

## AP Statistics

### Summer Review Packet

You must 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.

*This assignment is due at the beginning of the first day of class!*

If you have not yet purchased a graphing calculator, my recommendation is to purchase the TI-84+ graphing calculator or a comparable model. (Please note the TI-85 is **NOT** a comparable model).

Make sure your calculator is capable of performing the following:

- Stat Plots (Box-and-whisker, histograms, scatterplots)
- Regression equations and correlation
- Modified box-and-whisker plot
- Distribution and probability density functions
- Statistical tests (t, z,  $\chi^2$ , confidence intervals)

If you are confused as to which calculator to buy, please feel free to contact me.

**Consult your calculator manual for instructions on the keystrokes necessary to do the following operations:**

1. Enter the following data into your calculator and determine the indicated statistics:

Data
97
15
9
7
7
2
2
2
2
4
13
25

1-Var Statistics:	Mean ( $\bar{x}$ )	
	Median	
	Standard Deviation (s)	

Note that you might want to jot down the steps required to get this information just as a reminder.

Also Practice:	Sort the list in Ascending order Copy the list into a different list
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2. 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 / Minute
18	110
19	110
20	130
21	135
23	154
24	158
26	179
29	201
31	210
32	230

a) Find the regression line ( $y = a + bx$ ) for the data points. Record  $r$  (you must turn the diagnostics on to see this) for future use.

b) At 27°, what would you expect the number of chirps/min. to be? (Show work)

3. Visit the website

[http://www.dartmouth.edu/~chance/teaching\\_aids/data/baseball\\_salaries.html](http://www.dartmouth.edu/~chance/teaching_aids/data/baseball_salaries.html)

and use the data to complete the following:

a) What are the mean, median, and mode of each team?

Team	Mean	Median	Mode
Angels			
Orioles			

b) Which team has the highest average salary?

c) Would the team's ranking have anything to do with its salaries? Justify your answer.

d) What is the salary earned most frequently by an Orioles player?

e) Now, suppose the Angels traded for three superstars, each making \$3,000,000/yr. These superstars replace the players with the lowest salaries on the team. **Recalculate** the mean, median, and mode.

Team	Mean	Median	Mode
Angels			
Orioles			

f) Compare the new mean, median, and mode with the original ones.

g) Which statistic changed the most? The least?

4. An experiment found a significant difference between boys and girls pertaining to their ability to identify objects held in their left hands, which are controlled by the right side of the brains, versus their right hands which are controlled by the left side of their brains. A test was conducted for adult men and women.

The test involved 30 small objects, which participants were not allowed to see. First, they held 15 of the objects one by one in their left hands and guessed what they were. Then they held the other 15 objects one by one in their right hands and guessed what they were. Use **box plots** to compare visually the correct-guess data from this table (i.e. make a box plot on your calculator and then copy it here!):

**Correct Guesses**

Women Left	Women Right	Men Left	Men Right
8	4	7	12
9	1	8	6
12	8	7	12
11	12	5	12
10	11	7	7
8	11	8	11
12	13	11	12
7	12	4	8
9	11	10	12
11	12	14	11
		13	9
		5	9

a) Make a box plot of the Women Left and the Women Right on the same graph (parallel box plots).

b) Make a box plot of the Men Left and the Men Right on the same graph (parallel box plots).

5. Collect one newspaper or magazine article that includes statistical concepts. This may include things like graphs, charts, or averages. It may also report conclusions made as a result of looking at this data. For the article, highlight the statistics mentioned and answer the following questions:

a) What was the purpose of the article? Why was it written?

b) Were any conclusions stated? If so, what were they?

c) Is the article convincing? That is, do you believe the stated results? Explain.

***BE SURE TO INCLUDE A COPY OF THE ARTICLE, APPROPRIATELY MOUNTED WITH ITS SOURCE!***

Due no later than the beginning of the first class in August. This is your first test grade for the course!

<b>Algebra Practice</b>
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1. Given  $y = 12 - \frac{2}{3}x$

a) sketch the graph

b) state the slope and y-intercept

2. Solve for x: SHOW ALL WORK

a)  $\frac{x - 6.1}{3} = 82$

b)  $0.147 = \frac{0.813}{x}$

c)  $\ln x = 1.6873$

d)  $\log 42.117 = .4x - 3.08$

3. A line contains the point (2, 7). Write its equation in slope-intercept form if:

a) slope =  $1/2$

b) another point on the line is (0, 2)

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Suggested reading: [How to Lie with Statistics](#), by Darren Hull, 1954  
Available at the public library or for ~\$7 on amazon.com

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Feel free to email me at [david\\_i\\_beck@mcpsmd.org](mailto:david_i_beck@mcpsmd.org) if you are having difficulty with the use of your calculator to answer these questions.

On the first day of class, bring this work, one (1) 1.69 oz. bag of M&M's candy, your graphing calculator, a three-ring binder, notebook paper, and something with which to write. Have a great summer – I'm looking forward to meeting you in the fall!

Due no later than the beginning of the first class in August. This is your first test grade for the course!