

Biostatistics for the Biological and Health Sciences: Chapter 2 Test: Form A

Name _____

SHORT ANSWER. Using the following information, write the word, phrase, or value that best answers the problem.

Use the following sample data for the following eight questions. A study of physical fitness tests for 12 randomly selected Pre-Medical students measured their exercise capacity (in minutes). The following data resulted:

| | | | | | |
|----|----|----|----|----|----|
| 34 | 19 | 33 | 30 | 43 | 36 |
| 32 | 41 | 31 | 31 | 37 | 18 |

- 1) Find the mean, the median, and the mode for the students' exercise capacity.
- 2) Using five classes, construct a frequency distribution of the students' exercise capacity.
- 3) Construct a stem and leaf plot of the students' exercise capacity.
- 4) Find the standard deviation and the variance for the sample data of the students' exercise capacity.
- 5) Identify the five number summary for the students' exercise capacity.
- 6) Construct a box plot for the students' exercise capacity.
- 7) Find the percentile corresponding to 36 minutes.
- 8) Find the sample data value corresponding to P_{24} .

SHORT ANSWER. Using the following information, write the word, phrase, or value that best answers the problem.

Use the following data for the next four questions. The information below was generated from a registry of the number of patients waiting for a heart transplant during the last 10 years.

| | |
|-------------------------------------|------|
| Mean Number of Patients Wait-Listed | 3600 |
| Standard Deviation | 365 |

- 17) Use the Range Rule of Thumb to estimate the minimum and maximum "usual" number of patients waiting for a heart.
- 18) Using the Empirical Rule, what is the approximate percentage of people waiting for a heart between 2505 and 4695 patients?
- 19) In 2003, the mean number of patients waiting for a heart transplant was 3400. Convert this data to a z-score.
- 20) In 1998, the mean number of patients waiting for a heart transplant was 4000. Convert this data to a z-score.

Answer Key

Testname: CHAPTER 2 FORM A

1) $\bar{X} = 32.1$; $\tilde{X} = 32.5$; mode = 31

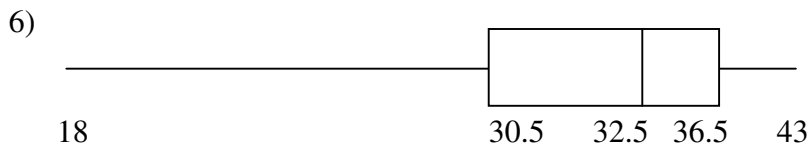
2) Using class width of 5,

| Class | Frequency |
|-------|-----------|
| 18-22 | 2 |
| 23-27 | 0 |
| 28-32 | 4 |
| 33-37 | 4 |
| 38-43 | 2 |

3) $\begin{array}{c|cccccccc} 1 & & 8 & & 9 & & & & \\ 2 & & & & & & & & \\ 3 & & 0 & 1 & 1 & 2 & 3 & 4 & 6 & 7 \\ 4 & & 1 & 3 & & & & & & \end{array}$

4) $s = 7.5 \text{ min}$; $s^2 = 56.3 \text{ min}^2$

5) min = 18; $Q_1 = 30.5$; $Q_2 = 32.5$; $Q_3 = 36.5$; max = 43



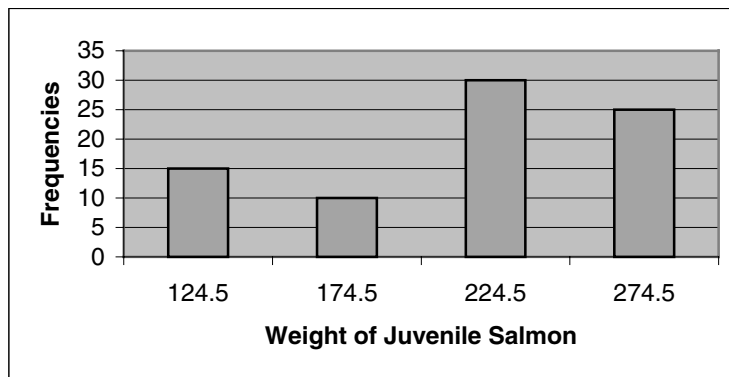
7) P_{67}

8) 30

9) class width = 50; midpoints = 124.5, 174.5, 224.5, 274.5

class boundaries = 99.5, 149.5, 199.5, 249.5, 299.5

10) Notes: midpoints of classes were used; there should not be gaps between the bars



11) $\bar{X} = 215.1g$

12) $s = 54g$

13) B

14) A

15) B

16) D

17) Minimum usual is 2870 patients; Maximum usual is 4330 patients

18) 99.7%

19) $z = -0.55$

20) $z = 1.1$

Name _____

SHORT ANSWER. Using the following information, write the word, phrase, or value that best answers the problem.

Use the following sample data for the next eight questions. A study of the percentage of alcohol content of nine randomly selected expensive beers yielded the following data:

8.5 9 8.5 9.5 8 8 8.5 8 5

- 1) Find the mean, the median, and the mode for the beers' percentage of alcohol content.
- 2) Using four classes, construct a frequency distribution of the beers' percentage of alcohol content.
- 3) Construct a stem and leaf plot of the beers' percentage of alcohol content.
- 4) Find the standard deviation and the variance for the sample data of the beers' percentage of alcohol content.
- 5) Identify the five number summary for the beers' percentage of alcohol content.
- 6) Construct a box plot for the beers' percentage of alcohol content.
- 7) Find the percentile corresponding to 9% alcohol.
- 8) Find the sample data value corresponding to P_{65} .

Use the frequency distribution to answer the next eight questions. A sample of 272 log jams found in river channels in the Northwest U.S. is grouped into the resulting frequency distribution based on the width of the channel in which the log jams were found.

| Width of Channel | Frequency of Log Jams |
|------------------|-----------------------|
| 0-4m | 103 |
| 5-9m | 82 |
| 10-14m | 49 |
| 15-19m | 16 |
| 20-24m | 16 |
| 25-29m | 6 |

- 9) Identify the class width, the class midpoints, and the class boundaries.
- 10) Construct a corresponding histogram for the width of the channels.
- 11) Determine the sample mean of the width of the channels summarized in the frequency distribution.
- 12) Find the sample standard deviation of the width of the channels summarized in the frequency distribution.

MULTIPLE CHOICE. Select the choice that best answers the problem.

- 13) The distribution of the histogram for the width of the channels appears:

| | |
|----------------|-----------------|
| A) Normal | C) Uniform |
| B) Skewed left | D) Skewed right |
- 14) If a relative frequency distribution were constructed for the width of the channels, what would be the relative frequency for the class with a width of 20-24m?

| | |
|---------|----------|
| A) 5.9% | C) 2.2% |
| B) 18% | D) 30.1% |
- 15) If a cumulative frequency distribution were constructed for the width of the channels, what would be the cumulative frequency for the class width less than 10m?

| | |
|--------|--------|
| A) 103 | C) 185 |
| B) 234 | D) 250 |
- 16) If a Pie Chart were constructed for the width of the channels, what would be the measure of the central angle for the class width 10-14m?

| | |
|-----------|-----------|
| A) 21.2° | C) 108.5° |
| B) 136.3° | D) 64.9° |

SHORT ANSWER. Using the following information, write the word, phrase, or value that best answers the problem.

Use the following data for the next four questions. Dental researchers found that a sample of females scored the following on the Dental Hygiene Fear Survey:

| | |
|-----------------------|------|
| Total Fear Score Mean | 27.5 |
| Standard Deviation | 10.9 |

- 17) Use the Range Rule of Thumb to estimate the minimum and maximum "usual" total fear score for females.
- 18) Using the Empirical Rule, what is the approximate percentage of females with a total fear score between 16.6 and 38.4?
- 19) Convert a total fear score of 35 to a z-score.
- 20) Convert a total fear score of 10 to a z-score.

Answer Key

Testname: CHAPTER 2 FORM B

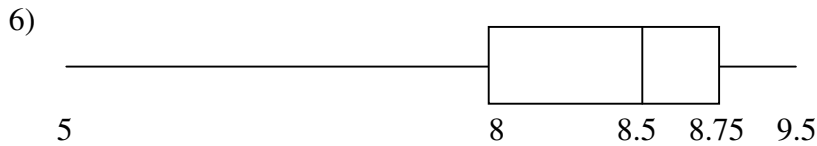
- 1) $\bar{X} = 8.1$; $\tilde{X} = 8.5$; mode = 8 & 8.5
 2) Using class width of 1.2,

| Class | Frequency |
|---------|-----------|
| 5-6.1 | 1 |
| 6.2-7.3 | 0 |
| 7.4-8.5 | 6 |
| 8.6-9.7 | 2 |

- 3)

| | | | | | | |
|----|---|---|---|---|---|---|
| 5. | 0 | | | | | |
| 6. | | | | | | |
| 7. | | | | | | |
| 8. | 0 | 0 | 0 | 5 | 5 | 5 |
| 9. | 0 | 5 | | | | |

- 4) $s = 1.27$; $s^2 = 1.61$
 5) min = 5; $Q_1 = 8$; $Q_2 = 8.5$; $Q_3 = 8.75$; max = 9.5



- 7) P_{78}
 8) 8.5%
 9) class width = 5; midpoints = 2, 7, 12, 17, 22, 27
 class boundaries = -.5, 4.5, 9.5, 14.5, 19.5, 24.5, 29.5
 10) Notes: midpoints of classes were used; there should not be gaps between the bars



- 11) $\bar{X} = 7.9m$
 12) $s = 6.4m$
 13) D
 14) A

15) C

16) D

17) Minimum usual score is 5.7; Maximum usual score is 49.3

18) 68%

19) $z = .69$

20) $z = -1.61$