Explain why the survey is biased.

1. Would you rather buy the TV dinner with a picture of a luscious, gourmet meal on it, or one in a plain package?
2. Do you want your kids to receive a faulty education by having their school day shortened?
3. A researcher wants to find out what brand of tomato sauce is most popular with people who work full-time. He samples shoppers at a supermarket between 10 A.M. and 2 P.M. Is this

Tell whether the following questions are biased or fair. Rewrite biased questions as fair questions.

4. Do you think bike helmets should be mandatory for all bike riders?
5. Do you prefer the natural beauty of hardwood floors in your home?
6. Do you exercise regularly?
7. Do you eat at least the recommended number of servings of fruits and vegetables to ensure a healthy and long life?
8. Do you prefer the look and feel of thick lush carpeting in your living room.

You want to survey students in your school about their exercise habits. Tell whether the following will give you a random sample. Justify your answer.

9. You select every tenth student on an alphabetical list of the students in your school. You survey the selected students in their first-period classes.
10. At lunchtime you stand by a vending machine. You survey every student who buys something from the vending machine.

11. Mark explored 7 hiking trails in each county in his state. Each county has an equal number of hiking trails. Is this sample of the hiking trails in the state likely to be biased?

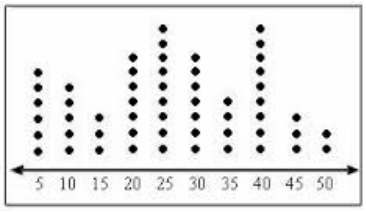
12. Kaya surveyed the 7 women at a restaurant. Is this sample of the restaurant's customers likely to be biased?

13. The mayor surveyed the first 50 people to arrive for a town meeting. Is this a random sample of the residents of the town?

14. Ben surveys 75 students at his school and discovers that 35 students have at least 1 pet. If there are 2500 students at his school, how many students can be expected to have at least 1 pet?

15. In a random survey of 500 shoppers at Sawgrass mall, 125 shoppers said they prefer to shop by themselves. If Sawgrass has 25,400 shoppers on Saturday, how many of those shoppers prefer to shop alone?

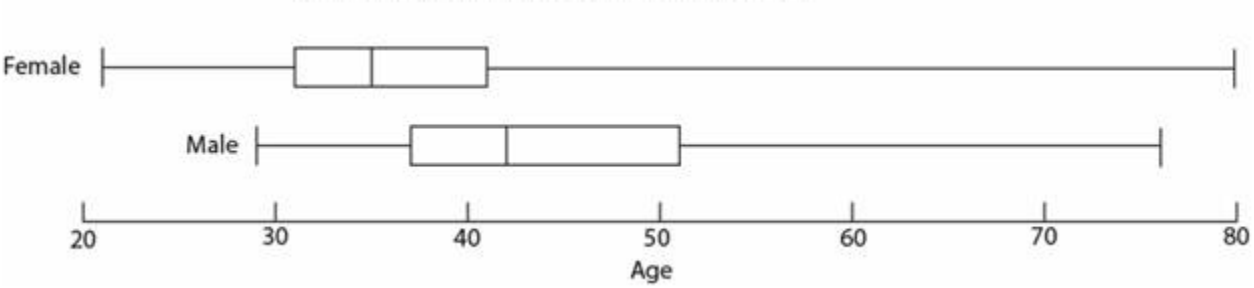
Use the dot plot to answer the following questions.



16. Find the median.

17. Find the mode.
18. Find the range.
19. Find the mean
20. Describe the overall shape and spread.

Use the box plot to answer the following questions.



21. Find the median
22. Find the range
23. Find the 1st and 3rd quartiles (upper and lower)
24. Find the interquartile range
25. Describe the overall shape and spread of each plot
26. Which plot has a greater range?
27. Which plot has a greater interquartile range?
28. Which plot has a greater median?

Answers:

1. The surveyor wants you to buy the gourmet meal.
2. The surveyor wants you to choose not to shorten the days
3. They are not surveying people who work full time during business hours
4. Fair
5. Biased; What type of floors do you prefer in your house?
6. Fair
7. Biased; How many servings of fruits and vegetables do you eat?
8. Biased; What type of floors do you prefer in your living room.
9. Random; students are chosen randomly
10. Biased; you are not surveying a fair sample at the entire school.
11. Random; all counties are represented
12. Biased; only females are surveyed
13. Biased; this does not represent the full town
14. Approximately 1167 people
15. Approximately 6350 people
16. 25
17. 25 and 40
18. 45
19. Approximately 26.9
20. The spread is fairly even with more points in the center and left
21. Female: 35; male: 42

22. Female: approx. 58; male approx. 48
23. Female 1^{st}: 31, 3^{rd}: 41; Male 1^{st} :38, 3^{rd}: 51
24. Female 10; male 13
25. Female have a wider range but the majority of the data is towards the left. Male has a smaller range. Their middle data is closer to the center, but still learning towards the left
26. Female
27. Male
28. Male