

Review Ch.3

1. Why is the **standard deviation** usually preferred to the variance as a measure of dispersion?
2. In a left-skewed distribution, which characteristic of central tendency is the smallest one?
3. Salary data was collected for a local university. The average salary for faculty at the university was \$73,661. The median salary was \$86,810, and the most common salary (the mode) for the collected data set was \$89,200. Is the distribution likely left skewed, right skewed, or symmetric?
4. Civil engineering graduate students weighed a random sample of vehicles passing over a small bridge here in Miami. The standard deviation for the weights of the sampled cars was 953 pounds. What unit of measurement would the variance of the data have?
 - a. A. Pounds
 - B. Root Pounds
 - C. Pounds Squared
 - D. Kilograms
5. NPR (National Public Radio) claims that their average listener listens to NPR programming for 3.2 hours every day. To test this claim a newspaper conducted a poll of 200 random NPR listeners. Each of the polled listeners were asked to estimate the amount of time they listened to NPR each day. The results of the poll were summarized and expressed as a z score by using the claimed value of 3.2 hours as the population mean. The resulting z score was -0.46. Based on the z score, does NPR's claim appear to be plausible?
6. Responding to criticism from nutritionists, the CEO of a company that operates a chain of movie theatres claims that typically customers only eat half of the bag of large popcorn served at its theatres. If true, this would equate to an average of 600 calories of popcorn consumed by customers ordering the large tub of popcorn. Researchers weighed the contents of a random sample of customers' large popcorn containers before and after their movie. The sample results were summarized into a z score by using the claimed value of 600 calories as the population mean. The resulting z score was 3.74. Based on this result, does the CEO's claim seem credible?
7. **A.** Suppose a light bulb manufacturer claims that the mean lifetime of its bulbs is 35 hours. Assume you have prior knowledge that the bulb lifetimes have mound shaped distribution with a standard deviation of 5 hours. If the manufacturer's claim is true, approximately what percent of light bulbs will burn out in less than 20 hours?

B. Suppose you randomly select one of the bulbs and it burns out in less than 20 hours. Do you suspect the manufacturer's claim is incorrect? EXPLAIN.

C. What percentage of bulbs can be expected to burn out between 30 and 45 hours?

8. What useful information can **Chebyshev's** theorem provide us with for a set of data? What assumptions about the shape of the distribution of the data does the theorem make?
9. A buyer for a lumber company must decide whether to buy a piece of land containing 5,000 pine trees. If 1,000 of the trees are at least 40 feet tall, the buyer will purchase the land; otherwise, he will not. The owner of the land reports that the heights of the trees have a mean of 30 feet and a standard deviation of 3 feet. Based on this information, what is the buyer's decision?
10. According to a report by Common Sense Media, teens are spending an average of 9 hours per day in front of a screen for entertainment. The standard deviation for the time teens spend in front of a screen for entertainment is 2.2 hours. What is the maximum percentage of teens that spend less than 4 hours in front of a screen for entertainment each day?
11. **In skewed-left distributions, what is the relationship of the mean, median, and mode?**
- a. Mean > median > mode
 - b. Median > mean > mode
 - c. Mode > median > mean
 - d. Mode > mean > median

14 . Which of the following is a measure of relative standing?

- a. Percentile
- b. Variance
- c. Mode
- d. Standard Deviation

15. At a hospital nursing station, the following information is available about a patient. For each variable described, indicate whether it is nominal, ordinal, interval or ratio.

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|---------------------------|----------------|
| 1) Name: | Jim Wood |
| 2) Age: | 27 |
| 3) Weight: | 165 lb. |
| 4) Blood type: | A |
| 5) Temperature: | 96.8 F |
| 6) Condition: | Fair |
| 7) Date of admission: | March 21, 2003 |
| 8) Response to treatment: | Excellent |