

M118 Final Review

- 1) Find the amount due on a loan of \$8,500 at 12.5% simple interest at the end of 4 years.
- 2) If you pay \$5,500 for a simple interest note that will be worth \$6,000 in 21 months, what annual simple interest rate will you earn? (Compute the answer to one decimal place.)
- 3) Construct the amortization table for a \$1,000 debt that is to be repaid in 6 monthly payments at 1.24% interest per month on the unpaid balance.
- 4) What amount will be in an account after 1.5 years if \$4,000 is invested at 6% compounded semiannually?
- 5) How much should you invest now at 8% compounded semiannually to have \$8,500 to buy a car in 2.5 years?
- 6) An investment company pays 12% compounded quarterly. What is the effective rate? (Compute the answer to two decimal places.)
- 7) How many months will it take until an account will have \$4,500 if \$2,500 is invested now at 15% compounded monthly?
- 8) What is the future value of an ordinary annuity at the end of 3 years if \$200 is deposited each quarter into an account earning 6% compounded quarterly?
- 9) An ordinary annuity has a value of \$1,333.85 at the end of 4 years when \$150 is deposited every 6 months into an account earning 6% compounded semiannually. How much interest has been earned?
- 10) You deposit \$130 each month into a savings account that pays 8.5% compounded monthly. How much interest will you have earned after 8 years?
- 11) A company establishes a sinking fund to replace equipment at an estimated cost of \$100,000 in 9 years. How much should be invested each month into an account paying 12% compounded monthly in order to have \$100,000 in 9 years?
- 12) You can afford semiannual deposits of only \$75 into an account that pays 15% compounded semiannually. How many half years will it be until you have \$10,000 to buy a car? (Round up to the next higher half if not an integer.)
- 13) A couple decides on the following plan for their child's college education: When the child is 6 months old, and every 6 months thereafter, they will deposit \$310 into a savings account paying 9.5% interest compounded semi-annually. After the child's tenth birthday (20 payments), they will stop making payments and let the money earn interest, at the same rate (8 more years) until the child is 18 and ready for college. How much money (to the nearest dollar) will be in the account when the child is ready for college?
- 14) An individual makes annual year-end deposits of \$500 into an ordinary annuity. After 10 years, the annuity is worth \$9,700. What annual rate (compounded annually) has this annuity earned? Solve graphically and express the answer as a percentage, correct to two decimal places.
- 15) What is the present value of an ordinary annuity that pays \$400 per quarter for 6 years if money is worth 9% compounded quarterly?

- 16) You have decided to buy a new stereo system for \$2,500 and agreed to pay in 30 equal quarterly payments at 1.25% interest per quarter on the unpaid balance. How much are your payments?
- 17) You have purchased a new house, and have a mortgage for \$70,000 at 15%. The loan is amortized over 20 years in equal monthly payments of \$921.75. Find the total amount paid in interest when the mortgage is paid off.
- 18) A bank makes a home mortgage loan of \$160,000 at 10% amortized in equal monthly payments over 30 years. What is the total amount paid in interest when the mortgage is paid off? (Round to the nearest dollar.)
- 19) A \$7,000 debt is to be amortized in 15 equal monthly payments of \$504.87 at 1.00% interest per month on the unpaid balance. What is the unpaid balance after the second payment?
- 20) You have agreed to pay off an \$8,000 loan in 30 monthly payments of \$298.79 per month. The interest rate of the loan is 0.75% per month on the unpaid balance. What is the unpaid balance after 12 monthly payments have been made?
- 21) A couple wishes to borrow \$125,000 in order to buy a house. They can pay a maximum of \$1200 per month. If the loan is at 9.5% compounded monthly, how many months will it take to pay off the loan? (Round answer to the next higher month if not an integer.)
- 22) A couple wishes to borrow \$140,000 in order to buy a house. They can pay a maximum of \$1500 per month. If the loan is at 9.6% compounded monthly, how many months will it take to pay off the loan? (Round answer to the next higher month if not an integer.)
- 23) A home was purchased 15 years ago for \$75,000. The home was financed by paying a 20% down payment and signing a 25-year mortgage at 9.0% compounded monthly on the unpaid balance. The market value is now \$100,000. The owner wishes to sell the house. How much equity (to the nearest dollar) does the owner have in the house after making 180 monthly payments?
- 24) Solve by elimination using addition: $4x - 2y = -12$
 $3x + 5y = 4$
- 25) Use a graphing utility to solve the system $2x + 3y = 7$
 $9x - 4y = 11$
Give the answer to two decimal places.
- 26) Solve this system by the graphical method. On each graph, label each line with its equation, label the x - and y -intercepts, and label the point of intersection (if there is one). $x - y = -1$
 $3x + 4y = 18$
- 27) A company that manufactures laser printers for computers has monthly fixed costs of \$177,000 and variable costs of \$650 per unit produced. The company sells the printers for \$1,250 per unit. How many printers must be sold each month for the company to break even?
- 28) Only one of the following augmented matrices of a linear system is in reduced form. Indicate by letter which one is reduced and tell why the others are not reduced.

a) $\begin{bmatrix} 1 & 0 & -7 \\ 0 & 0 & 0 \\ 0 & 1 & -1 \end{bmatrix}$ b) $\begin{bmatrix} 0 & 1 & -4 \\ 1 & 0 & 2 \end{bmatrix}$ c) $\begin{bmatrix} 1 & 0 & -2 & -3 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$ d) $\begin{bmatrix} 1 & 0 & 0 & -5 \\ 0 & 0 & 1 & 2 \end{bmatrix}$

- 29) Solve by augmented matrix methods using Gauss–Jordan elimination: Show your initial matrix and final solution.

$$x_1 - 3x_2 - 5x_3 = -30$$

$$x_2 - 3x_3 = 12$$

$$x_1 + x_3 = -9$$

30) Find $3 \begin{bmatrix} 2 & -3 & 4 \\ 0 & -1 & 1 \\ 7 & 0 & 2 \end{bmatrix} - \begin{bmatrix} 5 & 3 & -3 \\ 1 & -6 & 2 \\ -1 & 4 & 8 \end{bmatrix}$

31) Given $A = \begin{bmatrix} 2 & -3 & 1 \\ 6 & -1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & -2 \\ 0 & 3 \\ -6 & 1 \end{bmatrix}$,

find AB and BA and label your results.

32) Find the inverse of $\begin{bmatrix} 8 & -4 & a \\ 0 & 1 & 0 \\ 1 & 0 & 1 \end{bmatrix}$

and tell under which conditions the inverse does not exist.

- 33) Solve by augmented matrix methods using Gauss–Jordan elimination: Show your initial matrix and final solution.

$$2x_1 + 2x_2 = -10$$

$$2x_1 - 4x_2 = 8$$

$$x_1 + x_2 = -5$$

- 34) A performance center has 2,500 seats. Tickets for an event are \$6 and \$8 per seat. Assuming that all tickets are sold and bring in a total of \$17,200, how many of each type of ticket were sold? Set up a system of equations and solve by augmented matrix methods using Gauss–Jordan elimination.
- 35) If \$9,000 is to be invested, part at 13% and the rest at 8%, how much should be invested at each rate so that the total annual return will be the same as \$9,000 invested at 9%? Set up a system of equations, letting x_1 be the amount invested at 13% and x_2 be the amount invested at 8%.
- 36) In producing three types of bricks: face bricks, common bricks, and refractory bricks, a factory incurs labor, material, and utility costs. To produce one pallet of face bricks, the labor, material, and utility costs are \$50, \$75, and \$35, respectively. To produce one pallet of common bricks, the labor, material, and utility costs are \$50, \$60, and \$30, respectively, while the corresponding costs for refractory bricks are \$75, \$100, and \$45. In a certain month the company has allocated \$12,000 for labor costs, \$14,500 for material costs and \$6,000 for utility costs. How many pallets of each type of brick should be produced in that month to exactly utilize these allocations? Set up a system of linear equations, letting x , y , and z be the number of pallets of face, common, and refractory bricks, respectively, that must be produced in that month.
- 37) A hospital dietitian wants to ensure that a certain meal consisting of rice, broccoli, and fish contains exactly 26,800 units of vitamin A, 840 units of vitamin E, and 11,160 units of vitamin C. One ounce of rice contains 400 units of vitamin A, 20 units of vitamin E, and 180 units of vitamin C. One ounce of broccoli contains 800 units of vitamin A, 60 units of vitamin E, and 540 units of vitamin C. One ounce of fish contains 2,400 units of vitamin A, 40 units of vitamin E, and 810 units of vitamin C. How many ounces of each food should this meal include? Set up a system of linear equations and solve using Gauss–Jordan elimination.

38) A trucking firm wants to purchase 10 trucks that will provide exactly 28 tons of additional shipping capacity. A model A truck holds 2 tons, a model B truck holds 3 tons, and a model C truck holds 5 tons. How many trucks of each model should the company purchase to provide the additional shipping capacity? Set up a system of linear equations and solve using Gauss–Jordan elimination.

39) Find the coordinates of the corner points of the solution region for:

$$3x + 4y \geq 36$$

$$3x + y \leq 18$$

$$x \geq 0$$

$$y \geq 0$$

40) A retail company offers, through two different stores in a city, three models, A, B, and C, of a particular brand of camping stove. The inventory of each model on hand in each store is summarized in matrix M. Wholesale (W) and retail (R) prices of each model are summarized in matrix N. Find the product MN and label its columns and rows appropriately. What is the wholesale value of the inventory in Store 1?

$$M = \begin{matrix} & \begin{matrix} A & B & C \end{matrix} \\ \begin{matrix} \text{Store 1} \\ \text{Store 2} \end{matrix} & \begin{bmatrix} 2 & 0 & 1 \\ 3 & 3 & 0 \end{bmatrix} \end{matrix} \quad N = \begin{matrix} & \begin{matrix} W & R \end{matrix} \\ \begin{matrix} \text{Model A} \\ \text{Model B} \\ \text{Model C} \end{matrix} & \begin{bmatrix} 60 & 90 \\ 120 & 150 \\ 40 & 50 \end{bmatrix} \end{matrix}$$

41) Formulate the following problem as a linear programming problem (DO NOT SOLVE).

A company which produces three kinds of spaghetti sauce has two plants. The East plant produces 3,500 jars of plain sauce, 6,500 jars of sauce with mushrooms, and 3,000 jars of hot spicy sauce per day. The West plant produces 2,500 jars of plain sauce, 2,000 jars of sauce with mushrooms, and 1,500 jars of hot spicy sauce per day. The cost to operate the East plant is \$8,500 per day and the cost to operate the West plant is \$9,500 per day. How many days should each plant operate to minimize cost and to fill an order for at least 8,000 jars of plain sauce, 9,000 jars of sauce with mushrooms, and 6,000 jars of hot spicy sauce? (Let x_1 equal the number of days East plant should operate and x_2 equal the number of days West plant should operate.)

42) This message was encoded with the following matrix: $\begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix}$

Decode this message:

28 64 32 91 30 65 24 60 38 99 42 99 35 82 36 81 46 119 13 31 23 51.

43) A vineyard produces two special wines, a white and a red. A bottle of the white wine requires 14 pounds of grapes and 1 hour of processing time. A bottle of red wine requires 25 pounds of grapes and 2 hours of processing time. The vineyard has on hand 2,198 pounds of grapes and can allot 160 hours of processing time to the productions of these wines. A bottle of the white wine sells for \$11.00, while a bottle of the red wine sells for \$20.00. How many bottles of each type should the vineyard produce in order to maximize gross sales? (Solve using the geometric method.)

44) Solve the following linear programming problem by determining the feasible region on the graph and testing the corner points.

$$\text{Maximize: } P = 4x_1 + 3x_2$$

$$\text{Subject to: } 3x_1 + 2x_2 \leq 30$$

$$4x_1 + x_2 \leq 20$$

$$x_1, x_2 \geq 0$$

- 45) Using a graphing calculator as needed, maximize $P = 524x_1 + 479x_2$, subject to
- $$265x_1 + 320x_2 \leq 3,390$$
- $$350x_1 + 345x_2 \leq 3,795$$
- $$400x_1 + 316x_2 \leq 4,140$$
- $$x_1, x_2 \geq 0$$
- Give the answer to two decimal places.
- 46) A coin that can turn up either heads (H) or tails (T) is flipped. If a head turns up on the first toss, a spinner that can land on any of the first 7 natural numbers is spun. If a tail turns up, the coin is flipped a second time. What are the different possible outcomes?
- 47) A person purchasing a new car has several options: 6 interior color choices, 5 exterior color choices, 2 choices of radios, and 5 choices of body styles. How many different cars are possible if one choice is made for each option?
- 48) A test is composed of 4 multiple choice problems and 8 questions that can be answered true or false. Each multiple choice problem has 4 choices. How many different response sheets are possible if only one choice is marked for each question?
- 49) How many nine-digit ZIP code numbers are possible if the first digit cannot be a four and adjacent digits cannot be the same?
- 50) A survey of residents in a certain town indicates 170 own a dehumidifier, 130 own a snow blower, and 80 own a dehumidifier and a snow blower. How many own a dehumidifier or a snow blower?
- 51) In a group of 255 people, 165 invest in mutual funds, 135 invest in stocks, and 75 invest in mutual funds and stocks. How many people in this group invest in neither mutual funds nor stocks?
- 52) From a group of 10 people, in how many ways can we choose a chairperson, vice-chairperson, treasurer, and secretary, assuming one person cannot hold more than one position?
- 53) How many ways can a committee of 5 Democrats and 2 Republicans be selected from a state legislature that contains 11 Democrats and 10 Republicans?
- 54) An urn contains 8 dimes and 6 quarters. Two coins are removed from the urn, one after the other without replacement, and the total value of the two coins is recorded. Find an appropriate sample space for this experiment and find the probability of each simple event in the sample space.
- 55) A committee of 6 people is to be chosen from a group of 6 men and 5 women. What is the probability that the committee will consist of 4 men and 2 women?
- 56) A department store receives a shipment of 23 new portable radios. There are 5 defective radios in the shipment. If 4 radios are selected for display, what is the probability that 2 of them are defective?
- 57) A box contains pieces of paper numbered 2 through 12. An appropriate sample space is $S = \{2, 3, 4, \dots, 12\}$. A single piece of paper is to be drawn. Let event $A = \{2, 4, 6, 8\}$ and let event $B = \{2, 3, 4, 5\}$. What is the event $A' \cap B'$?

- 58) A survey of 100 students at a large university found that 80 students played tennis, 43 played basketball, and 35 played both tennis and basketball. If a student is selected at random, what is the (empirical) probability that the student plays neither tennis nor basketball?
- 59) A group of 10 people consists of 5 men and 5 women. A committee of 4 is chosen from this group. What is the probability that one or more of the committee members is a man?
- 60) A shipment of 28 compact disc players contains 4 that are defective. If 7 players from this shipment are selected at random and tested, what is the probability that at least one defective player will be found?
- 61) The odds in favor of event A are 3:5. What is the probability of A'?
- 62) A survey of men and women pet owners found that 25 owned a dog, 35 owned a cat, 4 owned a bird, and 1 owned a gerbil. Of the women, 10 owned a dog, 15 owned a cat, 4 owned a bird, and 0 owned a gerbil. No person owned more than one pet. What is the probability that a person chosen at random from this group is male and owned a cat or a dog?
- 63) From a survey involving 2,000 students at a large university, it was found that 1,300 students had classes on Monday, Wednesday, and Friday; 1,500 students had classes on Tuesday and Thursday; and 800 students had classes every day. If a student at this university is selected at random, what is the (empirical) probability that the student has classes only on Tuesday and Thursday?
- 64) A class of 40 students has 10 honor students and 13 athletes. Three of the honor students are also athletes. One student is chosen at random. Find the probability that this student is an athlete if it is known that the student is not an honor student.
- 65) A group of 25 people contains 10 brunettes, 8 blondes, and 7 redheads. Of the 20 girls in the group, 8 are brunettes, 6 are blondes, and 6 are redheads. A person is selected at random. Are the events of being a girl and having brown hair independent?
- 66) A box contains 7 red balls and 3 white balls. Two balls are to be drawn in succession without replacement. What is the probability that the sample will contain exactly one white ball and one red ball?
- 67) In building the space shuttle, NASA contracts for certain guidance components to be supplied by three different companies: 41% by company A, 25% by company B, and 34% by company C. It has been found that 1%, 1.75%, and 2% of the components from companies A, B, and C, respectively, are defective. If one of these guidance components is selected at random, what is the probability that it is defective?
- 68) One urn has 4 red balls and 1 white ball; a second urn has 2 red balls and 3 white balls. A single card is randomly selected from a standard deck. If the card is less than 5 (aces count as 1), a ball is drawn out of the first urn; otherwise a ball is drawn out of the second urn. If the drawn ball is red, what is the probability that it came out of the second urn?
- 69) A small manufacturing company has rated 75% of its employees as satisfactory (S) and 25% as unsatisfactory. Personnel records show that 80% of the satisfactory workers had previous work experience (E) in the job they are now doing, while 15% of the unsatisfactory workers had no work experience (E') in the job they are now doing. If a person who has had previous work experience is hired, what is the approximate empirical probability that this person will be an unsatisfactory employee?

70) Graph the data in the following table using a broken line graph:

Number of Inches of Snowfall Per Last 6 Winters in Our Area					
93-94	94-95	95-96	96-97	97-98	98-99
29.9	4.0	24.2	5.3	22.8	8.2

71) Using a graphing calculator, find the mean and standard deviation for the following data set:

1.5, 3.5, 2.2, 7.9, 4.3, 2.0, 11.8, 13.7, 15.7, 6.4

72) The starting salaries (in thousands of dollars) of 20 graduates chosen at random from the graduating class of an urban university are recorded in the table:

Starting Salaries									
32	37	30	23	29	25	40	26	41	34
33	30	27	31	42	24	35	38	36	35

- a) Construct a frequency and relative frequency table using a class interval width of 4 and starting at 20.5.
- b) Construct a histogram.

73) Given the data set: 200, 700, 300, 300, 900, 300, 400, 200, 500, 600, find the following:

- a) the mean
- b) the mode
- c) the median
- d) the range

74) Given the following grouped data, find the mean:

Intervals	Frequencies
0.5-2.5	1
2.5-4.5	3
4.5-6.5	8
6.5-8.5	5
8.5-10.5	3

75) Find the standard deviation of set this set of four math test grades:

78, 92, 85, 70

76) Find the standard deviation of this data set whose mean is 15.8:

Intervals	Frequency
9.5-12.5	3
12.5-15.5	6
15.5-18.5	7
18.5-21.5	4

77) Find the median of this grouped data set:

Intervals	Frequency
9.5-12.5	2
12.5-15.5	3
15.5-18.5	6
18.5-21.5	4

- 78) Given the binomial distribution function $P(x) = C_{6,x}(.7)^x(.3)^{6-x}$, find:
- the mean
 - the standard deviation
- 79) A certain lawyer wins 80% of all her cases.
- What then is the probability that she will win exactly 2 of her next 5 cases?
 - What is the probability that she will win at least 2 of her next 5 cases?
- 80) A normal distribution has mean 200 and standard deviation 50. Find the area under the normal curve from the mean to 224.
- 81) The duration of routine operations in a certain hospital has approximately a normal distribution with a mean of 72 minutes and a standard deviation of 9 minutes. What percentage of operations last less than 68 minutes?
- 82) Given the following data set, what actual percentage of the measurements lies within one standard deviation of the mean?
- | | | | | |
|---|---|---|---|---|
| 3 | 7 | 5 | 6 | 2 |
| 8 | 4 | 1 | 3 | 8 |
- 83) A fair coin is tossed 14 times. What is the probability of obtaining exactly 12 heads? Express the answer both in terms of $C_{n,k}$ and as a four-place decimal.
- 84) A botanist wants to grow a rare plant in his greenhouse. The probability that a given bulb will mature is .42. Suppose 6 bulbs are planted.
- Write the probability function defining this distribution.
 - What is the probability that 3 or more bulbs will mature? (Round your answer to three decimal places.)
- 85) A manufacturing process produces, on average, 1% defective items. The company ships 16 items in each box. Compute the mean and standard deviation if a success on a single trial (inspecting one item in a box) is finding the item defective.
- 86) A company guarantees customer satisfaction on the purchase of a product, or the company will refund the purchase price of the product. Previous experience has shown that 10% of the purchases are returned. What is the probability that no more than 1 of the next 7 purchases will be returned?
- 87) The life expectancy (in hours) of a fluorescent tube is normally distributed with mean 7,000 and standard deviation 1,000.
- Find the probability that a tube lasts for more than 8,900 hours.
 - Find the probability that a tube lasts for 8,000 hours.
 - Find the probability that a tube lasts less than 8,000 hours.
- 88) A pharmaceutical laboratory claims that a drug it produces causes serious side effects in 60 people out of 1,000 on the average. A research team administers the drug to 400 randomly chosen people. Assuming the laboratory's claim is correct, use the normal approximation to the binomial distribution to find the probability that 19 or fewer people experience serious side effects.
- 89) The duration of routine operations in a certain hospital has approximately a normal distribution with an average of 130 minutes and a standard deviation of 15 minutes. What percentage of operations last longer than 150 minutes?

90) Based on analysis of seismological data from a certain region, a geologist decides that the probability an exploratory well will be successful in discovering a drillable quantity of oil is $1/3$. If 159 exploratory wells are drilled, what is the probability that fewer than 58 will be successful?

Answer Key

Testname: M118 FINAL REVIEW.TST

1) Answer: \$12,750.00

2) Answer: 5.2%

3) Answer: Payment	Interest	Principal	Balance
\$173.97	\$12.40	\$161.57	\$838.43
\$173.97	\$10.40	\$163.58	\$674.85
\$173.97	\$8.37	\$165.61	\$509.24
\$173.97	\$6.31	\$167.66	\$341.58
\$173.97	\$4.24	\$169.74	\$171.84
\$173.97	\$2.13	\$171.84	0

4) Answer: \$4,370.91

5) Answer: \$6,986.38

6) Answer: 12.55%

7) Answer: 48 months

8) Answer: \$2,608.24

9) Answer: \$133.85

10) Answer: \$5,306.79

11) Answer: \$518.42

12) Answer: 34 half years

13) Answer: \$20,978.00

14) Answer: 14.07%

15) Answer: \$7,355.61

16) Answer: \$100.45

17) Answer: \$151,220.00

18) Answer: \$345,481.00

19) Answer: \$6,125.91

20) Answer: \$5,013.45

21) Answer: 221 months

22) Answer: 173 months

23) Answer: \$60,251.45

24) Answer: (-2, 2)

25) Answer: (1.74, 1.17)

26) Answer: (2,3)

27) Answer: 295 per month

28) Answer: d

29) Answer: (-8,9,-1)

30) Answer: $\begin{bmatrix} 1 & -12 & 15 \\ -1 & 3 & 1 \\ 22 & -4 & -2 \end{bmatrix}$

31) Answer: $AB = \begin{bmatrix} 4 & -12 \\ 30 & -15 \end{bmatrix}$ $BA = \begin{bmatrix} -2 & -13 & 5 \\ 18 & -3 & 0 \\ -6 & 17 & -6 \end{bmatrix}$

Answer Key

Testname: M118 FINAL REVIEW.TST

32) Answer: $\begin{bmatrix} \frac{-1}{a-8} & \frac{-4}{a-8} & \frac{a}{a-8} \\ \frac{1}{a-8} & \frac{4}{a-8} & \frac{-8}{a-8} \end{bmatrix} \quad a \neq 8$

33) Answer: $x_1 = -2, x_2 = -3$

34) Answer: \$6 seats - 1400, \$8 seats - 1100

35) Answer: $x_1 + x_2 = 9000 \quad x_1 = 1800$
 $.13x_1 + .08x_2 = 810 \quad x_2 = 7200$

36) Answer: $50x + 50y + 75z = 12,000$
 $75x + 60y + 100z = 14,500$
 $35x + 30y + 45z = 6,000$

37) Answer: 5 oz of rice, 7 oz of broccoli, 8 oz of fish

38) Answer: 2 of model A and 8 of model B
 or
 4 of model A and 5 of model B and 1 of model C
 or
 6 of model A and 2 of model B and 2 of model C

39) Answer: (0, 9), (0, 18), (4, 6)

40) Answer: a)

W	R	
160	230	store 1
540	720	store 2

 b) \$160

41) Answer: Minimize $C = 8,500x_1 + 9,500x_2$
 Subject to $8,500x_1 + 2,500x_2 \geq 8,000$
 $3,000x_1 + 1,500x_2 \geq 6,000$
 $6,500x_1 + 2,000x_2 \geq 9,000 \quad x_1, x_2 \geq 0$

42) Answer: The yellow owl is here.

43) Answer: 132 bottles white wine, 14 bottles of red wine

44) Answer: $P = 45$ at $x_1 = 0, x_2 = 15$

45) Answer: $P = 5587.19$ at $x_1 = 8.36, x_2 = 2.52$

46) Answer: $\{(H, 1), (H, 2), (H, 3), (H, 4), (H, 5), (H, 6), (H, 7), (T, H), (T, T)\}$

47) Answer: 300

48) Answer: 65,536

49) Answer: 387,420,489

50) Answer: 220

51) Answer: 30

52) Answer: 5,040

53) Answer: 20,790

54) Answer:

x_i	\$.20	\$.35	\$.50	
p_i	.308	.527	.165	\

55) Answer: .325

56) Answer: .17

57) Answer: $A' \cap B' = \{7, 9, 10, 11, 12\}$

Answer Key

Testname: M118 FINAL REVIEW.TST

- 58) Answer: 0.12
59) Answer: 0.98
60) Answer: 0.71
61) Answer: $5/8$
62) Answer: $35/65$
63) Answer: 0.350
64) Answer: $1/3$
65) Answer: yes
66) Answer: $42/90$
67) Answer: 0.015
68) Answer: 0.53
69) Answer: 0.26
70) Answer:
71) Answer: mean = 6.9, standard deviation ≈ 4.92
72) Answer:

Interval	Frequency	Relative Frequency
20.5-24.5	2	.10
24.5-28.5	3	.15
28.5-32.5	5	.25
32.5-36.5	5	.25
36.5-40.5	3	.15
40.5-44.5	2	.10

73) Answer: a) mean = 440 b) mode = 300 c) median = 350 d) range = 700
74) Answer: mean = 6.1
75) Answer: $s = 9.4, \sigma = 8.2$
76) Answer: 2.98
77) Answer: 16.75
78) Answer: mean = 4.2, standard deviation = 1.1
79) Answer: a) 0.0512 b) 0.99328
80) Answer: 0.1844
81) Answer: 0.33
82) Answer: 60%
83) Answer: $C_{14,12}(.5)^{14} \approx .0056$
84) Answer: a) $P(x) = C_{6,x}(.42)^x(.58)^{6-x}$ b) $P(3 \text{ or more successes}) = .497$
85) Answer: mean = .16, standard deviation = .40
86) Answer: 0.850
87) Answer: a) $P(> 8900) = .0287$ b) $P(=8000) = 0$ c) $P(<8000) = .8413$
88) Answer: 0.1711
89) Answer: 9.1%
90) Answer: $P(\text{less than 58 successes}) = .776$