

Psychology 2101
Practice Exam 1 – Form A, Code 10118

Student Name: _____

Instructions: This is a practice exam. The actual exam will be very similar to this one, except it will have 30 questions instead of 27. To test yourself, take this exam with a time limit of 60 minutes. In the actual exam, you will have 70 minutes to answer 30 questions. Answer all questions by circling the correct answer on the test paper. There is no penalty for guessing. If you believe that an item is incorrect, or has more than one correct answer, indicate your reasoning on the test paper with a brief note. This exam is open book, open note, and calculators may be used. Computers may not be used.

- 1 Compute the sample mean \bar{X} for the following 5 numbers: 23, 89, 83, 13, 19
 - (a) 45.4
 - (b) 36.32
 - (c) 22.7
 - (d) 45.6
 - (e) None of the above are correct

- 2 Compute the sample variance S^2 for the following 5 numbers: 90, 95, 90, 33, 36
 - (a) 985.50
 - (b) 788.56
 - (c) 985.7
 - (d) 985.9
 - (e) None of the above answers are correct

- 3 You have two groups of scores. The X group has a mean of 632 and is based on a sample size of 100. The Y group has a mean of 1742 and is based on a sample size of 69. If you combine the X and Y scores into one large group, what will the mean of the large group be?
 - (a) 1085.2
 - (b) It is impossible to determine
 - (c) 1187.0
 - (d) 1288.8
 - (e) 77.253

4. Suppose you have a set of data that have achieved a interval level of measurement. If you cube all the numbers, at what level of measurement will the numbers be?
- (a) Ratio
 - (b) Interval
 - (c) Nominal
 - (d) Ordinal
- 5 You have 5 numbers, and their mean is 121. If you multiply them all by 2, the mean of the resulting data set will be
- (a) 290.4
 - (b) 605.0
 - (c) 193.6
 - (d) 242.0
- 6 You have a sample of N observations, and you transform them to Z -scores. Assuming the original scores are not all equal, the quantity

$$\sum_{i=1}^N Z_i$$

will always be equal to

- (a) 0
- (b) $N - 1$
- (c) N
- (d) 1
- (e) Cannot be determined from the information given

- 7 You have the following grouped frequency distribution showing nominal limits and observed frequencies for the first exam in a Physics course with 100 students. Estimate the 40th percentile.

X	f
81 – 90	10
71 – 80	33
61 – 70	41
51 – 60	13
41 – 50	3
<hr/>	
$N =$	100

- (a) 62.333
(b) 66.354
(c) 67.5
(d) 64.75
(e) 65.00
- 8 Which of the following is true of the median?
- (a) It is always the average value in a distribution
(b) It is insensitive to outliers
(c) Multiplying all values by 5 does not necessarily multiply the median by 5.
(d) The value for combined groups can be determined from the sample sizes and group values of the individual groups
- 9 Ore samples are weighed on a scale that is accurate to the nearest 200 grams. A group of 50 samples is weighed. The heaviest is recorded as 18 000 grams, the lightest at 8000 grams. The inclusive range is the difference between the upper real limit and lower real limit for the data. What is the inclusive range for these data?
- (a) 10 200
(b) 10 001
(c) 10 100
(d) 10 400

- 10 You have a set of data that have a mean of 59 and a standard deviation of 10. You wish them to have a mean of 65 and a standard deviation of 11, while retaining the shape of the present distribution. What values of a and b in the linear transformation formula $Y = aX + b$ will produce a new set of data with the desired mean and standard deviation?
- (a) $a = 0.90909, b = -0.9$
 - (b) $a = 1.1, b = 0.2$
 - (c) $a = 2.2, b = 0.1$
 - (d) $a = 1.1, b = 0.1$
 - (e) $a = 2.1, b = -0.1$
- 11 Suppose you have *evenly spaced* numbers ordered from largest to smallest, and the distance between adjacent numbers is k . It is well known that, if $N = 3$, the sample mean of the 3 numbers is the middle value and their sample *variance* is k^2 . Suppose instead that $N = 5$. Find an expression for the sample *variance* of the 5 numbers.
- (a) $2k^2$
 - (b) $\sqrt{\frac{5}{2}k^2}$
 - (c) $5k^2$
 - (d) $\frac{5}{2}k^2$
 - (e) None of the above answers are correct
- 12 Mitzi took an exam where the class mean was $\bar{X} = 85$ and the class standard deviation was $S = 14$. What Z-score must Mitzi exceed to have a grade that exceeds 75?
- (a) -0.71429
 - (b) -0.81429
 - (c) -2.6726
 - (d) -0.66429
 - (e) None of the above answers are correct.

13 In the frequency distribution below, what is the *cumulative frequency* of the value $X = 2$?

X	f
3	7
2	7
1	7
0	4

- (a) 1.0
 - (b) 18.0
 - (c) 0.44
 - (d) 0.83
 - (e) None of the above answers are correct
- 14** In a normal distribution with a mean of 53 and a standard deviation of 18, which of the following scores is at the 20th percentile?
- (a) 35.580
 - (b) 47.851
 - (c) 37.851
 - (d) 48.298
 - (e) None of the above answers are correct
- 15** IQ scores have a distribution that is approximately normal in shape, with a mean of 100 and a standard deviation of 15. What percentage of scores is at or above an IQ of 110?
- (a) 27.774
 - (b) 21.998
 - (c) 25.249
 - (d) 28.865
 - (e) None of the above answers are correct
- 16** You have a set of 13 numbers with a mean of 15. If you add an additional number to the original group, and that new number has a value of 20, what will be the mean of the new set of 14 numbers?
- (a) 15.357
 - (b) 10.75
 - (c) 18.429
 - (d) 16.893
 - (e) None of the above answers are correct.

- 17** The University of Caldonia medical school publishes a summary of the MCAT scores of all applicants, and the MCAT scores of those who were accepted for admission. The summary states that "The average MCAT score for the 582 applicants to this year's program was 28.0, and the average MCAT score for the 80 people who were accepted was 32.0." Given this information, compute the average MCAT score for those who were denied admission.
- (a) 21.89
 - (b) 35.571
 - (c) 27.363
 - (d) 24.626
 - (e) 30.099
- 18** IQ scores have a distribution that is approximately normal in shape, with a mean of 100 and a standard deviation of 15 in the general population. Assuming a normal distribution is a good approximation, what proportion of the general population has IQ scores between 71.0 and 105.0?
- (a) 0.60396
 - (b) 0.70396
 - (c) 0.66436
 - (d) 0.50396
 - (e) None of the above answers are correct
- 19** Fred took an exam and got a Z-score of 1.06. For which of the following exam metrics will Fred get the highest raw score?
- (a) Mean = 77.9, Standard Deviation = 13.8
 - (b) Mean = 72.3, Standard Deviation = 12.2
 - (c) Mean = 78.3, Standard Deviation = 13.6
 - (d) Mean = 77.9, Standard Deviation = 11.5
- 20** You have 10 numbers with a mean of 19.0. You first multiply all the numbers by 5.0, *then* add 9.0 to all the numbers. What will the mean of the numbers be when you are finished?
- (a) 176.0
 - (b) 104.0
 - (c) 104.1
 - (d) 103.9
 - (e) None of the above answers are correct

- 21 Four distributions of 25 numbers have the identical shape, except that the X distribution has a mean of 103 and a standard deviation of 14, while the Y distribution has a mean of 16 and a standard deviation of 7, the W distribution a mean of 52, and a standard deviation of 18, and the K distribution a mean of 519 and a standard deviation of 94. Which of the following scores has the highest percentile rank in its respective distribution?
- (a) A score of 120 in the X distribution.
 - (b) A score of 70 in the W distribution.
 - (c) A score of 30 in the Y distribution.
 - (d) A score of 550 in the K distribution.
- 22 An experiment seeks to investigate the hypothesis that increased crowding in a housing subdivision causes higher levels of stress hormones in its residents. Crowding is defined as the number of residents per acre in the subdivision. In this case
- (a) You would probably investigate the hypothesis with an experimental (manipulative) study
 - (b) Level of stress hormones is the *independent variable*
 - (c) Crowding is the *independent variable*
 - (d) None of the above are true
- 23 You have the following list of X values.

X
1
5
3
2
7

Compute

$$\sum_{i=1}^5 (X_i + 12)^2$$

- (a) 1217
- (b) 1262
- (c) 1240
- (d) 1229
- (e) None of the above are true

- 24** In class and tutorial, we discussed 4 fundamental approaches to gaining knowledge. Suppose that, later that night, you tuned into The Home Channel to watch a show on how to redecorate your dorm room. This is an example of gaining knowledge through the method of _____.
- (a) Intuition
 - (b) Authority
 - (c) Scientific Method
 - (d) Rationalism, or Deduction

- 25** In the table below, Y is a function of X . Using linear interpolation, estimate the missing value k of Y .

X	Y
10	16
12	k
20	18

- (a) 16.4
 - (b) 16.45
 - (c) 16.65
 - (d) 16.20
- 26** In tutorial session, we reviewed a newspaper article that began with the headline caption "Study Proves Prayer Heals."
- This headline is a perfect example of a well-known fallacy we discussed in class. This fallacy is known as
- (a) misplaced precision
 - (b) affirming the consequent
 - (c) overcompensation
 - (d) confusing correlation with causality
- 27** You are in an undergraduate class with a total enrollment of 12. What is the largest possible Z -score you can obtain in this course?
- (a) 3.1754
 - (b) 3.6056
 - (c) 3.4641
 - (d) 3.3166
 - (e) you cannot tell without knowing the mean and standard deviation