

## Problem Set Section 2A

1. Describe each of the following symbols. What does the symbol represent? Is the symbol describing a sample statistic or a population parameter?

$N, n, \pi, \hat{p}, \mu, \bar{x}, \sigma, s, \sigma^2, s^2, \rho, r, \beta_1, b_1$

(#2-25) Directions: Determine if the numbers in the following clips from magazines and newspapers are describing a population parameter or a sample statistic. In each case, give the symbol we would use for the parameter or statistic. ( $N, n, \pi, \hat{p}, \mu, \bar{x}, \sigma, s, \sigma^2, s^2, \rho, r, \beta_1, b_1$ )

2. "Our study found that of the 200 people tested in the sample, only 3% showed side effects to the medication."
3. "It has been speculated for years that the mean average height of all men is 69.2 inches, but our sample data disagrees with this. Our sample mean average was 69.5 inches."
4. "The standard deviation for all humans is about 1.8 degrees Fahrenheit. A random sample of 52 people found a standard deviation of 1.739 degrees Fahrenheit".
5. "We tested a sample of 300 incoming college freshman and found that their mean average IQ was 101.9 with a standard deviation of 14.8".
6. "The mean average human body temperature has long been thought to be 98.6 degrees Fahrenheit, but our sample of 63 randomly selected adults had a mean average was 98.08".
7. "The mean average number of units that students take per semester is about 12, but when we took a random sample of 160 college students found that the mean average was 12.37 units."
8. "A public opinion poll showed that 47.2% of voters would vote for the candidate, but when the votes or entire population were counted we found that only 41.3% voted for the candidate."
9. "According to the California Department of Finance, the Los Angeles county population as of January 2015 was approximately 10,136,559 people."
10. "We want to check and see if the population correlation coefficient could be zero. The sample correlation coefficient was 0.338."
11. "Many experts think that the population slope for weight gain in these type of bears is about 3 pounds per month, but the sample slope from 54 bears was 2.7055 pounds per month."
12. "A random sample of 40 men found that the sample variance for systolic blood pressure was 109.474, but this indicates that the population variance could be as high as 173."
13. "According to the 2015 U.S. census, approximately 78% of U.S. households own a computer. A random sample of 165 households found that 81.2% of them owned a computer."
14. "We think that the population correlation coefficient is zero. The sample correlation coefficient was 0.0371."
15. "IQ tests are supposed to have a population mean of 100 and a population standard deviation of 15 IQ points. This could be correct since our random sample data had a mean of 97.7 and the standard deviation of 15.3 IQ points."
16. "When analyzing the relationship between the amount of mercury and the pH of Florida lakes, we found a sample slope of  $-0.152$ . We are wondering if the population slope could be zero."
17. "We believe that the population mean average pH of Florida lakes is approximately 6.7, yet our sample data from 53 randomly selected lakes had a mean of 6.591."
18. "While the sample variance is 37.882, we think the population variance could be as high as 50."



19. "We believe there are approximately 59,530 people currently living in Canyon Country, CA."
20. "A random sample of 60 adults found that 21.7% of them had this characteristic. However, we think the population percentage is probably closer to 15%."
21. "The mean average weight of the 10 male lions was 437.2 pounds. Most people believe that the mean average weight of all male lions is closer to 420 pounds."
22. "The correlation coefficient for the ordered pair sample data was 0.922. This seems very significant, but does this indicate that the population correlation coefficient is 1?"
23. "We analyzed the gas usage and distance for large 18-wheeler trucks and found the sample slope to be 6.23 miles per gallon. Articles online indicate that the population slope for all 18-wheeler trucks is closer to 5.9 miles per gallon."
24. "The sample standard deviation was approximately \$3.78. We want to see if the population standard deviation could be \$3.50."
25. "A random sample of 38 cars, found that the mean average displacement was 177.289 and the standard deviation was 88.877."
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