Summer Homework for AP Statistics

You need to be able to use your **graphing calculator** with its statistics package to enter data, calculate simple statistics such as the mean, median or linear regression equation, and produce a boxplot, scatterplot and histogram BEFORE the first day of class. Consult your manual if you are not already familiar with how to use your calculator.

If you do not already have a graphing calculator, my recommendation is to purchase a TI-83 Plus, TI-84 Plus or a TI-89 graphing calculator. (Please note that the TI-82, TI-85, and TI-86 are NOT comparable models).

This assignment is due Monday, the first day of term 2. It will be your first quiz grade for the class. Consult your calculator manual for instructions on the keystrokes necessary to do the operations.

1. **STAT Button use:** Enter the following data into List 1.
    1. Select the STAT menu.
    2. Choose "Edit."
    510 510 510 543 454 438 459 459 498 466 448 403 498 466 498 433
    454 454 498 419 415 454 407 498 443 448 498 433 459 459 419
    Entry sequence: Stat→Calc→1-Var-Stats→L1
    Record the following (Refer to the manual to see which symbol is which statistic)
    mean
    standard deviation(s)
    n
    min
    Q1
    median
    Q3
    Max

    Using the Statistics Plot:
    Select **StatPlot** (2nd Y=). Hit Enter to select Plot 1. Toggle cursor to "On," by hitting Enter. Select the fourth plot (a box plot with outliers) by hitting Enter. Your data should be in List 1, so *x*-list should read "L1." Select "Zoom" (3rd button, top row). Choose option 9 (ZoomStat). Reproduce the box plot in scale here. Use trace to find the end of the whisker and the ends of the box and the middle line on the box. Label your axis and scale. Choose a scale appropriate for the space provided.

2.   **Practice with regression:** If you are camping in the woods, can you tell what the temperature is by how quickly the crickets chirp? Examine the data below:

Temperature (°C)	Chirps/min
18	110
19	110
20	130
21	135
23	154
24	158
26	179
29	201
31	210
32	230

Enter this data into L2 and L3. Plot a scatterplot (the first choice in the plots, 2nd Y= again). Reproduce the scatterplot with labeled axes, scale and a title. Choose a scale appropriate for the space provided.   Remember to change the x-and y-lists to L2 and L3!
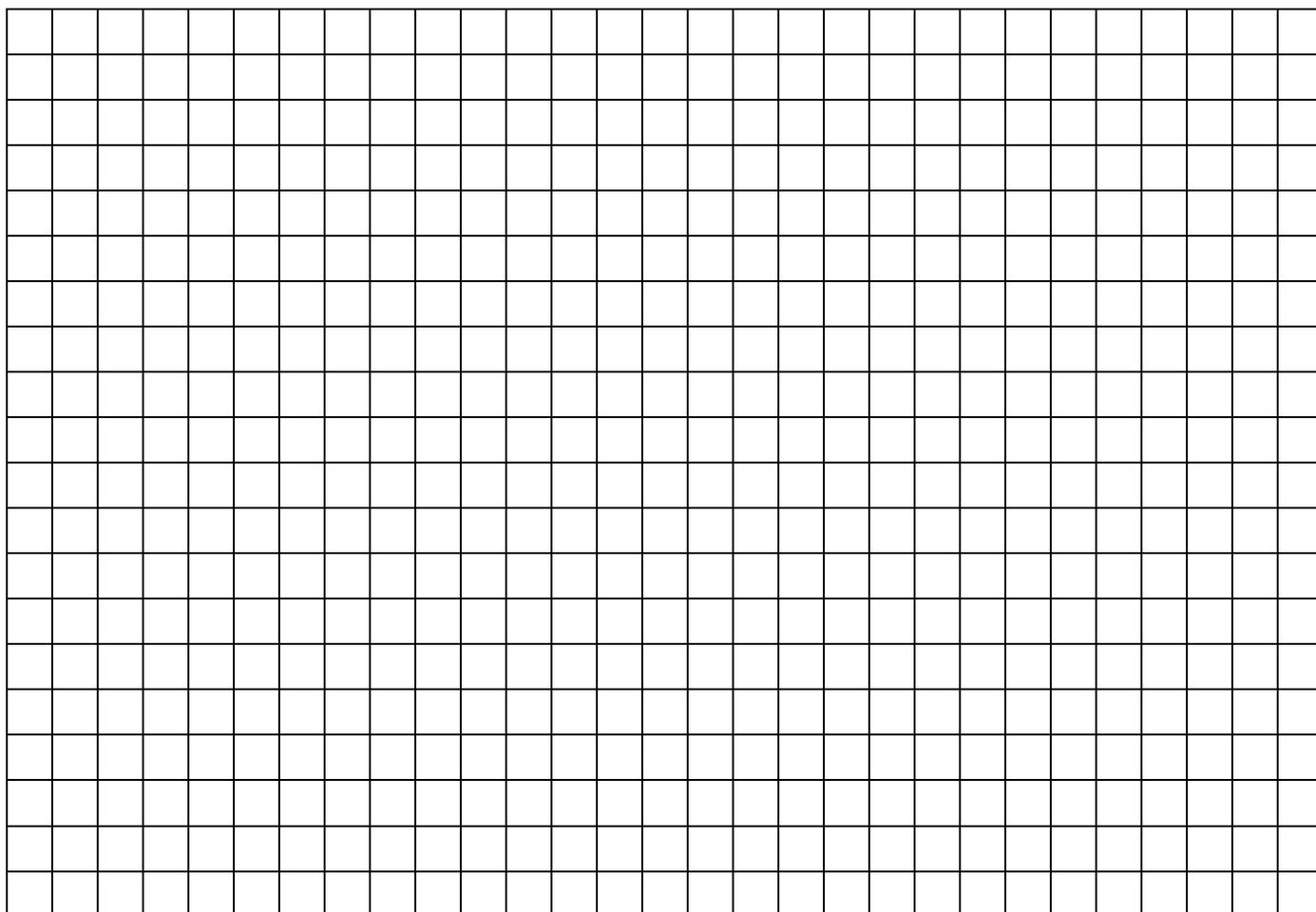
a.   Now find the line of best fit using these commands: Stat→Calc→8→L2, L3. Record the equation of the line along with r and r^2 (turn Diagnostics On if your calculator doesn't show r and r^2).

b.   At $27°$, what would you expect the number of chirps/minute to be (don't forget context—units)?

3. **Collect two newspaper or magazine articles** that include statistical concepts. These may include things like graphs, charts or averages. They may also report conclusions made as a result of looking at data. For each of the articles, highlight the statistics mentioned and answer the following questions on another sheet of paper:
   a. What was the purpose of the article? Why was it written?
   b. Were any conclusions states? Is so, what were they?
   c. Is the article convincing? Do you believe the stated results? Explain.
   BE SURE TO INCLUDE A COPY OF EACH ARTICLE <u>APPROPRIATELY MOUNTED,</u> WITH ITS SOURCE.

4. **Algebra I & II practice**. Copy the information for each problem onto your own paper and answer the questions:
   On graph paper, sketch the graph and state the slope and y-intercept of each line:
   a. $y = \frac{2}{3}(2x - 4)$ b. $3x+2y=14$ c. $\frac{1}{3}y - 6x = 4$

   Solve for the variable:
   d. $4(x - 2) = 3^2 - x$ e. $\frac{1}{3}n + 3 = n - 2$
   f. $9(2p+1) - 3p > 4p - 6$ g. $\frac{2}{3}y = \frac{8}{27}$
   h. $(q - 12)3 \le 5q + 2$ i. $\frac{m}{12} + \frac{5}{6} = \frac{5}{24}$
   j. $-3x^2 + 343 = 0$ k. $x^2 - 8x + 7 = 0$
   l. $2\sqrt{x} + 9 = 21$ m. $\sqrt{2x+10} = x + 1$
   n. $\ln x = 1.6873$ o. $\log_3 81 = x$
   p. $\log_3 x = 5$ q. $\log_x 256 = 8$
   r. $\log 42.117 = .4x - 3.08$ s. $\log_5(x - 4) = 0$

   Write the equation of the line containing the given points:
   t. (6, –2) and (0, 5)   u. perpendicular to: $y=2x-1$, contains (2, 7)
   For each function, find $f(x)$ for $x = -3,\ 0,\ 2$
   v. $f(x) = 4x - 2$ w. $f(x) = 3x^2$
   On your graph paper, create and <u>sketch</u> a(n):
   x. linear function   y. exponential function
   z. quadratic function

5. **Suggested reading** (extra credit available for completing the associated worksheet—send me an e-mail if you would like a copy of the worksheet):
   <u>Damned Lies and Statistics: Untangling Numbers from the Media, Politicians, and Activists</u> -- by Joel Best; Hardcover. Available through the public library or on Amzaon.com, buy used & new from: $14.00

   <u>How to Lie With Statistics</u> -- by Darrell Huff, Irving Geis (Illustrator); Paperback
   On Amazon.com, buy new: $9.56 – buy used & new from: $7.95

6. **Data collection.** Use the following worksheet to collect data on the gas consumption of your car for the entire summer. Record the date, the odometer reading, the number of gallons of gas you put in the car, and the cost per gallon. If you don't drive or have a car, get your parents or an older sibling to do it with you. We will use this data when the class starts to complete a project and several in-class activities.

Car #: _____ Primary Driver: _____

Make: _____ Model: _____ Year: _____

ONE CAR PER SHEET!!							
COMPLETE this Section over the SUMMER				**SAVE this section for the FALL**			
Date	**Odometer Mileage**	**Number of Gallons**	**Price per Gallon**	**Number of miles**	**Total Cost**	**Miles per Gallon**	**Cost per mile**

Feel free to contact me by e-mail over the summer at snickers@egusd.net with any questions you have.