REVIEW PROBLEMS
(Chapter 12)

FORMULAS PROVIDED:
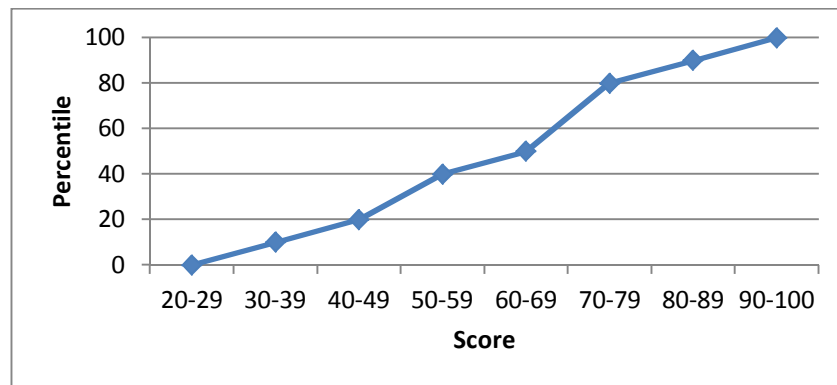
$$\bar{x} = \frac{\Sigma x_i}{n}$$

$$s_x = \sqrt{\frac{1}{n-1}\Sigma(x_i - \bar{x})^2} \text{ or } \sqrt{\frac{n\Sigma x^2 - (\Sigma x)^2}{n(n-1)}}$$

$$P(X = k) =_n C_k\, p^k (1-p)^{n-k}$$

$$z = \frac{x - \bar{x}}{s}$$

1. Find the mean and median of the following set of values: {8, 9, 11, 12, 13, 15, 16, 18, 20}

2. Use the IQR rule to identify any outliers: {17, 15, 16, 15, 9, 18, 16, 13}

3. Make a box plot of the following set of data: {36, 36, 48, 65, 75, 82, 92, 101}

4. Consider the following ogive of the scores of students in an introductory statistics course:

A grade of C or C+ is assigned to a student who scores between 55 and 70. Find the percentage of students that obtained a C or C+.

5. Find the mean and standard deviation for this set of values: {15, 17, 19, 20, 14, 23, 12}

6. Which of the following is likely to have a mean that is smaller than the median?

A) The salaries of all NFL players
B) The scores of students (out of 100 points) on a very easy exam in which most get nearly perfect scores but a few do very poorly
C) The prices of homes in a large city
D) The scores of students (out of 100 points) on a very difficult exam in which most get poor scores but a few do very well
(E) Amounts awarded by civil court juries

7. A set of test scores has mean 30 and standard deviation of 3.

   a. How many standard deviations away from the mean is a score of 24?

   b. Find the z-score of a test score of 37

8. In a poll of 123 students, 87 have never been on an airplane.

   a. Find the sample proportion (as a percent) of students who have never been on an airplane

   b. Find the margin of error

   c. Find the interval likely to contain the population proportion of students who have never been on an airplane

9. Find the probability of exactly 13 successes in 24 trials given that the probability of success is 0.6 for each trial.

10. There are 5 puppies in a litter. If the probability that a puppy is male is 0.5, find the probability that at most one puppy in the litter is male.

11. A set of data is normally distributed with mean of 100 and standard deviation of 10.

   a. What percent of the data is between 90 and 110?

   b. What percent of the data is between 90 and 120?

12. Use the Standard Normal Cumulative Probability Table to find the following:

   a. $z < -1.2$ **b.** $z > 1.5$

13. Scores on a test are normally distributed with a mean of 68 and a standard deviation of 8.

   a. Find the probability that a student scored at least 75 on the test.

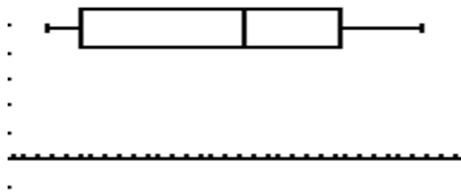   **b.** What score would a student need to be in the 75th percentile?

ANSWERS

1. $\bar{x} = 13.56$, M = 13

2. IQR = $Q_3 - Q_1$ = 16.5 – 14 = 2.5

Low outlier = any value < 14 – 1.5(2.5) < 10.25 = **9**

High outlier = any value > 16.5 + 1.5(2.5) > 20.25 = none

3.

4. 20%

5. $\bar{x} = 17.14$, $s = 3.80$

6. B

7a. – 2

7b. 2.33

8a. 71%

8b. ± 9%

8c. 62% to 80%

9. 0.137

10. 0.1875

11a. 68%

11b. 81.5%

12a. .1151

12b. .0668

13a. .1908

13b. 73.4