Name: _____

Date: _____

Statistics- Chapter 2 ▮▮▮ Test Review

Section 1: Use the data in question 1 to answer questions 1 through 5

1. Use the following data to fill out the frequency distribution chart below. *Use six classes.*

CLASS WIDTH = $\dfrac{range}{\text{\# of classes}}$

$= \dfrac{98-47}{6} = 8.5$

Exam Score Data: 83, 92, 94, 73, 82, 98, 90, 72, 85, 78, 92, 89, 96, 89, 75, 85, 63, 47, 75, 82

CLASS WIDTH = 9

| Class | Class Boundaries | Frequency, $f$ | Midpoint | Relative Frequency | Cumulative Frequency |
|---|---|---|---|---|---|
| 47 – 55 | 46.5 – 55.5 | 1 | 51 | 1/20 | 1 |
| 56 – 64 | 55.5 – 64.5 | 1 | 60 | 1/20 | 2 |
| 65 – 73 | 64.5 – 73.5 | 2 | 69 | 2/20 | 4 |
| 74 – 82 | 73.5 – 82.5 | 5 | 78 | 5/20 | 9 |
| 83 – 91 | 82.5 – 91.5 | 6 | 87 | 6/20 | 15 |
| 92 – 100 | 91.5 – 100.5 | 5 | 96 | 5/20 | 20 |
| | | $\Sigma f = 20$ | | $\Sigma \dfrac{f}{n} = 1$ | |

2. Use the axis below to create a **relative frequency histogram** using **class boundaries**.
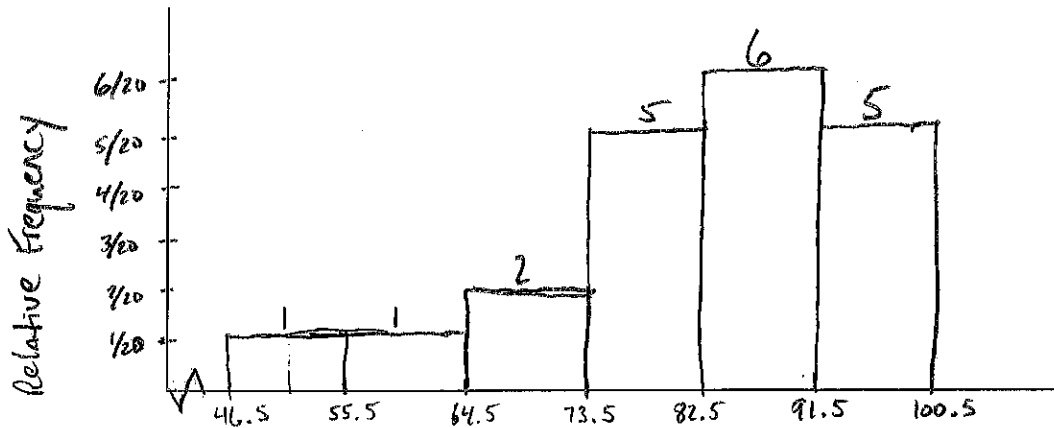


3. Use the data from question 1 to construct a box and whisker plot in the space below.

$Q_1 = 75$

$Q_2 = 84$

$Q_3 = 91$

$Min = 47$

$Max = 98$
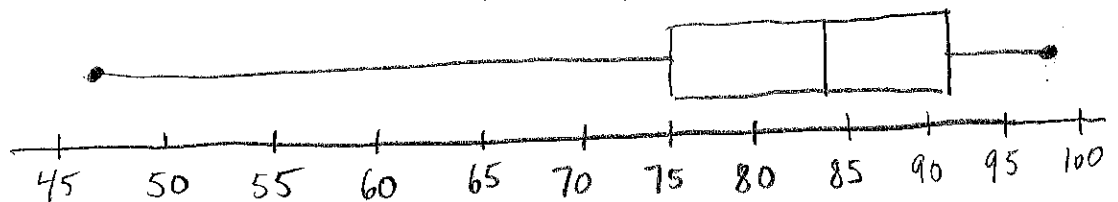
<u>Section 3</u>: Use the data from Section 1 (listed again below) to answer **questions 1 through 7**.

Exam Score Data: 83, 92, 94, 73, 82, 98, 90, 72, 85, 78, 92, 89, 96, 89, 75, 85, 63, 47, 75, 82

1. What is the mean of the following data?

   a. 81.5        b. 82        c. 84        d. 85.5

2. Assuming the data provided is **population data**, what is the standard deviation for the exam score data?

   a. 9.67        b. 1640        c. 11.95        d. 12.26

3. What is the median for the exam score data?

   a. 75        b. 82        c. 85        d. 84

4. What is the range of the exam score data?

   a. 51        b. 41        c. 26        d. 16

5. What is the mode of the exam score data?

   a. 75        b. 82        c. 89        d. No mode

6. Assuming the data provided is **sample data**, what is the variance of the exam score data?

   a. 142.9        b. 148.3        c. 150.3        d. 1640

7. What is the best description for the score of 47 in the exam score data set?

   a. Median        b. Variance        c. Outlier        d. Maximum

8. Which of the following variables represents population mean?

   a. $\sigma$        b. $\mu$        c. $\bar{x}$        d. $z$

9. Which of the following variables represents sample standard deviation?

   a. $s$        b. $\sigma$        c. $z$        d. $\mu$

10. Which of the following variables represents standard score?

   a. $s$        b. $s^2$        c. $z$        d. $\sigma$

11. Which of the following variables represents population variance?

   a. $\sigma$        b. $\sigma^2$        c. $s^2$        d. $\mu^2$

12. Use the Empirical Rule to answer the following question:  If the average height of a female in the U.S. is 65 inches with a standard deviation of 3 inches, between what two heights are 95% of all females in the U.S.?

    a.  62 and 68        b.  62 and 65        c.  59 and 71        d.  62 and 71

13. What percentage of data lies between the first and third quartiles in a box and whisker plot?

    a.  25%        b.  50%        c.  75%        d.  100%

14. If you have a data set with a **mean of 45 and a standard deviation of 5**, what is the standard score (or *z-score*) of an x-value of 48?

    a.  -0.5        b.  -0.6        c.  0.6        d.  1.2

15. Given the same data information as question 14, which of the following x-values would be considered **very unusual**?

    a.  49        b.  35        c.  44        d.  28
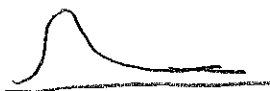
16. Which of the following words best describes the graph to the right?
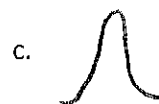
    a.  Uniform
    b.  Skewed Right
    c.  Skewed Left
    d.  Symmetric

17. Which of the following graphs has the highest standard deviation?

    a.        b.        c.

18. Which of the following equations best represents how to find the **population mean**?

    a.  $\mu = \frac{n-1}{\Sigma x}$        b.  $\mu = \frac{N}{\Sigma x}$        c.  $\mu = \frac{\Sigma x}{N}$        d.  $\mu = \frac{\Sigma x}{n-1}$

19. If you have a data set with a standard deviation of 10, and an x value of 60 has a *z-score* equal to 3, what is the mean of the data set?

    a.  30        b.  63        c.  90        d.  70

$$3 = \frac{60 - X}{10}$$

7. Fill in the columns to find the *sample* standard deviation of the following data. Use your calculator to check your answer. Round all answers to the nearest 10th.

Observations- 45, 37, 56, 51, 48, 39, 42, 33, 62          $\bar{x} = $ __45.9__, n = __9__

| Observations: $x$ | $x - \bar{x}$ | $(x - \bar{x})^2$ |
|---|---|---|
| 45 | -0.9 | .81 |
| 37 | -8.9 | 79.21 |
| 56 | 10.1 | 102.01 |
| 51 | 5.1 | 26.01 |
| 48 | 2.1 | 4.41 |
| 39 | -6.9 | 47.61 |
| 42 | -3.9 | 15.21 |
| 33 | -12.9 | 166.41 |
| 62 | 16.1 | 259.21 |

a. $\Sigma(x - \bar{x})^2 = $ __700.89__

b. $\dfrac{\Sigma(x-\bar{x})^2}{n-1} = $ __87.6__

c. $\sqrt{\dfrac{\Sigma(x-\bar{x})^2}{n-1}} = $ __9.4__

d. What is the term for the value in part b? __Sample variance__

e. What is the term for the value in part c? __Sample standard deviation__