AMS 7: **Nice Review** Full Name: _____ Discussion Day & Time: _____
Dr. Immanuel Williams, May 2, 2017 This Review is worth a total of **0 points**.

Build your own pyramids, write your own hieroglyphs. Kendrick Lamar

1. How can you characterize a probability distribution? 0

   A) _____
   B) _____
   C) _____

2. How do you measure spread/dispersion of a variable? 0

   A) _____
   B) _____
   C) _____
   D) _____

3. How do you measure central tendency of a variable? 0

   A) _____
   B) _____
   C) _____

4. Definitions/Concepts: 0

   A) Sampling: _____
      - Simple Random Sampling: _____
      - Stratified Sampling: _____
      - Cluster Sampling: _____
      - Convenience Sampling: _____
      - Volunteering Sampling: _____

   B) Experiments: _____
      - Replication: _____
      - Blinding: _____
      - Randomization: _____
      - Confounding: _____

   C) Observational Study
      - Prospective: _____
      - Retrospective: _____
      - Cross-Sectional: _____

   D) Use if Statistics
      - Inferential Statistics: _____
      - Descriptive Statistics: _____

   E) Frequency: _____

5. Know when to use these graphics: 0

A) Histogram: _____

B) Barplots: _____

C) Scatter Plots: _____

D) Boxplot: _____

6. Where are the outliers when the data looks: 0

A) Skew-Left: _____

B) Skew-Right: _____

C) Bell-Shaped: _____

7. How can you determine if there is an outlier: 0

A) _____

B) _____

8. Determine if the following is a statistic or parameter. 0

A) s : _____

B) μ : _____

C) σ^2 : _____

D) s^2 : _____

E) $\bar{x}$: _____

F) σ : _____

G) p : _____

H) $\hat{p}$: _____

I) q : _____

9. Check one category for each variable: 0

Variables	Nominal	Ordinal	Discrete	Continuous
Height (feet and inches)				
# of Marbles in a container				
Time (min and sec)				
Grades (A, A-,B+, etc.)				
Weight (pound and ounces)				
City Capitals				
Color of Eyes				
# of students in class				

Use the following data to answer questions 10-18.

$$2, 3, 5, 2, 7, 9, 3, 2$$

10. How could I visualize this data? 0

    A) _____

11. What is minimum value? 0

    A) _____

12. What is maximum value? 0

    A) _____

13. What is Q1? 0

    A) _____

14. What is Q2? 0

    A) _____

15. What is Q3? 0

    A) _____

16. What is the IQR? 0

    A) _____

17. What is the mean? 0

    A) _____

18. Are there any outliers? What methods can you use? Which one is robust to outliers? 0

19. What are the four assumptions of the binomial distribution? 0

A) _____

B) _____

C) _____

D) _____

Remember to provide 4 decimal places.

20. Suppose events A and B are such that $P(A) = 2/5$, $P(B) = 2/5$, and $P(A \cup B) = 1/2$. Find $P(A \cap B)$. 0

21. Suppose events A and B are such that $P(A) = 1/3$, $P(A \cap B) = 1/4$, and $P(A \cup B) = 1/2$. Find $P(B)$. 0

22. Assume X follows binomial distribution with sample size, $n = 40$, and probability of success, $p = 0.8$. What is the probability that X equals 32, $P(X = 32)$. **Box YOUR answer.** 0

23. Assume X follows a Poisson distribution. On average there are 4 accidents that occur on 101 a day, what is the probability that X equals 2, $P(X = 2)$ tomorrow. **Box YOUR answer.** 0

Use the following information to answer questions 24 and 28. A school has 65% women (W) and 35% are men (M). It is known that 25% of women smoke and 29% of men smoke. What is the probability that a random student is smoking (given) is a female? (i.e., $P(W|S)$)

24. Create a table. [0]

25. Note the probability of smoking, $P(S)$ and how we found it. **Box YOUR answer.** [0]

26. Here we can now find the $P(W|S)$ **Box YOUR answer.** [0]

27. What is the complement of not smoking? **Box YOUR answer.** 0

28. What are the odds of smoking? **Box YOUR answer.** 0

Use the following information to answer questions 29 and 44. The mean time to travel to SF from SC is 64.3 (minutes and seconds) and standard deviation is 7.4 (minutes and seconds).

29. What is the probability that a random drive up to SF will be between 60.3 and 62.1 (minutes and seconds)? **Box YOUR answer.** 0

30. This means: 0

A) _____

31. What is the probability that a random drive up to SF will be greater than 59.3 (minutes and seconds)? **Box YOUR answer.** 0

32. This means: 0

A) _____

33. What is the probability that a random drive up to SF will be less than 75.6 (minutes and seconds)? **Box YOUR answer.** 0

34. This means: 0

A) _____

35. One time you went to SF real fast and you were among the 5^{th} percentile. How long did it take you? **Box YOUR answer.** 0

36. This means that: 0

A) _____

37. One time you went to SF real slow and you were among the 95^{th} percentile. How long did it take you? **Box YOUR answer.** 0

38. This means that: 0

A) _____

39. What is the probability that a random sample of 20 of you and your friends time sample's mean time to SF is below 65.3 (minutes and seconds)? **Box YOUR answer.** 0

40. This means that: 0

A) _____

41. What is the probability that a random sample of 20 of you and your friends time sample's mean time to SF is greater than 65.3 (minutes and seconds)? **Box YOUR answer.** 0

42. This means that: 0

A) _____

43. What is the probability that a random sample of 36 of you and your friends time sample's mean time to SF is between 62.3 and 65.3 (minutes and seconds)? **Box YOUR answer.** 0

44. This means that: 0

A) _____

45. Extra Credit: What does Going above the odds (GATO) mean? 0