1. True or False? 1.08 is a valid value for the correlation coefficient, r.

2. True or False? -0.835 is a valid value for the correlation coefficient, r.

3. Using the scatter plot below, determine whether there is a positive linear correlation, negative linear correlation, or no linear correlation between the variables.



Use the data sets below to answer questions 4-6.

Geology and Earthquakes Is the magnitude of an earthquake, x related to the depth below the surface, y, at which the quake occurs?

x 2.9 4.2 3.3 4.5 2.6 3.1 3.5

y 5.0 9.9 11.3 10.0 4.8 3.9 5.5

4. Display the data in a scatter plot. (Please, orient the x and y-axes in the usual way.)

5. Calculate the correlation coefficient, r.

6. What do you conclude about the type of correlation?

Use the data sets below to answer questions 7-9.

College Crime Do larger universities tend to have more property crime? Let x be the student enrollment (in thousands) and y be the number of burglaries in one year. (Please, orient the x and y-axes in the usual way.)

x 12.4 31.0 24.6 14.2 7.6 27.7 16.3 20.1

y 26 73 38 24 15 31 18 25

7. Display the data in a scatter plot.

8. Calculate the correlation coefficient, r.

9. What do you conclude about the type of correlation?

10. What is the relationship between the residuals and the regression line?

11. What is an important use for the equation of a regression line?

Use the data below to answer questions 12-17.

Auto Accidents and Age Let x be the age of a licensed driver (in years). Let y be the percentage of all fatal accidents for a given age due to failure to yield the right of way.

x 37 47 57 67 78 86

y 5 9 10 15 29 43

12. What is the equation of the regression line?

13. Construct a scatter plot for the data showing the regression line and the data points on the same graph.

Use the regression equation found in question 13 to predict the value of y for the values of x given in questions 15-18. If the x-value is not meaningful to predict the value of y, explain why not.

14. x = 60 years

15. x = 80 years

16. x = 30 years

17. x = 50 years

Answer questions 18 and 19 about the probability experiment. A probability experiment is conducted by first spinning the spinner below, then tossing a coin.



18. What set represents the sample space?

19. Draw a tree diagram for the probability experiment.

Use the information given for the event below to answer questions 20-22.

Recognizing Simple Events A computer is used to randomly select a number between 1 and

2000. Event A is selecting a number greater than 1700.

20. What is the number of outcomes?

21. Is event A a simple event (Yes or No)?

22. Explain the reason for your decision in question 21.

23. Multiple Choice Quiz A multiple choice quiz has four possible answers per question. Assuming that no questions are left unanswered, in how many ways can a 10 question multiple choice quiz be answered?

24. True or False? The sum of the probability of event A and the probability of its complement is 1.

25. True or False? It is possible for a probability to lie outside the interval [0; 1].

26. Finding Probabilities: A company with 8472 employees selects employees for random drug tests. Each employee is assigned a number between 1 and 8472. The company uses a computer to randomly select employee numbers that range from 1 to 8472. Find the probability of selecting a number greater than 6500.

27. Probability Experiment: A probability experiment consists of spinning the spinner used in problem 18 and rolling a six-sided die. What is the probability of spinning an even number and then rolling an odd number greater than 2?

28. Using a Frequency Distribution to Find Probabilities Use the frequency distribution below to find the required probability.

Ages of Voters Frequency (in millions)

18 to 20 years old 5.8

21 to 24 years old 8.5

25 to 34 years old 21.7

35 to 44 years old 27.7

45 to 64 years old 51.7

65 years old and over 26.7

What is the probability that a voter chosen at random is between 21 and 34 years old?

29. Using a Pie Chart to Find Probabilities Use the pie chart below to find the required probability.

The pie chart represents grades attained by students on a recent quiz.



What is the probability that a student attained less than C on the quiz?

30. Classifying Events: Consider the events: Tossing a coin and rolling a six-sided die. Are the events independent or dependent?

Use the information below to answer questions 31-33.

Pickup Trucks In a survey, 840 adults were asked if they drive a pickup truck and if they drive a Ford. The results showed that one in 7 adults surveyed drives a pickup truck, and two in eleven adults surveyed drives a Ford. Of the adults surveyed that drive Fords, two in nine drive a pickup truck. You must show your calculations where applicable. 

31. Find the probability that a randomly selected adult drives a pickup truck given that he or she drives a Ford.

32. Find the probability that a randomly selected adult drives a Ford and drives a pickup truck.

33. Are the events driving a Ford and driving a pickup truck independent or dependent? (Note: Show your calculation justifying this decision to get full credit.)

Use the information below to answer questions 34 - 38.

Nursing Majors: The table below shows the number of male and female students enrolled in Nursing at a university for a recent semester.

Nursing Majors Non-nursing Majors Total

Males 121 1197 1318

Females 732 1458 2190

Total 853 2655 3508

34. Find the probability that a randomly selected student is a nursing major.

35. Find the probability that a randomly selected student is male.

36. Find the probability that a randomly selected student is a nursing major given that the student is a male.

37. Find the probability that a randomly selected student is a nursing major and male.

38. Are the events being a male student and being a Nursing major independent or dependent events? Show the probabilities that support your answer.