

Exam 1 and key

****Consider the following Frequency distribution. (3 questions)

| Scores | Frequency |
|--------|-----------|
| 17-19 | 1 |
| 14-16 | 0 |
| 11-13 | 4 |
| 8-10 | 3 |
| 5- 7 | 2 |

1. What is the lower-limit of the interval that contains the score of 13?
A) 12.5; B) 11.5; C) 10.5; D) 12; E) 13.
2. 18. In a histogram what is the value of the ordinate when the abscissa is 15?
A) 4; B) 9; C) 2; D) 0; E) it is undefined.
3. What score is the 20th percentile? A) 7; B) 8; C) 13; D) 7.5; E) 6.

****Assign the most likely shapes of distribution from the following list to the following populations. A) positively skewed; B) negatively skewed; C) bimodal; D) rectangular; E) approximately normal. (5 questions)

4. The distribution of the last digit of the social security number of students in this class.
5. The distribution of leaf lengths of leaves on the apple trees in an orchard in July.
6. A distribution with the Mode smaller than the Median which is smaller than the Mean.
7. The distribution of gas mileage for vehicles of a motor company that produces mostly small family sedans and SUV's (Relatively large truck-like vehicles.).
8. The distribution of scores on a fair statistics test.

****The following are a set of quiz scores from a small class: 8, 6, 3, 3, 5, 4
(note that the questions are not necessarily in the best computational order) (11 questions)

9. $\bar{X} =$: A) 29; B) 18; C) 27; D) 47; E) 36
10. Mode = : A) 5; B) 4.5; C) 4; D) 2; E) 3
11. $\sum X^2 =$: A) 28.54; B) 333; C) 841; D) 136.2; E) 159
12. $(\sum X)^2 =$: A) 841; B) 1296; C) 628; D) 86; E) 92
13. SS = : A) 628; B) 56.58; C) 30.86; D) 18.83; E) 12.18
14. \bar{X} : A) 5.22; B) 4.96; C) 4.83; D) 4.50; E) 5.88
15. $X_6 =$: A) 3; B) 4; C) 5; D) 6; E) 4.5.
16. Median = : A) 3; B) 4.5; C) 6; D) 4; E) 7
17. $s^2 =$: A) 5.44; B) 3.77; C) 6.38; D) 7.11; E) 1.56
18. $s =$: A) 1.58; B) 1.187; C) 2.67; D) 1.94; E) 3.86
19. $\bar{X} =$: A) 3.58; B) 2.67; C) 1.77; D) 2.03; E) 4.20
20. An exam was given in two rooms. 42 students took it in one room and 28 in the other. The mean in the first room was 70.19 and the mean in the second, 68.25. What was the overall mean for the exam? A) 69.41; B) 70.19; C) 138.44; D) 69.06; E) 69.55.

****Assume that a random sample of 2500 high school seniors took a reading test in order to standardize it. The mean raw score was 74, the standard deviation was 8, and the distribution was essentially normal. (5 questions)

21. If Jerry scored 60 on the test, what would his percentile rank be? A) 45; B) 60; C) 4; D) 54; E) 12.
 22. What score is equivalent to a z score of 2.5? A) 90; B) 99; C) 85; D) 79; E) 94.
 23. What score is at the 90th percentile? A) 84; B) 90; C) 82; D) 75; E) 80.
 24. About how many students in the standardization group scored above 90? A) 100; B) 2; C) 91; D) 132; E) 57.
 25. Brianna scored 85 on the original reading test. The test was converted to T scoring, that is, to a new scoring system with a mean of 50, and a standard deviation of 10. Brianna's new standardized score is about what? A) 58; B) 73; C) 85; D) 64; E) 60.
26. Which scales of measure allow for meaningful quantitative differences between measures? A) Only interval; B) Only interval and ordinal; C) All but nominal; D) Only ratio; E) Only ratio and interval;
 27. As the $|r|$ gets larger, the variability around the regression line: A) gets smaller; B) gets larger; C) stays the same; D) changes in an unpredictable way.
 28. Consider this list of ranges of family incomes and the percents of families that earn them.
i) \$0-\$24,999--20%; ii) \$25,000-\$34,999--25%; iii) \$35,000-\$54,999--25%;
iv) \$55,000-\$79,999--20%; v) \$80,000-500,000--10%. If you drew a histogram-like figure from these data, for which range of incomes and percents should you show the greatest density?
A) i; B) ii; C) iii; D) ii and iii have equal density; E) v.
 29. If individuals who have a high value in one variable tend to have a low value in the other, that would suggest a Pearson r : A) that is positive; B) that is negative; C) that is somewhere around zero; D) that could have any value between -1 and +1.
 30. Assume that you have a positively skewed distribution of scores from a test. You then convert all of the raw scores to their z scores. The distribution of z scores would be: A) positively skewed; B) Normal; C) negatively skewed; D) rectangular.

****Consider two quizzes taken by 7 students of a small class. Their scores and some computations follow. (6 questions)

| | Quiz 1 | Quiz 2 |
|---------|--------|--------|
| Student | X | Y |
| 1 | 4 | 6 |
| 2 | 3 | 5 |
| 3 | 4 | 3 |
| 4 | 6 | 8 |
| 5 | 2 | 5 |
| 6 | 9 | 9 |
| 7 | 9 | 7 |

$$\sum X = 37 \quad \sum Y = 43$$

$$\sum X^2 = 243 \quad \sum Y^2 = 289$$

$$SS_X = 47.43 \quad SS_Y = 24.86$$

$$s_X^2 = 7.90 \quad s_Y^2 = 4.14$$

$$s_x = 2.81$$

$$\bar{X} = 5.29 \quad \bar{Y} = 6.14$$

31. The sum of the crossproducts, $SP =$: A) 25.71; B) 218; C) 146.21; D) 19.14; E) 86.
32. The correlation between these two tests, $r =$: A) .62; B) .55; C) .75; D) .37; E) .69
33. The slope of the regression line for predicting Y from X, $b_y =$: A) .62; B) .54; C) 1.52; D) .37; E) .69.
34. The intercept of the regression line for predicting Y from X, $a =$: A) 1.54; B) 3.28; C) 3.13; D) -.087; E) -3.87.
35. If Rivka scored 8 on the first exam, the expected value of her score on the second exam, $Y' =$: A) 6.85; B) 5.15; C) 7.61; D) 8.10; E) 6.12.
36. The proportion of the variance in Y accounted for by X, $______ =$: A) .35; B) .75; C) .18; D) .56; E) .69.

Key: CDDDE ACEAE EADCB BBDCA CEAED EABBA ACBBC D