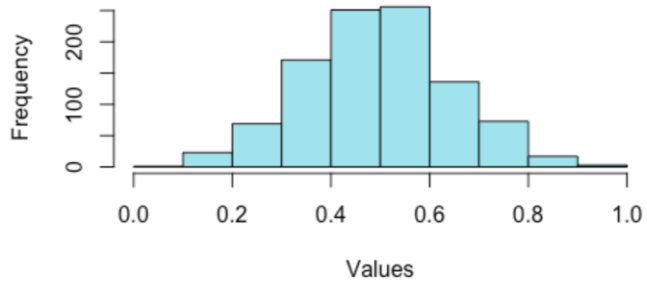
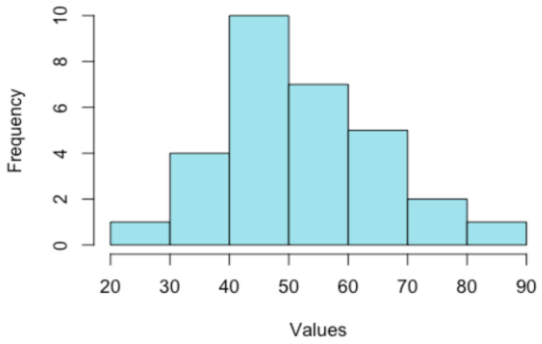
Attempt all questions:

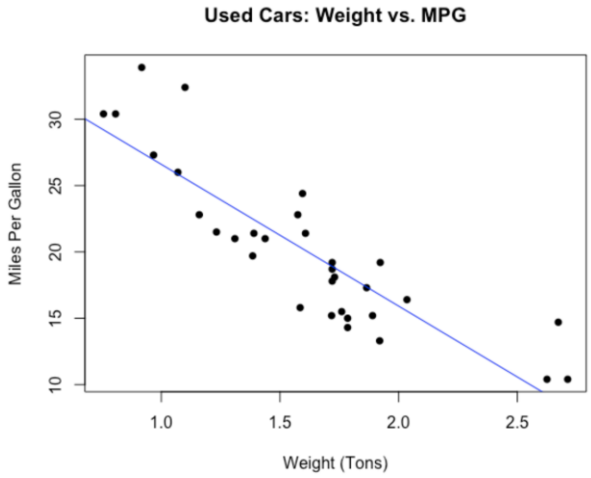
1. When plotting your data you should consider:
    a. Which type of plot will display the data most effectively
    b. Appropriate labels for the plot, axes, and tick marks
    c. Accessibility for color-blind consumers
    d. Make your plots visually appealing
    e. All of the above
2. Bar Plots can be used as an alternative to a histogram for discrete data.
    a. True b. False
3. For what reasons are pie charts often considered ineffective?
    a. It can be difficult to compare & contrast similarly sized slices
    b. Pie chart can be unclear if there are large no. of sub-populations
    c. Comparing one pie chart to another can be very difficult
    d. All of the above
4. For which situation(s) can histograms be useful?
    a. To show the approximate frequency of a given value range in a dataset
    b. To visualize an estimation of the probability distribution
    c. To determine the modality of a dataset
    d. To determine whether a plot is symmetric, left-skewed or right-skewed
    e. All of the above
5. The distribution of the histogram can be described as:
    a. Left-skewed b. Right-skewed c. Symmetrical



6. The distribution of histogram from the previous question can be described as:
    a. Bimodal b. Unimodal c. Multimodal
7. In the following histogram, what is the approximate frequency of values between 40 and 70? (Write your answer)

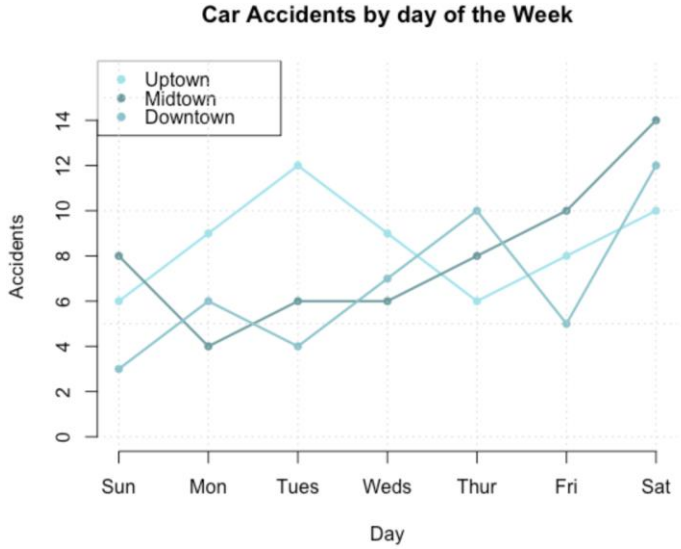


8. Describe the relationship between the two variables:



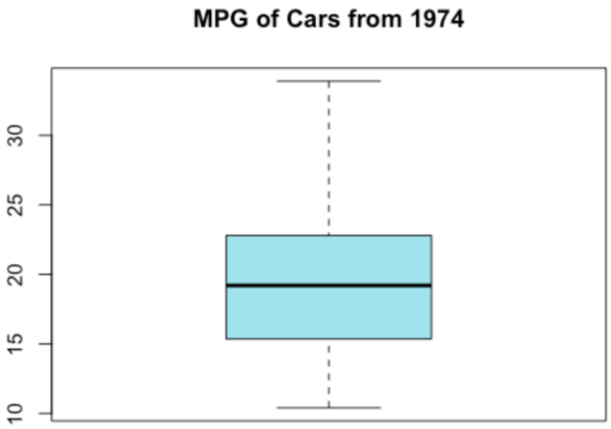
   a. There is negative correlation
   b. There is positive correlation

9. Based on the plot in the previous question, What value best approximates the fuel efficiency (MPG) of a used car with a weight of 2.25 tons?
10. For what application is a line graph typically used?
   a. To show the frequency distribution of a dataset
   b. To visualize how some variable(s) changes over time
   c. To show the proportions of different subsets of a population
   d. To display the correlation between two non-ordinal variables
11. On which days were the total number of accidents equal?



   a. Mon & Tue
   b. Sat & Sun
   c. Tue & Wed
   d. Fri & Sat

12. What is the approximate median of the distribution represented by the boxplot below?



a. 19 b. 20 c. 23 d. 16

13. Refer to boxplot in the above challenge: How would you describe the skewness of the distribution?
    a. Positively skewed b. Negatively skewed c. Symmetrical
14. What does the IQR represent?
    a. The values in two center quartiles
    b. The values greater than Q3 and less than Q1
    c. All the values except outliers
15. Which of them can be considered a random experiment.
    a. Flipping a penny, nickel, dime, & quarter dollar
    b. Choosing a marble out of a bag filled with red & blue marbles while blindfolded
    c. Measuring the lifetime of a light bulb
    d. All of the above
16. Write the set of the sample space for flipping two coins?
17. Which of the following events are potential outcomes from the random experiment of rolling three dice?
    a. All 3 dice show the same number
    b. None of dice show 1
    c. All of the dice show even number
    d. The sum of the dice is less than 6
    e. All of the above are possible events
18. How can the union of two events, A and B, be represented mathematically?
19. Given a random experiment where three coins are flipped, there are two events; event A is the outcome in which two or more coins land on heads. A = {HHH, HHT, HTH, THH}. Event B is the outcome in which the second coin lands on heads. B = {HHH, HHT, THT, THH}. What is A union B?
20. A group of 30 students are numbered 1-30, all even numbered students take statistics, all students who have a number which is evenly divided by three take computer science, and all of the students with numbers greater than 20 take data science. How many students attend at least one of the three courses?

21. How can the intersection of two events, A and B, be represented mathematically?
22. QN 19. What is AB?

23. A class of 30 students are assigned numbers 1-30, all even numbered students take statistics, all students who have a number which is evenly divided by three take computer science, and all of the students with numbers greater than 20 take data science. How many students take all three courses?
24. Given the following descriptions of a random experiment and an event, select the A's complement. S = {1,2,3,4,5,6,7,8,9,10} and A = the event that the outcome is even.
25. QN 19. What is A'B' and (AB)'?
26. Choose the option which is equivalent to A U (BC):
    a. (AUB)(AUC) b. (AB) U (AC) c. (AB) (BC)
27. Given the following space and sets, what will the result of A U (AB) be?
    U = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9} A = {0, 2, 4, 6, 8} B = {2, 3, 4, 5, 6}
28. Given the following space and set, what will the result of (A')' be?
    U = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9} A = {1, 3, 5, 7, 9}
29. Set an example yourself and verify the de-Morgan laws.
30. Let S = {HHH, HTH, HHT, HTT, TTT, TTH, THT, THH}, A = {HHH, HHT, HTH, THH} and B = {HHH, HTH}. Which of the following statements are true?
    a. A is subset of B
    b. B is a subset of A
    c. A and B are equivalent events
    d. All of the above are true

"If a 'religion' is defined to be a system of ideas that contains unprovable statements, then Gödel taught us that mathematics is not only a religion, it is the only religion that can prove itself to be one."

-- John Barrow