PSYC 2317: Statistical Methods for Psychology

Tarleton State University | Exam 1

Instructions: please complete each problem below. You may submit your completed exam in Canvas using one of two file formats: either (1) write your solutions on paper and scan to a PDF, or (2) write your solutions in a Word/OpenOffice document. On either method, please show (or describe) as much work as possible. Report your final answers rounded to 2 decimal places.

1. A sample of $N = 23$ scores has a mean of $\overline{X} = 7$. One score of $X = 15$ is removed from the sample. What is the new value for the sample mean?

2. An expert reviews a sample of 8 scientific articles and records the following numbers of errors in each article: 5, 3, 9, 3, 4, 2, 6, 8. Compute the mean and median for this data.

3. A social psychologist records the age (in years) that a sample of seven participants first experienced peer pressure. The recorded ages are 13, 21, 16, 15, 11, 15, 14. Compute the variance and standard deviation for this data.

4. For a set of scores with mean 80 and standard deviation 10, find the Z-score that corresponds to each of the following X values: 85, 105, 70, 45.

5. For a set of scores with $\mu = 30$ and $\sigma = 12$, find the X-value that corresponds to each of the following Z-scores: 1.50, -0.50, 2.00, -1/3

6. A set of exams are reported as X values and Z-scores. On this exam a score of $X = 82$ corresponds to a $Z = 0.5$ and $X = 67$ corresponds to a $Z = -1.0$. Use this information to find the mean and standard deviation for the complete set of exams.

7. A set of exam scores has a mean of 50 and a standard deviation of 8. The instructor would like to transform the scores into a *standardized* distribution with a new mean of 100 and new standard deviation of 15. Find the *transformed* value for each of the following scores from the original population: 50, 52, 46, 34.

8. A normal distribution has a mean of $\mu = 90$ with $\sigma = 12$. What proportion of scores in this distribution are:

   (a) above 93?

   (b) below 102?

   (c) between 81 and 93?

9. The average employee in the US spends $\mu = 25$ minutes commuting to work each day. Assume that the distribution of commute times is normal with a standard deviation of $\sigma = 8$ minutes.

   (a) What proportion of employees spend less than 17 minutes a day commuting?

   (b) What proportion of employees spend more than 35 minutes commuting each day?

10. For a normal population with $\mu = 50$ and $\sigma = 12$, what is the probability of obtaining a *sample mean*:

    (a) greater than 53 for a sample of $n = 36$ scores?

    (b) greater than 53 for a sample of $n = 9$ scores?