

**Prob/Stat/Discrete
Review Packet A**

Name_____

1) Find $P(z < -1.55)$

- a) 0.9394
- b) 0.0606
- c) 0.9778
- d) 0.0222

2) In a recent year, the sophomore class taking the Nevada High School Proficiency Mathematics exam had a mean score of 340 with a standard deviation of 45. Assume that the scores are normally distributed. Find the probability that a student had a score higher than 353.

- a) 0.2136
- b) 0.3863
- c) 0.4864
- d) 0.8433

3) A normal distribution has a mean of 86.2 and a standard deviation of 12.3. Find the probability of an x value more than 65.5.

- a) 0.9538
- b) 0.0458
- c) 0.9919
- d) 0.0081

4) The average number of hours per week a high school student watches television is 12.5 hours, with a standard deviation of 2.4 hours. Find the probability of a student watching between 9.6 and 14.8 hours of television.

- a) 0.6257
- b) 0.7176
- c) 0.8083
- d) 0.4917

5) Find $P(z > -0.34)$

- a) 0.7704
- b) 0.2296
- c) 0.6331
- d) 0.8749

6) The area to the right of a z -score is 0.4297. What is the z -score?

- a) 0.18
- b) 0.82
- c) -0.18
- d) -0.82

7) The probability of being lower than a specific z -score is 5.6%. What is the value of the z -score?

- a) -1.57
- b) 1.57
- c) -1.59
- d) 1.59

8) What z -score is at the 40th percentile?

- a) 0.25
- b) -0.25
- c) 0.75
- d) -0.75

9) SAT English scores are normally distributed with a mean score of 690 and a standard deviation of 75. What score is at the 85th percentile?

- a) Around 753
- b) Around 770
- c) Around 761
- d) Around 768

10) The mean home price in Reno is \$454,889, with a standard deviation of \$54,600. 65% of the homes in Reno are more expensive than John's home. What is the price of John's home?

- a) \$399,414.51
- b) \$433,850.50
- c) \$430,619.16
- d) \$475,577.23

15) In order to set rates, an insurance company is trying to estimate the number of sick days that full time workers at an auto repair shop take per year. A previous study indicated that the standard deviation was 3.3 days. How large a sample must be selected if the company wants to be 99% confident that the true mean differs from the sample mean by no more than 1 day?

- a) 141 b) 73 c) 31 d) 512

16) A random sample of 95 students has a test score with $\bar{x} = 72.5$ and $s = 14.5$. Construct the confidence interval for the population mean, μ if $c = 0.90$.

- a) (71.9, 73.1) b) (69.6, 75.4)
c) (70.1, 74.9) d) (68.7, 76.3)

17) A group of 40 bowlers showed that their average score was 225 with a standard deviation of 10. Find the 95% confidence interval of the mean score of all bowlers.

- a) (219, 227) b) (222, 228)
c) (226, 234) d) (221, 229)

18) Construct a 95% confidence interval for the population mean, μ . Assume the population has a normal distribution. In a recent study of 26 seniors, the mean number of hours per week that they spent doing homework was 15.1, with a standard deviation of 4.9 hours.

- a) (14.6, 19.6) b) (13.1, 17.1) c) (14.1, 20.2) d) (12.9, 21.3)

19) The standard IQ has a mean of 100 and a standard deviation of 8. We want to be 95% certain that we are within 2 IQ points of the true mean. Determine the required sample size.

- a) 153 b) 3 c) 21 d) 62

Use the data for home prices for # 20 – 25.

Price (Thousands of \$)	\$150	\$175	\$200	\$220	\$240	\$260	\$280
Sales of New Homes This Year	145	119	99	75	82	43	24

20) Find the equation of the regression line.

- a) $\hat{y} = -0.79x + 249.86$ b) $y = 246.16x + 0.77$
c) $\hat{y} = -0.89x + 276.95$ d) $y = -0.77x + 246.16$

21) What is the value of the correlation coefficient, r ?

- a) 0.96 b) -0.97 c) -0.98 d) 0.88

22) Predict the number of new homes sold at a price of \$300,000.

- a) around 15 b) around 9 c) around 13 d) around 10

23) 200 homes are sold this year at a certain price. Use the regression line to estimate the price.

- a) around \$86,461 b) around \$74,502 c) around \$62,394 d) around \$59,948

24) Find the residual value for a home priced at \$240,000.

- a) 19.74 b) -19.74 c) 18.65 d) -18.65

25) What percentage of the variation in the data can be explained by the regression line?

- a) 96% b) 98% c) 79% d) 83%

26) A collection of a set of data (x) has a mean 14 with a standard deviation of 4.8. Another variable (y) has a mean of 28 with a standard deviation of 2.3. The correlation coefficient is 0.94. Find the equation of the linear regression line.

- a) $y = -1.96x + 55.44$
b) $y = 1.96x + 0.56$
c) $y = -0.45x + 34.3$
d) $y = 0.45x + 21.7$

27) Jack and Sara borrow \$25,000 for a down payment on their house. The loan is calculated at a simple interest rate of 7.5%. If they pay back the loan in 18 months, how much interest will they pay?

28) An investment is made of \$4000, and the future value of the investment is \$4780 after three years. Find the simple interest rate of the investment.

Use the following for #29 and 30: John's parents open a bank account on his 2nd birthday. They put \$3000 in the account, which has an interest rate of 4.5% compounded monthly.

29) How much money will be in the account on John's 18th birthday?

30) How much interest was earned over the life of the investment?

31) Heidi would like to save \$25,000 so that she can make a down payment on a home. How much should she invest in an account with 8% interest that is compounded monthly, so that she can reach her goal in four years?

32) In order to save for retirement, Jack makes a periodic deposit of \$600 into an annuity account that earns an interest rate of 5.5% compounded semiannually. How much money will be in this account after 25 years?

For #33, use the stock table for Netflix.

52 week high	52 week low	Stock	Sym	Div	Yld%	PE	Vol 100s	Hi	Lo	Close	Net Chg
28	12	NTF	ICR	0.43	1.7	22	9420	28	26.5	25	...

33) What is the annual earnings per share for Netflix?

34) The cost of a new 70 inch Sony 4k Ultra HDTV is \$3000(on sale). We can finance this by paying \$750 down and \$244.99 per month for 12 months. Determine the finance charge.

35) A particular credit card calculates interest using the unpaid balance method. The monthly interest rate is 2.34% on the unpaid balance on the first day of the billing period less payments and credits. Here are some of the details in the July 1-July 31 itemized billing.

July 1 Balance; \$1550

Payment Received July 10: \$500

Purchases Charged to the VISA Account: Dinner, \$78; flight ticket, \$410; hotel room, \$270

Last day of the billing period: July 31

Payment Due Date: August 9

The monthly payment is calculated in the following way: If the balance is less than \$600, the monthly payment is \$15. If the balance is more than \$600, the monthly payment is $\frac{1}{36}$ of the total balance on the account, rounded to the nearest dollar. Find the amount of the minimum monthly payment.

For #36 – 37: The price of a home is \$340,000. The bank requires a 20% down payment. After the down payment, the balance is financed with a 30-year fixed-rate mortgage at 5.5%.

36) Determine the monthly mortgage payment to the nearest dollar.

37) How much interest will be paid during the life of the mortgage?

38) How long will it take an investment of \$2000 at 5% compounded continuously to grow to \$6000?

Review Packet B

Name _____

39) Solve the following inequality: $-8 \leq 3x + 1 < 7$

- a) $-5 \leq x < -3.5$ b) $-4 \leq x < 2$ c) $-1 \leq x < 0.5$ d) $-3 \leq x < 2$

40) At Rhonda's diner, six loaded baked potatoes and four cheeseburgers provide 5540 calories.

Two loaded baked potatoes and three cheeseburgers provide 2830 calories. Find the calorie content of each item.

- a) potato: 520 calories, cheeseburger: 550 calories
b) potato: 550 calories, cheeseburger: 520 calories
c) potato: 580 calories, cheeseburger: 500 calories
d) potato: 530 calories, cheeseburger: 590 calories

41) When making a long distance call from a certain pay phone, the first three minutes of a call cost \$1.40. After that, each additional minute or portion of a minute of that call costs \$0.35. Find the maximum number of minutes one can call long distance for \$5.60.

- a) 15 minutes b) 16 minutes c) 17 minutes d) 12 minutes

42) Chelsea has nickels, dimes, and quarters in her coin purse. She has a total of \$2.80 from 20 coins. The number of quarters is two more than the number of nickels. The number of dimes is one more than the number of quarters. How many nickels did she have?

- a) 3 nickels b) 4 nickels c) 5 nickels d) 6 nickels

43) Solve using the substitution method:

$$2x - 9y = 23$$

$$y = 6x + 9$$

a) (3, 27)

b) (2, 21)

c) (-2, -3)

d) (-3, -9)

44) On a buying trip in Los Angeles, Rosaria Perez ordered 120 pieces of jewelry: a number of bracelets at \$8 each and a number of necklaces at \$15 each. She wrote a check for \$1310 to pay for the order. How many bracelets and how many necklaces did Rosaria purchase?

a) 70 bracelets and 50 necklaces

b) 55 bracelets and 65 necklaces

c) 60 bracelets and 60 necklaces

d) 64 bracelets and 56 necklaces

45) Solve the following system by graphing:

$$4x + 2y = -8$$

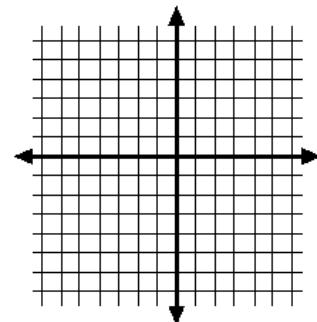
$$y = 3x + 11$$

a) (-2, 1)

b) (1, 3)

c) (-3, 2)

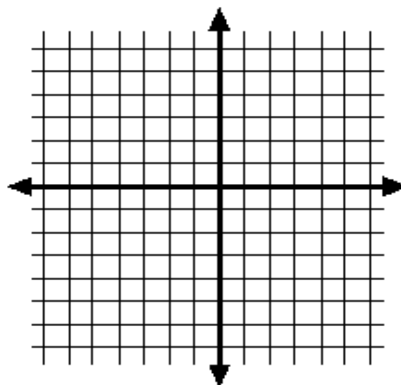
d) (-1, 2)



46) Graph the following system of inequalities on the graph shown.

$$y > 3x + 3$$

$$x + y > -1$$



Use the following word problem for #47 – 50:

The Discrete quiz consists of computation problems and graphing problems. Computation problems are worth 5 points each, and graphing problems are worth 10 points each. You can answer a computation problem in 2 minutes and a graphing problem takes 5 minutes. You have 40 minutes to take the quiz and may choose no more than 14 problems to answer. Let x equal the number of computation problems that a student gets correct. Let y equal the number of graphing problems a student gets correct on the quiz.

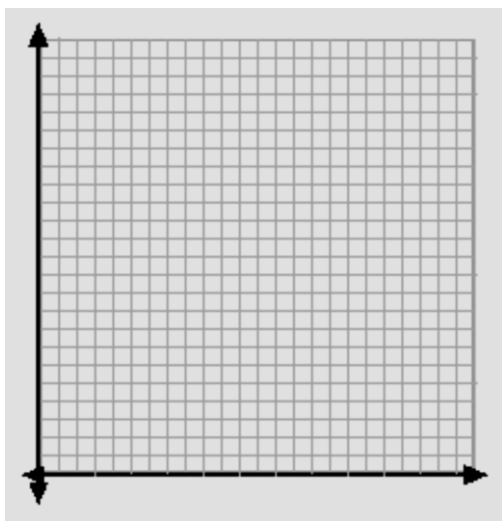
47) What is the objective function for this situation?

a) $z = 5x + 10y$

b) $z = 2x + 4y$

c) $z = 40x + 12y$

d) none of these



48) Which of the following inequalities is NOT one of the constraints for this situation?

a) $x + y \leq 14$

b) $5x + 10y \geq 40$

c) $2x + 5y \leq 40$

d) $x \geq 0$

49) Which of the following is NOT one of the vertices of the polygon formed by the constraints?

a) (14, 0)

b) (10, 4)

c) (0, 8)

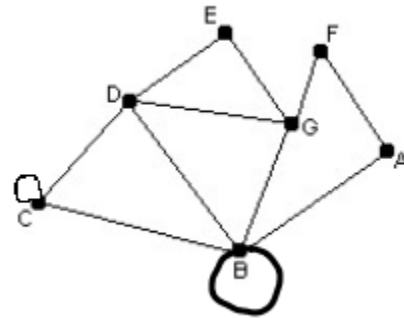
d) (20, 0)

50) Assuming you get all the problems you do correct, how many of each type should you answer to get the highest number of points?

- a) 14 computational b) 20 graphing
c) 8 graphing d) ten computational and four graphing

For # 51 – 53, use the graph shown.

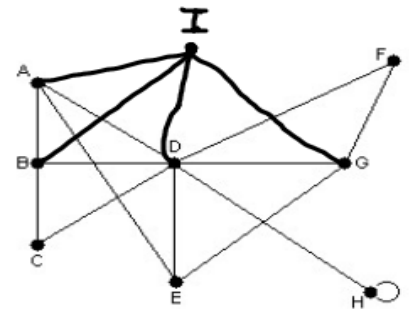
51) Is the graph complete? Is it connected?



52) Is the edge FA is a bridge?

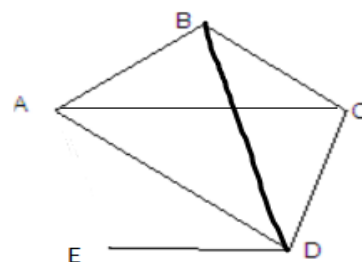
53) Find the degree of vertex B.

54) Does the graph have an Euler Path, an Euler Circuit, or neither?



55) Which of the following graphs is equivalent to the one shown?

- a)
- b)
- c)
- d)

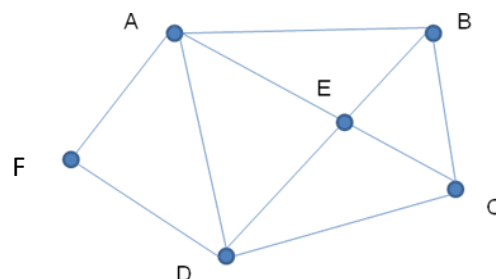


56) The layout of a city with land masses and bridges is shown. Draw a graph to model the land masses and bridges.



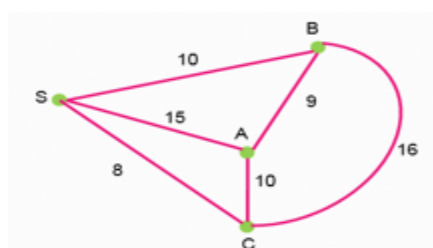
Determine if the city residents would be able to walk across all of the bridges (starting on either bank) without crossing the same bridge twice. Explain.

57) For the graph shown, C E B C D E A D F A B is best described as an Euler Circuit, an Euler Path, a Hamilton Path, or a Hamilton Circuit?



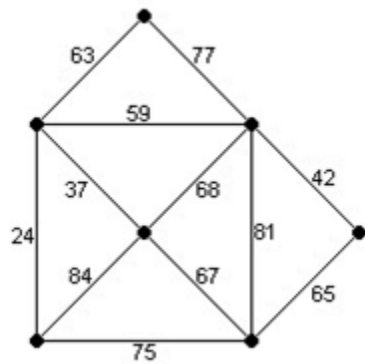
58) A complete graph has 8 vertices. How many Hamilton Circuits exist?

59) A restaurant chain has four different location is different cities, A, B, C, and S, as shown. The manager needs to start at the location in city C, visit each restaurant, and return to city C. Use the Nearest Neighbor Algorithm, starting at vertex C, to find the optimal circuit and its weight.



60) True or False? A spanning tree is a subgraph that contains all of a connected graph’s vertices, is connected, and contains only one circuit.

61) A new office building is built, and cat-5 lines need to be run in order to connect all of the offices. Use Kruskal’s algorithm to find the minimum amount of line needed.



62) Suppose that 4 Student Leadership committees all want to meet during lunchtime.

	Fundraising	Activities	Communication	Service	Accounting
Amy	X		X		X
Heather	X	X		X	
Sara			X		X
Amber	X	X	X		

What is the least number of days required for all committees to meet without out any scheduling conflicts?

63) Express each expanded form as a Hindu-Arabic numeral:
 $(9 \times 10^6) + (0 \times 10^5) + (1 \times 10^4) + (5 \times 10^3) + (5 \times 10^2) + (7 \times 10^1) + (4 \times 1)$

64) If the Babylonian numeral V stands for 1 and the Babylonian numeral < stands for 10, then write the Babylonian numeral as a Hindu-Arabic numeral: <<VV <VVV <<VVVV

65) Use the table to write the Mayan number as a Hindu-Arabic numeral.



0	1	2	3	4
5	6	7	8	9
10	11	12	13	14
15	16	17	18	19

66) Convert the number to base ten: 4502_{nine}

67) Convert the number to base ten: 21543_{seven}

68) Convert the base ten numeral 119 to base two.

69) Add in the indicated base: 5432_{six}
 + 452_{six}

70) Multiply in the indicated base: 32_{four}
 x 3_{four}
