

AP Statistics Summer Assignment 2018~2019

Welcome to AP Statistics! Many students find this class to be challenging, but fun and unlike any other math class they have taken. You will learn how statisticians collect data, how to analyze data in context and a lot more about probability and inference. You will use your math skills to perform statistical calculations and analysis and then use your verbal skills to write descriptive paragraphs explaining your analyses and conclusions. We will spend considerable time preparing for the AP exam, and you should plan on taking that exam in May. You also will learn a lot about the world around us – looking at data and analyzing data about health, science, politics, sports, and many other topics.

Below are the directions for the summer assignment. Its purpose is to get you off to a strong start by reviewing Algebra and researching a little about Statistics and its role in the world. The assignment is due on the first day of school, Tuesday August 14, 2018. It will count as your first test. Please read the directions carefully and contact me by email at nmb5729@lausd.net if you have any questions or concerns. ***Don't procrastinate until the last couple of days before school starts to begin this assignment!*** I recommend that you begin about halfway through the summer and then work on it a few hours a week so the material will be fresh in your mind when school starts. Have a wonderful summer!

Ms. Burawski

Resources/supplies needed for AP Statistics:

- Our textbook is ***The Practice of Statistics*** (Starnes, Yates, Moore, 5th ed.) This textbook is well aligned to the AP Statistics curriculum and the sample problems and activities will prepare you well for the AP Statistics exam.
- You will need a **TI-83/84 graphing calculator** for this course. I will be demonstrating problems using the TI-84 all year and tips on how to use this calculator are provided throughout the textbook.
- I also recommend **a large binder**, since I will provide a large number of AP practice problems.

PART I: Algebra I and II Review

Show work for all problems on a separate sheet. Give answers on this page. Simplify answers. Do not approximate or round.

1. $4(x - 2) = 3^2 - x$

2. $\frac{1}{3}n + 3 = n - 2$

3. $9(2p + 1) - 3p \geq 4p - 6$

4. $\frac{2}{3}y = \frac{8}{27}$

5. $q - 12 < 5q + 2$

6. $\frac{m}{12} + \frac{5}{6} = \frac{5}{24}$

7. $\frac{1}{2}x^2 - 8 = 0$

8. $-3x^2 + 243 = 0$

9. $x^2 - 8x + 7 = 0$

10. $2\sqrt{x} + 9 = 21$

11. $\sqrt{2x+10} = x+1$

12. $3^{x+5} = 3^{4x-1}$

13. $\log_3 81 = x$

14. $\log_3 x = 5$

15. $\log_x 256 = 8$

16. $\log_2(x + 1) = 1$

17. $\log_5(x - 4) = 0$

18. $5(2)^{3x} - 4 = 13$

19. Write equations of the horizontal and vertical lines that pass through point $(-6, 2)$. Indicate which line is horizontal and which is vertical.

20. Find the slope and y-intercept of each line.

a) $y = \frac{2}{3}(2x - 4)$

b) $3x + 2y = 14$

c) $\frac{1}{3}y - 6x = 4$

slope = _____

slope = _____

slope = _____

y-intercept = _____

y-intercept = _____

y-intercept = _____

21. Find the slope and the equation of the line containing the given points.

a) (6, -2) and (0, 5)

b) (8, -5) and (3, 4)

slope = _____

slope = _____

Equation: _____

Equation: _____

22. For each function find $f(x)$ when $x = -3, 0$ and 2 .

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

b) $f(x) = 5x^2$

$f(-3) =$ _____

$f(-3) =$ _____

$f(0) =$ _____

$f(0) =$ _____

$f(2) =$ _____

$f(2) =$ _____

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

a) $f(x) = 3x; g(x) = 2x + 3$

b) $f(x) = -x; g(x) = x^2 + 5$

$g[f(-2)] =$ _____

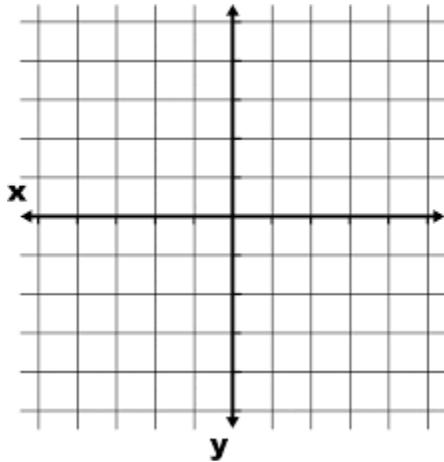
$g[f(-2)] =$ _____

$f[g(3)] =$ _____

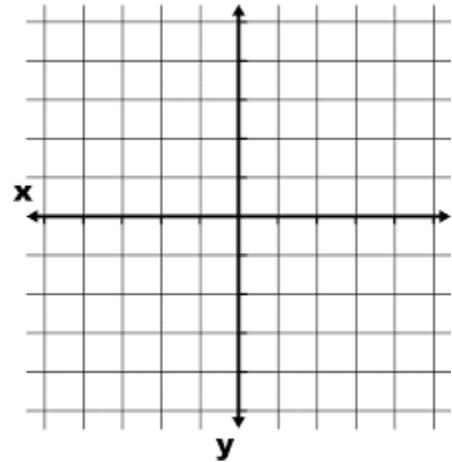
$f[g(3)] =$ _____

24. Plot the data given. Describe each set as linear, exponential, quadratic or absolute value.

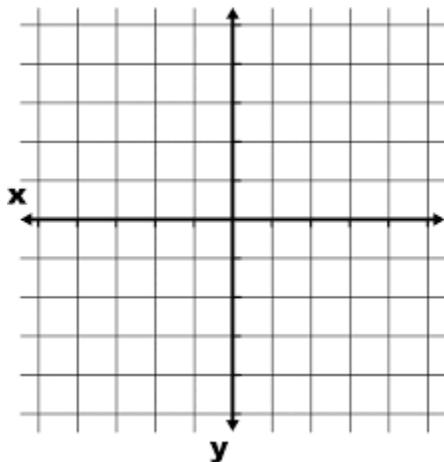
- a) $(-3, 4)$, $(-2, 3\frac{1}{2})$, $(-1, 3)$, $(0, 2\frac{1}{2})$,
 $(1, 2)$, $(2, 1\frac{1}{2})$, $(3, 1)$
-



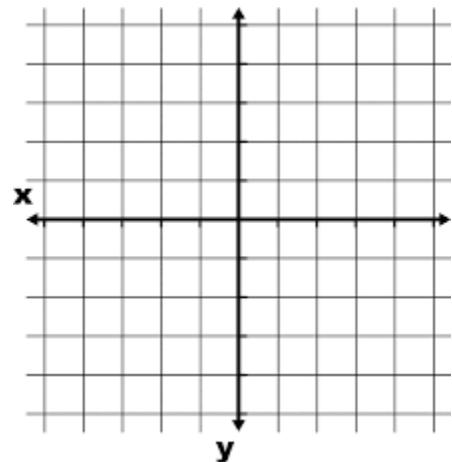
- b) $(-3, 4)$, $(-2, 3)$, $(-1, 2)$, $(0, 1)$, $(1, 2)$,
 $(2, 3)$, $(3, 4)$
-



- c) $(-3, 4)$, $(-2, 2)$, $(-1, 1)$, $(0, \frac{1}{2})$,
 $(1, \frac{1}{4})$, $(2, \frac{1}{8})$, $(3, \frac{1}{16})$
-



- d) $(-3, 4)$, $(-2, \frac{7}{3})$, $(-1, \frac{4}{3})$, $(0, 1)$, $(1, \frac{4}{3})$,
 $(2, \frac{7}{3})$, $(3, 4)$
-



PART II: Reflection Paper

In AP Statistics you will do more writing than in any other math course. A statistic is a number with a context, and the context matters. The same percentage can mean very different things in different situations. To get you ready for the wonderful world of statistics, you need to be ready to see the context and write about it. So... below is a list of books for you to choose from.

You are to choose a book from the list below, read it and write a two to four page reflection (double-spaced, 12 point simple font such as Arial, Courier, Times Roman, Verdana, etc). If none of the books below appeal to you, you may find one on your own, **as long as you get my approval**. The important condition is that the book must be nonfiction and relate to the use of Statistics or Probability in the real world.

Your reflection paper should include:

1. The title and author of the book you chose and why you chose it.
2. The central problem or issue in the book: What was the decision being made or central problem/question of the book?
3. How was data or probability used to solve the problem?
4. Statistics concepts to look for:
 - i. Experimental Design – what components of the experiment(s) does the author make a point to describe?
 - ii. Long-Run behavior: when are events unpredictable and when are they predictable?
 - iii. Methods of gathering data
 - iv. The placebo effect and significantly different results
 - v. Analysis of variability – how results are different from one sample to another
 - vi. Using data to make a conclusion or decision
5. What solution or conclusion did the author make?
6. Include something new that you learned – it may be Statistics related or not

Here is your list of books, happy reading!

Moneyball: The Art of Winning an Unfair Game, Michael Lewis

Bringing Down the House: The Inside Story of Six MIT Students Who Took Vegas for Millions, Ben Mezrich

The Lady Tasting Tea, David Salsburg

The Unfinished Game, James Devlin

Outliers: The Story of Success, Malcom Gladwell

Against The Gods: The Remarkable Story of Risk, Peter L. Bernstein

Predictably Irrational: The Hidden Forces that Shape our Decisions, Dan Ariely

The Panic Virus: The True Story Behind the Vaccine - Autism Controversy,
Seth Mnookin

Do You Believe in Magic?: Vitamins, Supplements, and All Things Natural; A Look Behind the Curtain, Paul A. Offit

The Ghost Map: The Story of London's Most Terrifying Epidemic - And How It Changed Science, Cities, and the Modern World, Steven Johnson

*** The following is a list of words that have specific statistical meaning. Avoid using them the way that they are used in common conversation (colloquially) until you know the precise Statistics definitions. Use them only if the author has, and then use them the same way.

1. Random
2. Correlation
3. Bias

AP Statistics Summer Assignment Grading Rubric

Component	Essentially Complete	Partially Complete	Incomplete
Title, Author and Reason for Choice			
Central Problem, Issue, or Question			
Identify Statistics Content			
How Data/Statistics Were Used			
Solution/Conclusion Described			
Something New Learned			
Demonstrates understanding of the text			
Appropriate vocabulary			
Organized Paper: Introduction, Conclusion			
Writing Mechanics (spelling, punctuation)			