AP Statistics Summer Assignment

Due: First day of class **Name:** _____
(Note: If you take this class in the spring, it is due the first day of the spring semester)

The purpose of the summer assignment in AP Statistics is to prepare students for the fast paced, challenging course that lies ahead. You will be given 4 tasks to complete for this summer assignment. Some tasks are review assignments and some tasks are designed to introduce you to some of the basic concepts in the course. **This assignment will be your first test grade in the course. Any late assignments will be -15 points per day (maximum 2 days late).**

On the first day of class, bring your summer work, your calculator, your notebook, and a 1.69 oz (unopened) bag of regular M&Ms.

I will be checking my e-mail throughout the summer. Please e-mail me with any questions that you may have. Enjoy the rest of your summer!!!!

-Byrd

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TASK # 1 -- Algebra Review/Assessment

Complete each problem, showing **all necessary work** neatly on a separate sheet of paper. Write *only answers* on this sheet. Simplify all answers. Do NOT round.

1. Solve for the variable

a) $4(x-2)=3^2-x$ _____

b) $\frac{1}{3}n+3=n-2$ _____

c) $9(2p+1)-3p>4p-6$ _____

d) $\frac{2}{3}y=\frac{8}{27}$ _____

e) $(q-12)3\le 5q+2$ _____

f) $\frac{m}{12}+\frac{5}{6}=\frac{5}{24}$ _____

g) $\frac{1}{2}x^2-8=0$ _____

h) $-3x^2+343=0$ _____

i) $x^2-8x+7=0$ _____

j) $2\sqrt{x}+9=21$ _____

k) $\sqrt{2x+10}=x+1$ _____

l) $\log_3 81=x$ _____

m) $\log_3 x=5$ _____

n) $\log_x 256=8$ _____

o) $\log_2(x+1)=1$ _____

p) $\log_5(x-4)=0$ q) $2^{3x}-4=13$ r) $e^x=80$

_____ _____ _____

2. Find the slope and y-intercept of the line.

a) $y=\frac{2}{3}(2x-4)$ b) $3x+2y=14$ c) $\frac{1}{3}y-6x=4$

_____ _____ _____ _____ _____ _____

3. Find the slope and write the equation of the line passing through the points.

a) (6,-2) and (0,5) b) (8,-5) and (3,4)

_____ _____ _____ _____

4. On graph paper, plot the given data. Label the axes and connect the points. Then determine if the function is linear, quadratic, exponential, or absolute value. (Each is used only once!)

a) (-3, 4) (-2, 3.5) (-1, 3) (0, 2.5) (1, 2) (2, 1.5) (3, 1) _____

b) (-3, 4) (-2, 3) (-1, 2) (0, 1) (1, 2) (2, 3) (3, 4) _____

c) (-3, 4) (-2, 2) (-1, 1) (0, .5) (1, .25) (2, .125) (3, .0625) _____

d) (-3, 4) (-2, 7/3) (-1, 4/3) (0, 1) (1, 4/3) (2, 7/3) (3, 4) _____

5. For each function, find f(x) for x=-3, 0, and 2

a) $f(x)=4x-2$
$f(-3)=$
$f(0)=$
$f(2)=$

b) $f(x)=3x^2$
$f(-3)=$
$f(0)=$
$f(2)=$

6. Evaluate $g[f(-2)]$ and $f[g(3)]$ for each of the following functions.

a) $f(x)=3x;\ g(x)=2x+3$
$g[f(-2)]=$
$f[g(3)]=$

b) $f(x)=-x;\ g(x)=x^2+5$
$g[f(-2)]=$
$f[g(3)]=$

TASK # 2—Against All Odds Video Worksheet

Go to www.learner.org/resources/series65.html/. Scroll down to the middle of the page and find the first video on the page titled "What is Statistics?". Watch the video once, then again while completing the following worksheet. You may have to pause and rewind the video to answer all questions!

Video #1- What is Statistics?

1. What were the children in the experiment making? _____
2. What was Teresa's experiment attempting to prove?

   _____

   _____
3. What was the new item on Domino's menu? _____
4. What percentage liked both thin crust and thick crust pizza? _____
5. What was the first stage of testing the new thick crust pizza? _____
6. In the consumer trials, how many people did Dominos select for the taste-testing? _____
7. What is Dominos advertising department's job with this new product?

   _____
8. Who is the star of the previous Dominos advertisements? _____
9. What did Dominos do to see if the test commercial would be successful? _____

   _____
10. Fill in the blanks below.

    "Without these statistical analyses, we would never really be sure whether or not two things are

    _____ _____ or not. We would just be guessing.

    _____ help provide us a basis on which to make an _____ decision."
11. What is statistics is fundamental to? _____
12. What are the three steps you would take to "solve a puzzle" that intrigues you?

    _____

    _____

    _____
13. What time in a day does lightning usually begin? _____
14. What deficiency did Sarah have? _____
15. What animal did Statistics help save the lives of in Florida? _____

16. What sport is called a “game of Statistics”? _____

17. What was the boat measuring in the Chesapeake Bay? _____

18. What drug might help save the lives of people who suffer from heart attacks? _____

19. What is the foundation of modern quality control? _____

20. Probability calculations showed that 6 joints in the *Challenger* shuttle had a success rate of _____%.

21. How did Perez and his lawyer show that the status of Hispanic agents was very unlikely to have arisen by chance alone in the FBI? _____

22. What confidence level did the Duracell associate use when he stated that the battery life of a Duracell battery was 7.5 hours $\pm$ 20 minutes? _____

23. What did statistics show about the witch community and the accuser community of Salem?

_____

_____

24. Describe the result of the study performed in Baltimore about those women who used the existing welfare program and those who used the new “Options” program. _____

_____

_____

25. What was the result of Teresa’s experiment? _____

_____

TASK # 3— Using the STAT button and Box Plots

1. Select the STAT button
2. Choose "Edit"
3. Enter the following data into List 1 or L_1

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														

4. Use the following sequence: STAT, CALC, 1-Var Stats, L_1

Record the following (Refer to the manual to see which symbol is which statistic)

- Mean
- Standard Deviation
- N
- Min
- Q1
- Median
- Q3
- Max

Online guidebooks:
Guide book for TI-84: http://education.ti.com/calculators/downloads/US/Guidebooks/Detail?id=6125
Guide book for TI-83: http://education.ti.com/calculators/downloads/US/Guidebooks/Detail?id=6124

5. Select **Stat Plot** (2^{nd} Y =)
6. Hit Enter to select Plot 1
7. Toggle cursor to "On," by hitting Enter
8. Select the 4^{th} plot (a box plot with outliers) by hitting Enter
9. Your data should be in List 1, so x-list should read "L_1."
10. Select "Zoom" (3^{rd} button, top row).
11. Choose option 9 (ZoomStat).

Reproduce the box plot in scale below. Use the TRACE button 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.

TASK # 4— Practice with Regression

If you are camping in the woods, can you tell what the temperature is (y) if you know how fast a cricket chirps?

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

Enter this data in L_1 and L_2. Plot a scatterplot (the first choice in the plots, 2^{nd} Y = again). Reproduce the scatterplot **with labeled axes, scale and a title.** Choose a scale appropriate for the space provided.

Turn on Diagnostics using this sequence: 2^{nd}- 0 - x^{-1} – use down arrow until you see DiagOn- Enter x 2

Find the line of best fit along with r and r^2 using these commands: Stat- Calc- 4- L_1, L_2.

Record calculations here (round 3 places):_____

If there were 190 chirps per minute, what would you predict the temperature to be? (Don't forget unit!!)