Chapter 2 Test A - Multiple Choice

Section 2.1 (Visualizing Variation in Numerical Data)

1. [Objective: Understand the difference between how observations are recorded in dotplots, histograms, and stemplots.] How are individual observations recorded in a dotplot, a histogram, and a stemplot?

   a. A dotplot displays the actual values of observations. A histogram displays a dot for every observation. A stemplot uses bars to display intervals of observations.

   b. A dotplot displays a dot for every observation. A histogram uses bars to display intervals of observations. A stemplot displays the actual values of observations.

   c. A dotplot displays the actual values of observations. A histogram uses bars to display intervals of observations. A stemplot displays a dot for every observation.

   d. A dotplot uses bars to display intervals of observations. A histogram displays a dot for every observation. A stemplot displays the actual values of observations.

2. [Objective: Understand the difference between frequencies and relative frequencies.] What is the difference between a histogram and a relative frequency histogram?

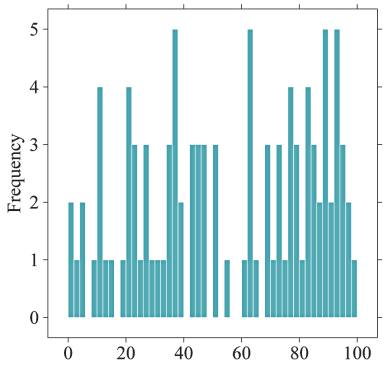
   a. A histogram uses numbers to record how many observations are in a data set, and a relative histogram uses categories.

   b. A histogram uses categories to record how many observations are in a data set, and a relative histogram uses counts.

   c. A histogram uses counts to record how many observations are in a data set, and a relative histogram uses proportions.

   d. A histogram uses proportions to record how many observations are in a data set, and a relative histogram uses counts.

3. [Objective: Determine significance of bin width in a histogram.] In the following histogram, what can you conclude about the bin width?



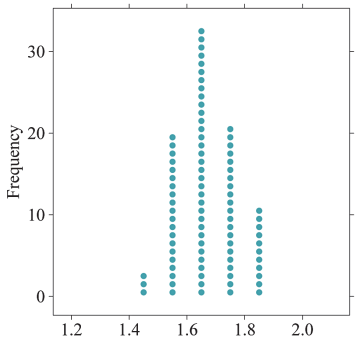
a. The bin width is too small. We are given too much detail.

b. The bin width is too large. We are given too much detail.

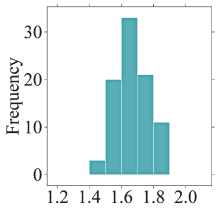
c. The bin width is too small. We are hiding details of the distribution.

d. The bin width is too large. We are hiding details of the distribution.

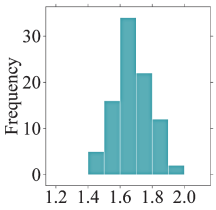
4. [Objective: Understand that a distribution of a sample of data can be displayed multiple ways.] Which histogram represents the same data as the dotplot shown below?



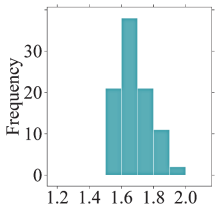
a.



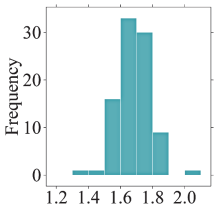
b.



c.



d.



Section 2.2 (Summarizing Important Features of a Numerical Distribution)

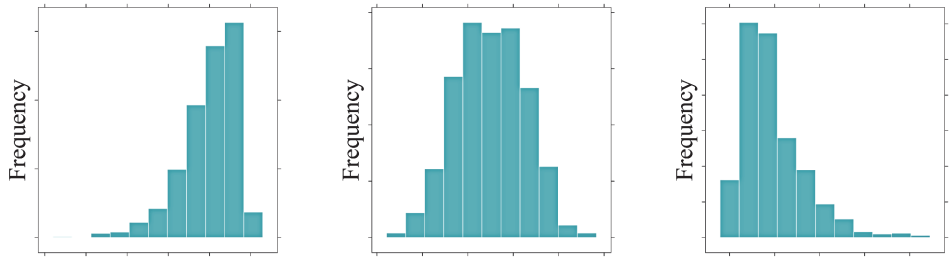
5. [Objective: Know what to pay attention to in distributions of numerical data.] When examining distributions of numerical data, what three components should you look for?

   a. Symmetry, center, and spread
   b. Symmetry, skewness, and spread
   c. Shape, symmetry, and spread
   d. Shape, center, and spread

6. [Objective: Understand modality in distributions.] Which of the following would likely show a bimodal distribution in a histogram?

   a. The heights of all students in a high school band.
   b. The ages of students who attend a 4-year university.
   c. The number of hours preschoolers plays outside.
   d. The final exam grades for an introductory statistics course.

For questions (7) - (9), match one of the histograms below with its appropriate description.



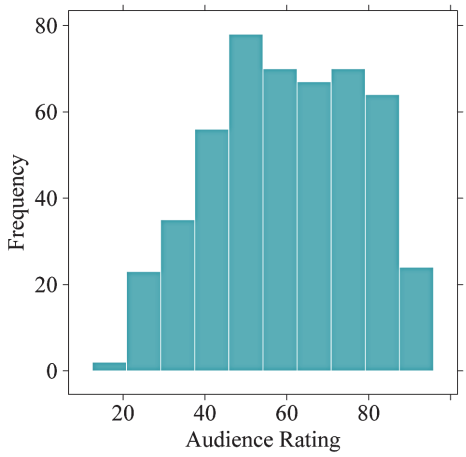
a. b. c.

7. [Objective: Recognize the shape of a distribution.] The distribution of scores on an easy test is displayed in histogram ___.

8. [Objective: Recognize the shape of a distribution.] The distribution of household income in a large city is displayed in histogram ___.

9. [Objective: Recognize the shape of a distribution.] The distribution of female heights is displayed in histogram ____.

10. [Objective: Understand how to find typical values from a histogram.] The following histogram represents audience movie ratings (on a scale of 1-100) of 489 movies. What is the *typical* movie rating given by audiences according to this distribution?



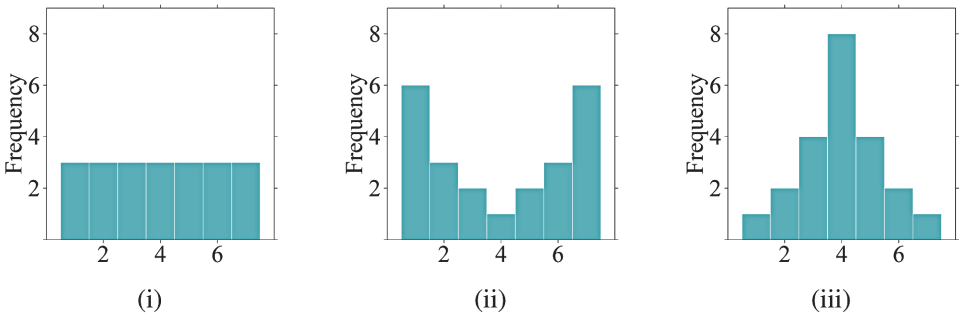
a. The typical value is about 40.

b. The typical value is about 50.

c. The typical value is about 60.

d. The typical value is about 70.

11. [Objective: Determine differences in variability.] Order the following histograms from least to most variability.



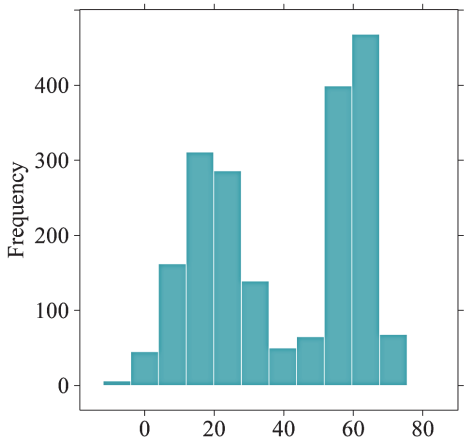
a. (i), (ii), (iii)

b. (ii), (i), (iii)

c. (ii), (iii), (i)

d. (iii), (i), (ii)

12. [Objective: Interpreting typical values of bimodal distributions.] What is the typical value for the histogram shown below?



a. The typical value is 40 because it is the center of the distribution.

b. The typical value is 40 because it is the average of 20 and 60.

c. Since the data are bimodal, a typical value cannot be found.

d. Since the data are bimodal, there are two typical values - one is about 20 and the other is about 60.

Section 2.3 (Visualizing Variation in Categorical Variables)

13. [Objective: Understand differences between bar charts and histograms.] What is the difference between a bar chart and a histogram?

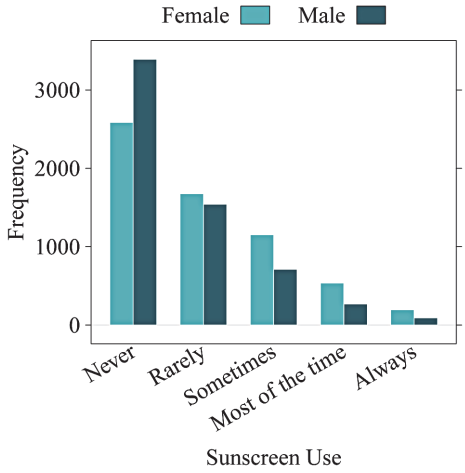
a. They can both be used to represent numerical data.

b. They can both be used to represent categorical data.

c. A bar chart represents numerical data and a histogram represents categorical data.

d. A bar chart represents categorical data and a histogram represents numerical data.

14. [Objective: Interpreting bar charts.] Which statement below is NOT supported by the following bar chart?



a. More females wear sunscreen than males.

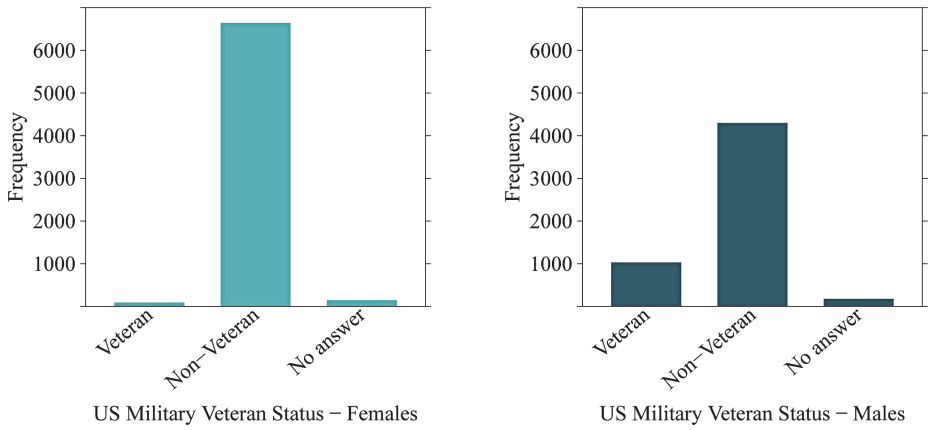
b. Very few people, in general, always wear sunscreen.

c. More males wear sunscreen than females.

d. About 50% of males never wear sunscreen.

Section 2.4 (Summarizing Categorical Distributions)

15. [Objective: Determine the variability of categorical data from a bar chart.] The bar charts below depict the veteran statuses of Americans, separated by gender. Which bar chart has more variability in veteran status? Why?



a. The female bar chart shows more variability because many of the observations fall into one category ("Non-Veteran").

b. The female bar chart shows more variability because there are more observations in the different categories than there are for males.

c. The male bar chart shows more variability because many of the observations fall into one category ("Non-Veteran").

d. The male bar chart shows more variability because there are more observations in the different categories than there are for females.

16. [Objective: Understand the term *mode* when describing categorical variables.] What does it mean to find the *mode* of a bar chart?

    a. You cannot find a mode for categorical data. Modes are only used with numerical data.
    b. The mode can be found by finding the bar, or category, with the most observations.
    c. The mode can be found by adding up the total number of categories.
    d. The mode can be found by adding up the total number of observations and dividing by the number of categories.

Section 2.5 (Interpreting Graphs)

Use the following information to answer questions (17) - (18):

A large state university conducted a survey among their students and received 300 responses. The survey asked the students to provide the following information:

* Age
* Year in School (Freshman, Sophomore, Junior, Senior)
* Gender
* GPA

17. [Objective: Determine appropriate graph based on variable type.] What type of graph would you use to describe the variable Age?

    a. A histogram because Age is a numerical variable.
    b. A histogram because Age is a categorical variable.
    c. A bar chart because Age is a numerical variable.
    d. A bar chart because Age is a categorical variable.

18. [Objective: Determine appropriate graph based on variable type.] What type of graph would you use to describe the variables Gender and Year in School?

    a. A side-by-side histogram should be used since these are two numerical variables.
    b. A side-by-side histogram should be used since these are two categorical variables.
    c. A side-by-side bar chart should be used since these are two numerical variables.
    d. A side-by-side bar chart should be used since these are two categorical variables.

A word cloud was created using the first chapter of Lewis Carroll's Alice's Adventures in Wonderland. (Note that filler words such as "the," "a/an," and "and" were excluded from the plot.)
Use the word cloud to answer questions (19) - (20).

19. [Objective: Interpreting word clouds.] According to the word cloud, what is the most common word in the first chapter of Alice's Adventures in Wonderland? Why?

    a. The most common word is "alice" because it is the largest in size.

    b. The most common word is "alice" because she is a main character in the story.

    c. The most common word is "marked" because it appears at the top of the cloud.

    d. The most common word is "garden" because it appears in the middle of the cloud.

20. [Objective: Pitfalls of using word clouds.] What information is NOT explicitly portrayed in the word cloud?

    a. The words that occur most frequently in the chapter.

    b. The specific word that occurs most often.

    c. The number of times each word occurs.

Chapter 2 Test A - Answer Key

1. B
2. C
3. A
4. A
5. D
6. A
7. A
8. C
9. B
10. C
11. D
12. D
13. D
14. C
15. D
16. B
17. A
18. D
19. A
20. C