Discrete Mathematics   Name _____
Fall Final Exam Study Guide   Date _____ Period ____

1. What type of sampling is being employed if the country is divided into economic classes and a sample is chosen from each class to be surveyed?

2. Questioning every 14th customer leaving a theater about the movie is an example of what type of sampling?

3. A middle school student passes out leaflets to the adults at a school function. The bottom of the leaflet has a survey about global warning that is to be returned to the student. This is an example of what type of sample?

4. The names of all 106 students from a class are written on identical slips of paper and placed into a large glass jar. The professor selects 11 slips from the jar without looking. What type of sample is being used?

For questions 5-8, use the information below.

Mrs. Zieman is testing the impact of colored paper on test performance. She randomly splits her Discrete Mathematics students into two groups. Group A takes their final exam on blue paper while Group B takes their final exam on normal, white copy paper. She then compares the results of the two groups on the final exam.

5. What type of study is Mrs. Zieman conducting?

6. Name the independent variable.

7. Name the dependent variable.

8. List 5 confounding variables that could impact the results of this study.

For questions 9 – 10, use the data below.

A recent statistics exam yielded the following 25 scores:

63	86	77	51	67
55	89	63	68	96
81	82	44	80	90
77	87	74	91	59
77	79	45	87	97

9. Ms. Burke is going to make a grouped frequency distribution with **6 classes**. What will the **width of each class** be?

10. Create a grouped frequency distribution with 6 classes.

Class Limits	Class Boundaries	Tally	Frequency	Cumulative Frequency

11. Construct a stem and leaf plot for the 25 scores.

Stem	Leaf

12. Find the mean for the following data set: 10, 5, 8, 3, 14

13. The mean bowling score for Mr. Kass' last 10 days was 155. If the sum of his bowling scores for the last nine games was 1,300, what was his score on game 10?

14. Find the median for the following data set: 32, 15, 29, 15, 25

Use the frequency distribution below to answer questions 15 and 16.

Age	Frequency
14	18
15	10
16	11
17	16
18	22

15. Find the median.

16. Find the mean.

17. Find the range for the following data set: 33, 44, 57, 19, 20, 47, 88, 76, 45, 44, 23

18. The number of police officers in a sample of city districts is found below. Find the mean and standard deviation of the data.

24	26	24	30	23	28	19	31	24	26	19

Mean : _____   Standard Deviation : _____

For questions 19 – 20, use the frequency distribution below.

Class	Frequency
0-9	18
10-19	18
20-29	9
30-39	9
40-49	9

19. Find the midpoint of the third class.

20. Find the mean for the data.

For questions 21 and 22, use the following data:

84, 88, 86, 70, 75m 72, 86, 78, 81, 86, 78, 81, 72, 73, 76, 77, 87, 88, 84

21. Find the interquartile range for the heights of college basketball players.

22. Find the first quartile for the heights of college basketball players.

23. For the data below, find the extreme outlier(s).

178, 123, 171, 163, 147, 201, 196, 166, 170, 171, 177

For questions 24 and 25, use the graph below.

Histogram of Tire Pressure
Motorcycle XYZ Production
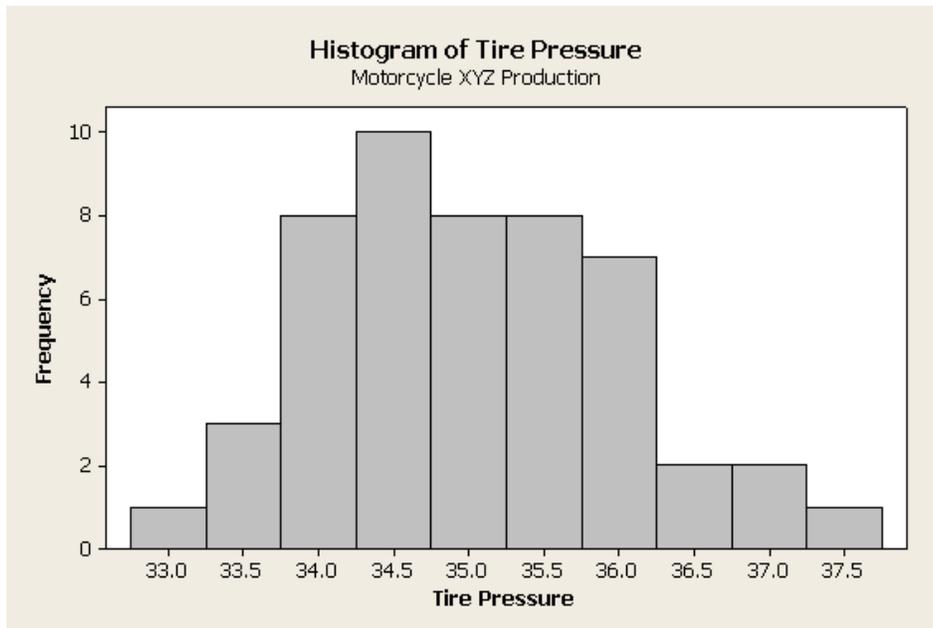
24. How many tires had their pressure examined?

25. What is the mode for tire pressure?

Assume a population is normally distributed with a mean of 88 and a standard deviation of 4. Use this information for questions 26 – 30.

26. Draw a normal curve and label the sections 1, 2, and 3 standard deviations away.

27. Given that 400 people were surveyed, how many people were within 1 standard deviation of the mean?

28. What interval represents 3 standard deviations away from the mean?

29. What percentage represents between 80 and 92?

30. What percentage represents the data above 96?

31. Find the value of z on the standard normal curve given the right tail is approximately 0.6026

32. If a normally distributed group of test scores have a mean of 70 and a standard deviation of 12, find the percentage of scores that will fall below 50.

33. A normal population has a mean of 33 and a standard deviation of 9. What percent of data points are greater than 44?

34. A normal population has a mean of 40 and a standard deviation of 11. What is the probability a data point is between 24 and 32?

35. A sample of size 20 is drawn from an approximately normal population with a population standard deviation is 5.5. If the sample mean is 52.4, construct a 95% confidence interval.

36. A study of 65 bolts of carpet showed that their average length was 74.2 yards. The standard deviation of the population is 3.6 yards. What is the 99% confidence interval for the data?

37. If a population has a standard deviation of 14, what is the minimum number of samples that need to be averaged in order to be 95% confident that the average of the mean is within 5 of the true mean?

38. In a survey of 305 registered voters, 130 of them wished to see Mayor Waffleskate lose her next election. Construct a 90% confidence interval for the proportion of voters who want to see Mayor Waffleskate defeated.

39. A recent poll of 700 people who work indoors found that 278 smoke. If the researchers want to be 99% confident of their results to within 3.5 percentage points, how large a sample is necessary?

40. Describe the correlation shown in each graph.
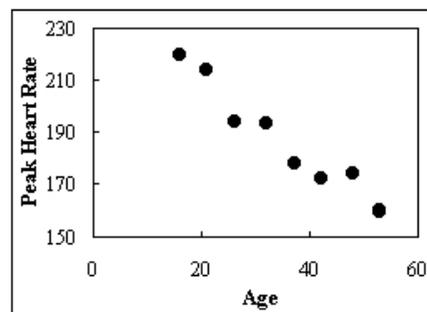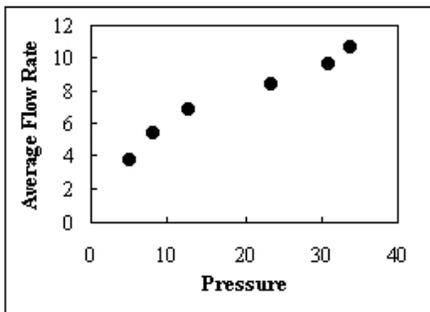
Use the data table below to answer questions 41 and 42.

| X	40	43	46	41	44
Y	182	214	210	194	218

41. Calculate the line of best fit.

42. Compute and interpret the correlation coefficient.

43. Describe the relationship between change in temperature and flow rate.
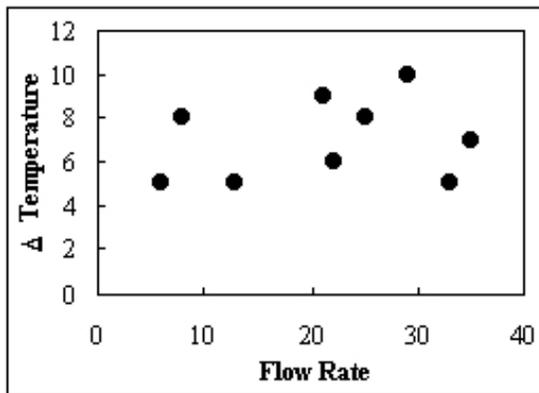
44. Below is a scatter plot showing the demand for a product (in hundreds) and its price (in dollars). Based on the scatter plot, estimate the demand (in hundreds) for a price of $21.
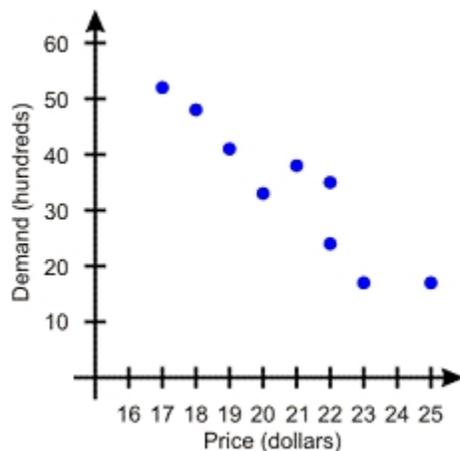
45. What values does probability always fall between?

46. A bag contains 3 pennies, 2 nickels, 4 quarters, and 3 dimes. If a coin is drawn at random, what is the probability

    a) It will be a penny

    b) It will not be a quarter

    c) It will be silver

47. At PNHS, 40% of seniors are attending some form of schooling after high school, 60% are moving out of their parent's house. And 15% are going to school after high school and are moving out of their parent's house. What is the probability that a senior attends school after PNHS or moves out of their parent's?

48. A bag of M&Ms has 7 brown, 4 blue, 2 orange, 1 red, and 3 yellow M&Ms.

    a) Find the probability of picking a brown M&M, replacing it, and then picking a yellow M&M.

    b) Find the probability of picking an orange M&M, eating it, and then picking a blue M&M.

    c) Find the probability of picking a red M&M, replacing it, and then picking a brown M&M.

    d) Find the probability of picking an orange M&M, eating it, and then picking a second orange M&M.

49. How many different teams of 5 basketball players can be formed from a team of 25 players?

50. In Mr. Spencer's 5th period class, there are 20 students. 12 of them have brown eyes, 4 have hazel eyes, 2 have green eyes, and 2 have blue eyes. If 4 students are selected at random, what is the probability that you select 2 with hazel eyes and 2 with brown eyes?