

Chapter 6.1, 6.2 Classwork

1. Assume that scores on a bone mineral density test are normally distributed with a mean of 0 and a standard deviation of 1.
 - a. Find the z-score that separate the lowest 9% of scores from the highest 91%.
 - b. For a randomly selected subject, find the probability of a score greater than -2.93.
 - c. For a randomly selected subject, find the probability of a score between 0.87 and 1.78.
2. Identify the values of μ and σ for the standard normal distribution.
3. Assume that women have diastolic blood pressures that are normally distributed with a mean of 70.2 mm Hg and a standard deviation of 11.2 mm Hg.
 - a. Find the probability that a randomly selected woman has a normal diastolic blood pressure level, which is below 80 mm Hg.
 - b. Find the probability that a randomly selected woman has a diastolic blood pressure level between 60 mm Hg and 80 mm Hg.
 - c. Find P_{90} , the 90th percentile for the diastolic blood pressure levels for women.

Chapter 6.3, 6.4 Classwork

4. Use the population $\{34, 36, 41, 51\}$ of the amounts of caffeine (mg/12 oz) in Coca-Cola Zero, Diet Pepsi, Dr. Pepper, and Mellow Yello Zero. Assume that random samples of size $n = 2$ are selected with replacement.
 - a. After identifying the 16 different possible samples, find the mean of each sample.
 - b. Construct a table representing the sampling distribution of the sample mean.
5. Assume that females have pulse rates that are normally distributed with a mean of 74.0 beats per minute and a standard deviation of 12.5 beats per minute.
 - a. If 1 adult female is randomly selected, find the probability that her pulse rate is less than 80 beats per minute.

Continue from previous problem.

- b. If 16 adult females are randomly selected, find the probability that they have pulse rates with a mean less than 80 beats per minute.

- c. Why can the normal distribution be used in part(b), even though the sample size does not exceed 30?

- d. If 1 adult female is randomly selected, find the probability that her pulse rate is greater than 70 beats per minute.

- e. If 25 adult females are randomly selected, find the probability that they have pulse rates with a mean greater than 70 beats per minute.

- f. If 1 adult female is randomly selected, find the probability that her pulse rate is between 72 beats per minute and 76 beats per minute.

- g. If 4 adult females are randomly selected, find the probability that they have pulse rates with a mean between 72 beats per minute and 76 beats per minute.

Chapter 7 Classwork

6. Here is a 95% confidence interval estimate of the proportion of adults who say that the law goes easy on celebrities:
 $0.692 < p < 0.748$ (based on data from a Rasmussen Reports survey).
 - a. What is the best point estimate of the proportion of adults in the population who say that the law goes easy on celebrities?
 - b. Write a brief statement that correctly interprets the confidence interval given.
 - c. Find the critical value that would be used for constructing a 99% confidence interval estimate of the population proportion.
7. *USA Today* reported that 40% of people surveyed planned to use accumulated loose change for paying bills. The margin of error was given as ± 3.1 percentage points. Identify the confidence interval that corresponds to that information.
8. In a Harris poll of 2036 adults, 40% said that they prefer to get their news online.
 - a. Construct a 95% confidence interval estimate of the percentage of all adults who say that they prefer to get their news online.
 - b. Can we safely say that fewer than 50% of adults prefer to get their news online?

9. Find the sample size required to estimate the percentage of college students who take a statistics course. Assume that we want 95% confidence that the proportion from the sample is within four percentage points of the true population percentage.

10. Listed below are Richter scale magnitudes of randomly selected earthquakes.

3.09	2.76	2.65	3.44	3.01	2.94	3.45	2.72	2.69	2.89	2.71	2.76
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- Identify the best point estimate of the population mean μ .
 - Construct a 95% confidence interval of the mean magnitude of the population of earthquakes.
 - Write a statement that interprets the confidence interval.
11. Find the sample size required to estimate the mean IQ of professional musicians. Assume that we want 98% confidence that the mean from the sample is within three IQ points of the true population mean. Also assume that $\sigma = 15$.