Answer Key:
1. A **parameter** is a measure that describes the population where a **statistic** describes a sample.

2. A **significance level** measures how frequently the conclusion will be wrong.

3. A **confidence level** is the proportion of times that an estimating procedure will be correct.

4. **Descriptive** statistics deals with methods of organizing, summarizing, and presenting data in a convenient and informative way.

5. **Inferential** statistics is a body of methods used to draw conclusions or inferences about characteristics of populations based on sample data.

6. A **Frequency Distribution** represents summarized data in a table, which presents the categories and their counts.

7. A **pie chart** is used to display proportions where a **bar chart** is used to display frequencies.

8. An **exhaustive** list means that every possible outcome is noted.

9. **Mutually exclusive** means that no two outcomes can occur at the same time.

10. The values of **Nominal** Data are categories.

11. **Ordinal** Data appear to be categorical in nature, but their values have an order or a ranking to them.

12. Arithmetic operations can be performed on **Interval** Data.

13. A histogram is said to be **symmetric** if, when we draw a vertical line down the center of the histogram, the two sides are identical in shape and size.

14. In a histogram a **modal** class is the one with the largest number of observations.

15. A **bimodal** histogram has two peaks, not necessarily equal in height.
16. **Non-sampling** error results from mistakes made in the acquisition of data or the sample observations being selected improperly.

17. **Target** population is the population about which we want to draw inferences.

18. **Sampled** population is the actual population from which the sample has been taken.

19. Over the years, a lot of thought has been put into the science of the design of survey questions. Key design principles:

   A. Keep the questionnaire as short as possible.
   B. Ask short, simple, and clearly worded questions.
   C. Start with demographic questions to help respondents get started comfortably.
   D. Use dichotomous (yes|no) and multiple choice questions.
   E. Use open-ended questions cautiously.
   F. Avoid using leading questions.
   G. Pretest a questionnaire on a small number of people.
   H. Think about the way you intend to use the collected data when preparing the questionnaire.

20. A. \( P(S) = \frac{180}{400} = 0.450 \)
    B. \( P(S \text{ and } W) = \frac{40}{400} = 0.100 \)
    C. \( P(S \text{ or } W) = \frac{180}{400} + \frac{160}{400} - \frac{40}{400} = \frac{300}{400} = 0.750 \)
    D. \( P(S|W) = \frac{40}{160} = 0.250 \)
    E. \( P(S|W) = 0.250 \) and \( P(S) = 0.450 \), so, no, the events are not independent, they are dependent.
    \( P(S|W) \neq P(S) \)

   S = Stayed up all night
   W = Did well on the midterm

21. A. 1
    B. 75
    C. \( P(X = 0) = \frac{9}{75} = 0.120 \)

22. A. \( 15LN \div 10LN \times 3.3 + 1 = 4.88 \) round up to 5
    B. \( (260 - 190) \div 5 = 14 \)

23. A. 1.900
    B. 1.663
    C. 87.526%
24. 0.124

25. A.
Quartile 1 = Lp = \((25 + 1) \times \frac{25}{100}\) = 6.5  6th = 148  7th = 151
\[148 + (151 - 148) \times 0.5 = 149.5\]
Quartile 3 = Lp = \((25 + 1) \times \frac{75}{100}\) = 19.5  19th = 169  20th = 171
\[169 + (170 - 169) \times 0.5 = 170\]
\[170 - 149.5 = 20.5\]
B. Lp = \((25 + 1) \times \frac{45}{100}\) = 11.7  11th = 156  12th = 157
\[156 + (157 - 156) \times 0.7 = 156.7\]