

NAME:

MATH 106

FINAL EXAM A

05/09/2012

Students have two hours and forty-five minutes to complete this exam. Be sure to write down all steps and work, not just an answer. Each question is worth the shown number of points.

1) In how many ways can six students be seated in seven rows. (10 points)

2) Let $Y = \{x|x \text{ is a day of the week that ends in y}\}$, list all elements of Y and find a proper subset of Y (10 points)

3) Olga must take four exams in a geography class. If his scores on the first three exams are 85, 72, and 77, what score does he need on the fourth exam to for her overall mean to be 80? (10 points)

4) Taco Bell offers two types of tacos, regular and supreme, on three types of taco shells. How many ways are there to choose three tacos at Taco Bell? (10 points)

5) In a survey, 680 adults were asked what television program they had watched. The following information was obtained: 145 watched neither sports nor a movie, and 240 watched a movie. If 79 of those that watched a movie did not watch sports, how many of the surveyed watched both sports and a movie? (hint: draw a Venn Diagram) (10 points)

6) What percent of the standard normal z-distribution lies between the following values?
(10 points)

$$z = -1.3 \text{ and } z = 1.1$$

7) Determine whether the statements are equivalent by constructing a truth table. (10 points)

“If the program is educational, then I watch television.”

“If the program is not educational, then I do not watch television.”

8) You order twenty burritos to go from a Mexican restaurant, seven with hot peppers and thirteen without. However, the restaurant forgot to label them. If you pick four burritos at random, find the probability of the event that none has hot peppers. (10 points)

9) The mean salary of 19 men is \$24,000 and the mean salary for 16 women is \$48,000.
Find the mean of all 35 people. (10 points)

10) Find the future value of an ordinary annuity with a \$250 monthly payment at 7.50% interest for 12 years. (10 points)

11) Find the mean, median, and mode for the set of data. (10 points)

80, 95, 95, 112, 120, 144

12) How many three letter code words can be constructed from the first ten letters of the Greek alphabet? (10 points)

13) Write the negation of the statement: “The freeway is under construction and I ride the train.” (10 points)

14) Construct the truth table for the symbolic expression. (10 points)

$$(p \wedge q) \rightarrow (p \vee q)$$

15) Translate the sentence into symbolic form. (10 points)

“If I drink coffee or eat candy, then I do not sleep soundly”

16) Based on his sales records, a salesman knows that his weekly commissions have the following probabilities: (10 points)

commission	\$0	\$1000	\$2000	\$3000	\$4000
probability	.15	.21	.44	.11	.09

Find his expected weekly commission.

17) In 1973, the University of California at Berkeley admitted 1,513 of 4,409 female applicants for graduate study, and 3,758 of 8,491 male applicants. (10 points)

a) Find the probability that an applicant was admitted.

b) Find the probability that an applicant was admitted, given she was female.

18) A PC manufacturer buys 30% of its chips from Japan and the rest from America. 2.1% of the Japanese chips are defective, and 1.4% of the American chips are defective. Find the probability that a chip is defective and made in Japan. (10 points)

19) You are dealt two cards from a deck of 52 cards (no jokers). (10 points)

a) Find the probability that both cards are jacks.

b) Find the probability that both cards are diamonds.

c) Find the probability that both cards have the same value, given one card is the Jack of diamonds.

20) Mendel found that snapdragons have no color dominance; a snapdragon with one red gene and one white gene will have pink flowers. If a pure-red snapdragon is crossed with a pure-white one, find the probability of a red offspring. (10 points)