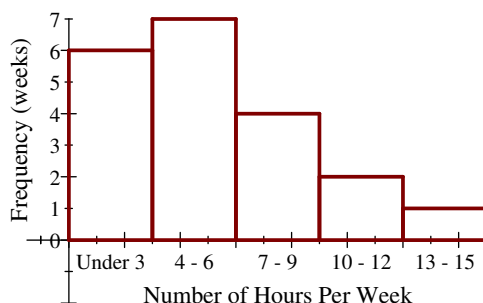


### TMATYC - Statistics Test - 2015

1. The number of active players on the Nashville Predators roster would be an example of what type of variable?  
A. nominal      B. discrete      C. qualitative      D. continuous      E. homogeneous
2. In a frequency distribution, two contiguous classes are 40 – 46 and 47 – 53. What is the class width for this distribution?  
A. 5      B. 6      C. 7      D. 8      E. 46.5

3. From the graph below, how many times did the student spend more than 6 hours studying in a week?

Weekly Hours Spent Studying



- A. 4      B. 6      C. 7      D. 4-6      E. 7-15
4. The following data set was collected: {32, 37, 38, 36, 37, 39, 37, 35, 41, 31}. What is the midrange?  
A. 5      B. 35      C. 36      D. 37      E. 38
  5. The following data was reported for weekly salaries:

Salary (in dollars)	Frequency
300	4
350	5
400	8
450	10
500	9
550	12

What is the estimated mean (to the nearest dollar) of this distribution?

- A. 363      B. 425      C. 436      D. 453      E. 708
6. The mean of three numbers is 10 and the mode is 5. What is the range for the three numbers?  
A. 0      B. 5      C. 10      D. 15      E. 25

7. The password for an e-mail account at Western Technology has to consist of 3 letters of the alphabet followed by two numerical digits. Assuming the password is **NOT** case-sensitive, how many different passwords can be selected?
- A. 175,600    B. 676,000    C. 1,404,000    D. 1,757,600    E. 11,881,376
8. In a statistics class there are 11 freshmen and 15 sophomores; 5 of the sophomores are females, and 8 of the freshmen are males. If a student is selected at random from the class, what is the probability of selecting a sophomore or a male?
- A.  $\frac{3}{26}$     B.  $\frac{5}{13}$     C.  $\frac{9}{13}$     D.  $\frac{23}{26}$     E.  $\frac{33}{26}$
9. The probability that both Bob and Chris go to the movies is 0.35. The probability that Bob goes to the movie is 0.5. What is the probability that Chris goes to the movies, given that Bob goes?
- A. 0.0875    B. 0.15    C. 0.175    D. 0.7    E. 0.85
10. Three cards are drawn from a deck without replacement. What is the probability of selecting 2 black cards and then a heart (in that order)?
- A.  $\frac{1}{408}$     B.  $\frac{1}{32}$     C.  $\frac{1}{16}$     D.  $\frac{13}{204}$     E.  $\frac{1}{8}$
11. A study was conducted to determine the number of years of experience for faculty at a community college. The results are as follows:

Experience	Instructor	Associate Professor	Professor
1-5 years	8	3	2
6-10 years	4	15	10
11-15 years	1	12	8

- If one of these faculty members is selected at random, what is the probability that the person is an associate professor given that he or she has 11-15 years of experience?
- A.  $\frac{4}{21}$     B.  $\frac{4}{15}$     C.  $\frac{2}{5}$     D.  $\frac{3}{5}$     E.  $\frac{4}{7}$
12. If a gambler rolls two dice and gets a sum of 9, he wins \$10, and if he gets a sum of 3, he gets \$20, and for all other sums he wins nothing. The cost to play the game is \$5. What is the expectation of this game (to the nearest cent)?
- A. lose \$3.06    B. lose \$2.78    C. lose \$1.94    D. win \$1.39    E. win \$2.22
13. A student randomly guesses at 7 multiple choice questions. Each question has five possible choices. What is the probability that the student gets exactly 3 questions correct?
- A. 0.055    B. 0.115    C. 0.124    D. 0.227    E. 0.429
14. Assuming the random variable  $z$  has a standard normal distribution, what is  $P(z > 2.09)$ ? Round your answer to the third decimal place.
- A. 0.002    B. 0.018    C. 0.482    D. 0.518    E. 0.910

15. Assuming the random variable  $z$  has a standard normal distribution, what value of  $z$  corresponds to the 78th percentile? Round your value to two decimal places.  
 A. 0.11      B. 0.22      C. 0.58      D. 0.77      E. 0.87
16. The average hourly wage of workers at a fast food restaurant is \$7.25 with a standard deviation of \$0.50. Assume that the distribution of hourly wages is normally distributed. If a worker at this fast food restaurant is selected at random, what is the probability the worker has an hourly wage between \$7.30 and \$7.80? Round your answer to the third decimal place.  
 A. 0.325      B. 0.386      C. 0.402      D. 0.424      E. 0.050
17. In a given normal distribution, if the mean is 500 and 3.62% of the distribution lies to the right of 572, what is the standard deviation?  
 A. 40      B. 50      C. 80      D. 100      E. 130
18. A brick company found that 4% of its bricks were defective. If 400 bricks are checked at random, what is the probability that there are more than 18 defective bricks? Round your answer to three decimal places.  
 A. 0.239      B. 0.254      C. 0.291      D. 0.352      E. 0.436
19. An economics professor randomly selected 100 millionaires in the U.S. The average age of these millionaires was 52.1 years with a standard deviation of 12.3 years. What is a 95% confidence interval for the mean age,  $\mu$ , of all U.S. millionaires?  
 A.  $48.9 < \mu < 55.3$       B.  $49.5 < \mu < 54.7$       C.  $49.7 < \mu < 54.5$   
 D.  $50.1 < \mu < 54.1$       E.  $51.9 < \mu < 52.4$
20. A recent study claims that business travelers spend an average of \$39 per day on meals. A sample of 15 business travelers found that they had spent an average of \$42 per day with a standard deviation of \$3.78. If this claim is tested at a significance level of  $\alpha = 0.05$ , what is the null hypothesis ( $H_0$ )?  
 A.  $\mu = 39$       B.  $\mu \geq 39$       C.  $\mu \leq 39$       D.  $\mu \neq 39$       E.  $\mu > 39$
21. Using the standard normal ( $z$ ) distribution, what are the critical values for a two-tailed test when  $\alpha = 0.04$ ?  
 A.  $\pm 1.75$       B.  $\pm 1.88$       C.  $\pm 2.05$       D.  $\pm 2.12$       E.  $\pm 2.33$
22. A sample of eight students was selected to test the effectiveness of a course designed to improve keyboarding skills. The scores before and after the course are recorded below.

Before	45	38	60	35	70	48	39	49
After	56	42	62	39	75	50	42	56

What is the 95% confidence interval for the difference of the two means?

- A.  $-7.21 < \mu_D < -2.29$       B.  $-7.27 < \mu_D < -2.23$       C.  $-7.43 < \mu_D < -2.07$   
 D.  $-7.91 < \mu_D < -3.04$       E.  $-9.23 < \mu_D < -0.27$

23. A teacher wanted to see if there was a relationship between the number of absences ( $x$ ) a student had in her class and the final grade ( $y$ ) of the student. The  $y$ -intercept for the line of best fit was found to be 96.8 and the slope of the line was found to be  $-2.67$ . If the student had a final grade of 65, using the line of best fit, approximately how many absences did this student have?
- A. 8      B. 9      C. 10      D. 11      E. 12
24. If the correlation coefficient is 0.87, what is the explained variation?
- A. 13%      B. 24.3%      C. 75.7%      D. 87%      E. 93.3%
25. A contingency table has 5 rows and 2 columns. If ran a test of independence for the row and column variables using a significance level of  $\alpha = 0.10$ , what is the critical value?
- A. 7.779      B. 9.488      C. 13.277      D. 15.987      E. 26.432