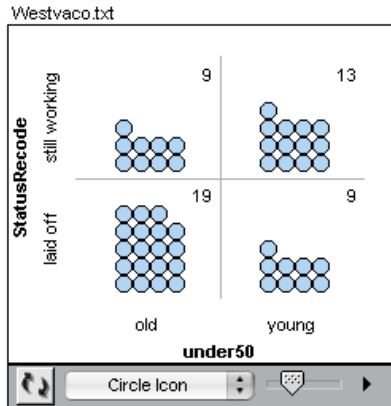


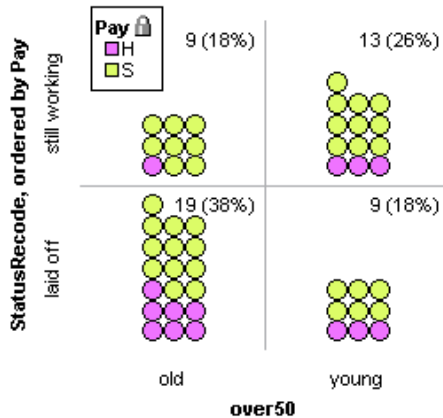
Math 45X – Practice Midterm Exam

- 1) Westvaco is a corporation that makes paper products. In 1990 they were sued by an employee for age discrimination during lay-offs. This graph shows the Westvaco data for all 50 workers employed at the time. A worker is labeled "young" if he or she is under 50 years of age. What percent of the young workers were laid off?



- a). 32%
b). 41%
c). 18%

- 2) This is a graph of the 50 Westvaco workers categorized by age and work status. Shaded dot is used to identify workers as hourly or salaried. Which interpretation accurately describes the 38%?



- a). 38% of the older workers were laid off.
b). 38% of the workers were both over 50 and laid off.
c). 38% of the laid off workers were old (over 50.)
d). 38% of the workers were salaried, laid off and old.

- 3) Suppose that another company Eastvaco is also downsizing. Wary of the age discrimination lawsuit against Westvaco, they are very cautious and intentionally plan lay-offs so that older workers are not disproportionately laid off. They plan to lay-off 20 of their 80 employees. Complete the table.

	Laid off	Retained	Total
Under 50	A	B	16
50 or older	C	D	64
Total	20	60	80

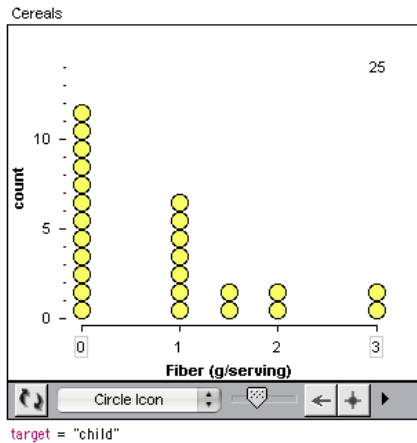
- a). A=10, B=6, C=10, D=5
b). A=8, B=8, C=32, D=32
c). A=4, B=12, C=16, D=48
d). A=6, B=10, C=24, D=40

- 4) The following list is the number of academic units carried by 13 students this semester. What is the mean number of units carried by this group of students? 4, 4, 6, 8, 9, 9, 12, 12, 12, 12, 12, 15, 15

Answer: _____

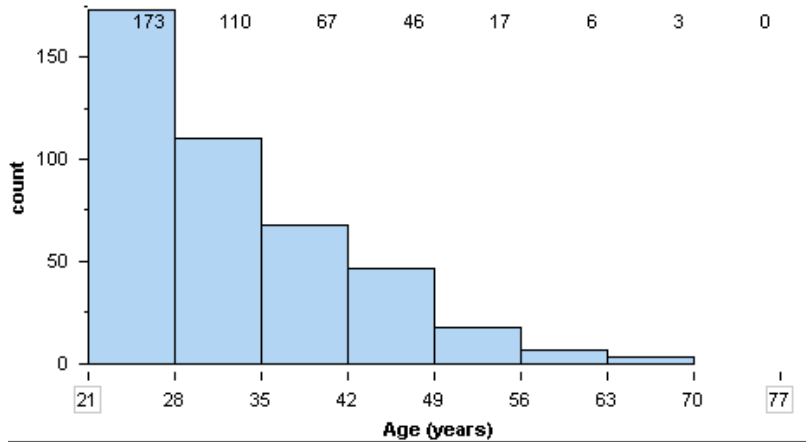
- 5) Imagine a bag of numbers with a mean of 8. You reach in and pull out a 12. You keep the 12 and you put a 3, a 4, and a 5 into the bag to replace the 12. What is the impact on the mean?
- a). The mean decreases.
b). The mean increases.
c). The mean stays the same.
d). The mean could increase or decrease. It is impossible to tell without knowing what all the numbers are.

- 6) The dotplot shows the distribution of fiber (g/serving) for 25 children's breakfast cereals. What is the **median** amount of fiber for the cereals in this distribution?



- a). 0 g/serving
- b). 1 g/serving
- c). 1.5 g/serving
- d). 0.8 g/serving

- 7) The histogram below shows the distribution of ages of 422 adults who are members of a local gym. Which interval contains the median?

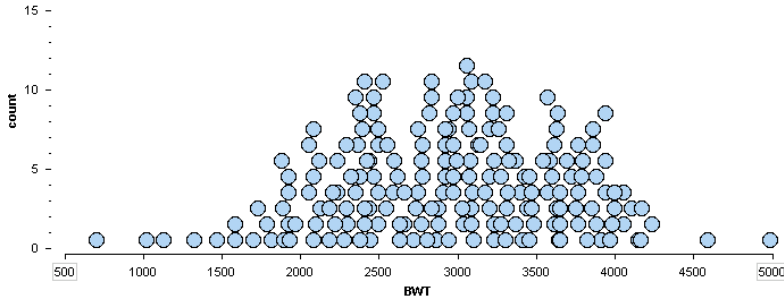


- a). 28-35
 - b). 21-28
 - c). 30-32
 - d). 42-49
- 8) CCSF collects information on the surrounding community and publishes an annual report. In the report the results are summarized using percents, means, and medians. Given the variables: Annual Wages, Age, Zip Code, and Number of Members in Household, for which of the following variables could you NOT calculate a mean or a median?

Answer: _____

- 9) The distribution of the top 2% of CEO's (Chief Executive Officers) salaries in the US Fortune 500 companies is strongly skewed to the right. In 2005, the two measures of center for the top 2% of CEO's salaries were \$450,000 and \$897,000. Which number represents the mean salary of the top 2% and which number represents the median salary of the top 2%? Choose the best answer.
- a). \$450,000 is the median and \$897,000 is the mean.
 - b). \$450,000 is the mean and \$897,000 is the median.
 - c). Not enough information to tell which is which.

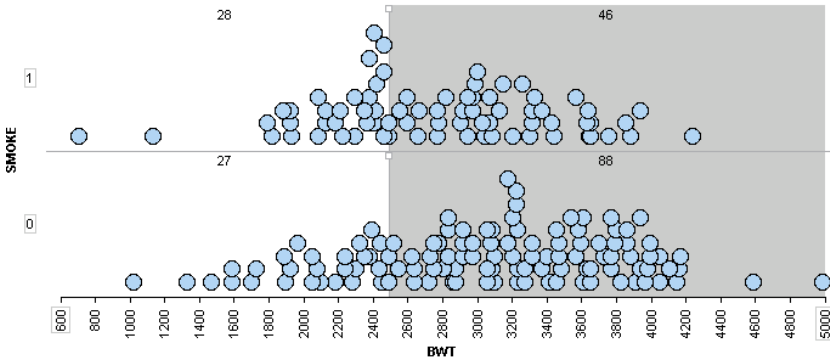
10) This is a dotplot of birth weights (in grams) for 189 newborns. Which statement is most likely true?



- a). The mean birth weight is quite a bit larger than the median.
 - b). The mean birth weight is about equal to the median.
 - c). The mean birth weight is quite a bit smaller than the median.
 - d). It is impossible to make this type of estimate from a graph.
- 11) A student created this graph to argue that smoking during pregnancy is related to low birth weight in newborns. Low birth weight is defined as less than 2500 grams. (SMOKE - Smoking status during pregnancy (0=No, 1=Yes)).

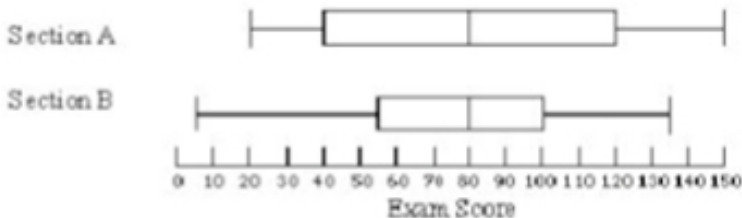
After analyzing the data, she concluded that her original conjecture was wrong since there are 28 low weight babies born to mothers who smoked and 27 low weight babies born to mothers who did not smoke during pregnancy. She decides that these numbers are so close, there really isn't a difference in the occurrence of low birth weights based on mother's smoking behavior.

Do you agree or disagree with her analysis? In other words, does her reasoning support her conclusion? (Write agree or disagree in the blank, and explain your answer briefly.)



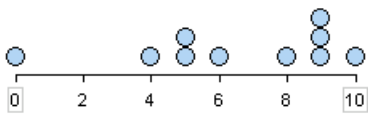
Answer: _____

12) The two boxplots below display final exam scores for all students in two different sections of the same course. Which data set has a greater percentage of students with scores at or below 80?

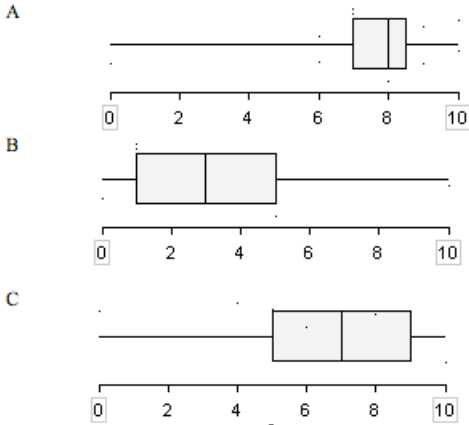


- a). Section A
- b). Section B
- c). Both sections are about equal
- d). It is impossible to tell.

13) Which boxplot summarizes the data in the dotplot?

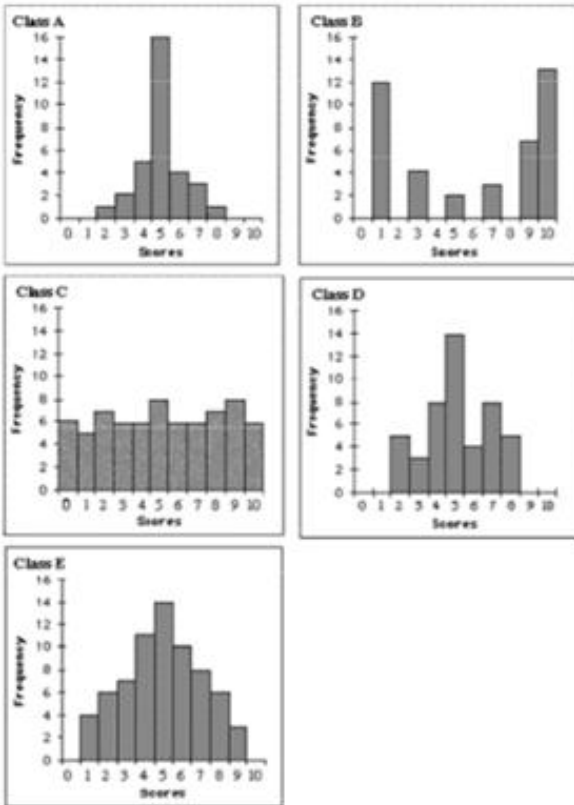


- a). A
- b). B
- c). C
- d). all of these



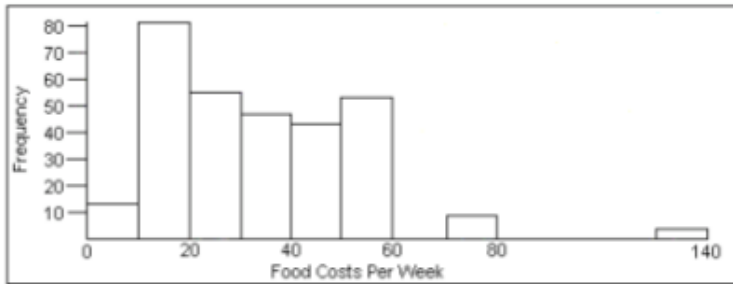
14) Which of the classes would you expect to have the largest interquartile range, and why?

Five histograms are presented below. Each histogram displays test scores on a scale of 0 to 10 for one of five different statistics classes.



- a). Class A, because it has the highest peak.
- b). Class B, because it has over half of its values toward the ends of its range and far from the median.
- c). Class C, because there are roughly the same percentage of scores close to the median as far from it.
- d). Class E, because it looks the most symmetric.

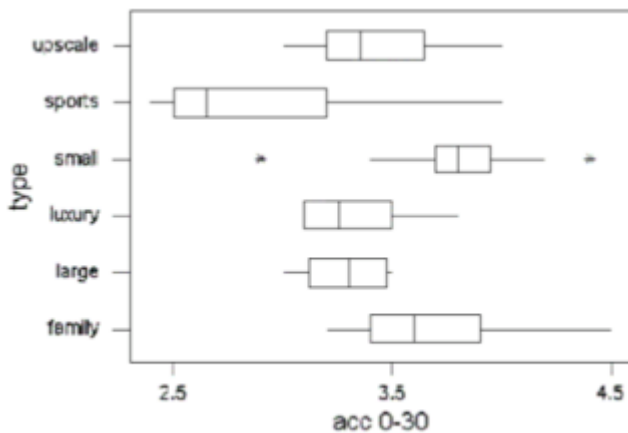
- 15) This is a distribution of how much money was spent per week for a random sample of college students. Which measure of spread would be the most useful in identifying a range of typical food costs per week?



- The overall range because it takes into account all of the data.
- The overall range because it is influenced by the outliers and gives a better sense of how the data is spread out.
- The interquartile range (IQR) because is not influenced by the outliers that are skewing the graph to the right.
- The average distance from the mean (ADM) because it takes the mean into account.

Use the given information for questions #17 and #18.

The 1999 Consumer Reports new Car Buying Guide reported on the number of seconds required for a variety of cars to accelerate from 0 to 30 mph. The cars were also classified into six categories according to type. The boxplots for acceleration times for each type of car are shown below.



- 16) If we compare a typical car in each category, which type accelerates the fastest? What part of the boxplots did you compare to make your choice?
- Sports cars because the range is the longest (length of the boxplot).
 - Sports cars because the median is the lowest.
 - Small cars because the median is the highest.
 - Family cars because they have the highest value at 4.5.
 - Sports car because the interquartile range is the longest.
- 17) If the outliers were removed from the dataset of Small cars, which of the following statistics would be least affected?
- Range
 - Interquartile Range (IQR)
 - Average Deviation from the Mean (ADM)
 - ll are equally affected