to interpret what the calculator gives us, and rewrite the number correctly without the E. You can find this button above the comma button (E E).