Review Answers

Mid-Module 2 Assessment
Statistics Topics

- Construct & Interpret Box and Whisker Plots
- Mean, Median, Mode, Range
- Measures of Central Tendency (Mean, Median, Mode)
- Measures of Variability (Spread) (Range, IQR, Standard Deviation)

	Measure of Center	Measure of Spread (Variability)
Skewed	Median	IQR / Range
Symmetric	Mean	Standard Deviation

- Finding Outliers

$x < Q1 - 1.5(IQR)$ or $x > Q3 + 1.5(IQR)$

Mid-Module 2 Assessment
Statistics Topics (Continued)

- Constructing & Interpreting Dot Plots
- Finding Mean, Median, Range from Dot Plots
- Frequency Distributions
- Finding 5 Number Summary from a Box and Whisker Plot
- Symmetric vs. Skewed Data Distributions
- Calculating Deviations from the Mean

$$x - \bar{x}$$

value mean

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Answers to Review

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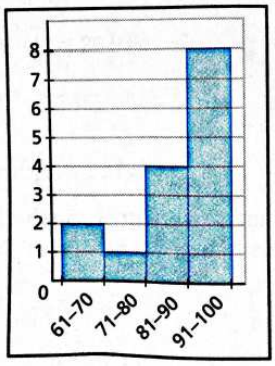
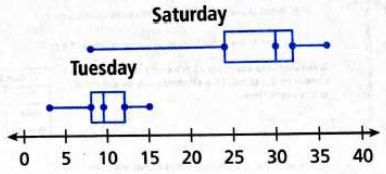
Sample answers

1. Possible answer:

Quiz Score	Frequency
61–70	2
71–80	1
81–90	4
91–100	8



3. Scoring Guide:

Task	Possible points
a	1 point for correctly finding and comparing the medians: 9.5 for Tuesday and 30 for Saturday, so the average number of cars on Saturday is greater, and 1 point for explaining that the median is the best choice because the Saturday data contain an outlier.
b	2 points for a correct box-and-whisker plot: 
c	2 points for explaining that according to this data the owner should not close on Saturday afternoons because the amount of traffic on Saturday afternoons, except for week 2, is consistently much heavier than the amount of traffic on Tuesday afternoons.

Total possible points: 6

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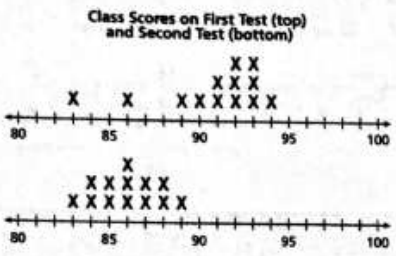
MULTIPLE CHOICE

For Items 1–3, use the line plots below.

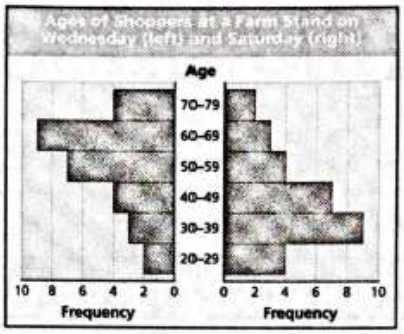


1. How do the medians of the two sets of test scores compare?
   - (A) The median for the first test is greater than the median for the second test.
   - B. The median for the first test is less than the median for the second test.
   - C. The medians for the first and second tests are equal.
   - D. The relationship cannot be determined.

2. For which test is the median greater than the mean?
   - (F) First test only
   - G. Second test only
   - H. Both tests
   - J. Neither test

3. Which measure of center is appropriate for comparing the two sets of test scores?
   - (A) The median only
   - B. The mean only
   - C. Either the median or the mean
   - D. Neither the median nor the mean

For Items 4–6, use the histograms below.



4. Which distribution is skewed toward older ages?
   - F. Only the Wednesday distribution
   - (G) Only the Saturday distribution
   - H. Both distributions
   - J. Neither distribution

5. How do the spreads of the two distributions compare?
   - A. The spread for the Wednesday data is much greater than the spread for the Saturday data.
   - B. The spread for the Wednesday data is much less than the spread for the Saturday data.
   - (C) The spreads are roughly equal.
   - D. The relationship cannot be determined.

6. Which measure of spread is appropriate for comparing the sets of ages?
   - (F) The interquartile range only
   - G. The standard deviation only
   - H. Either the interquartile range or the standard deviation
   - J. Neither the interquartile range nor the standard deviation

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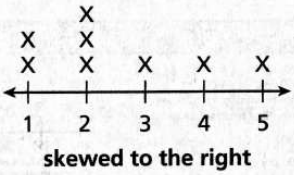
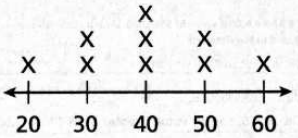
Problem Solving

1. mean: \$63, median: \$64, range: \$31, IQR: \$21; SD: about \$10.31; no outlier
2. mean: 40, median: 34, range: 52, IQR: 10; SD: about 14.8; outlier: 76
3. 

skewed to the right
4. 

symmetric
5. D
6. G
7. A

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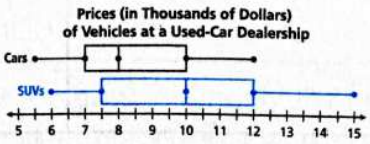
CONSTRUCTED RESPONSE

For Items 9–11, use the box plot below.



9. Suppose the dealership acquires a used luxury car that it intends to sell for $15,000. Would the price of the car be an outlier? Explain. (Assume that when the car's price is included in the data set, it has no effect on Q_3.)

Yes; $Q_3 = 10$ and $IQR = 3$, so $Q_3 + 1.5(IQR) = 14.5$ and $15 > 14.5$

10. The dealership also sells used SUVs. The prices (in thousands of dollars) of the SUVs are listed below. Add a box plot for the SUVs to the data display above.

6, 6, 7.5, 7.5, 8, 9, 11, 11, 11, 13, 14, 15

11. Compare the distribution of prices for the used SUVs with the distribution of prices for the used cars.

The distribution of prices for the used SUVs is more symmetric than the distribution of prices for the used cars. The prices of the used SUVs have a greater median and are more spread out than the prices of the used cars.