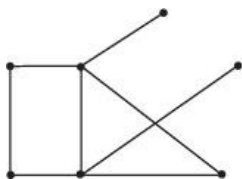


## Math 167 Help Session Interview Questions



1. (Chapter 1) Eulerize the given graph.

2. (Chapter 2) Use the mileage chart to find the lowest cost Hamiltonian circuit

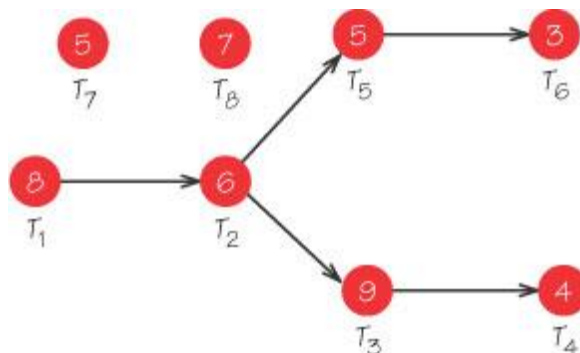
- (a) using the nearest neighbor method, starting at city C.
- (b) using the sorted edges method.

The distances listed are in miles.

	A	B	C	D	E	F
A	0	20	21	33	27	19
B	20	0	41	39	18	17
C	21	41	0	35	5	9
D	33	39	35	0	42	26
E	27	18	5	42	0	23
F	19	17	9	26	23	0

3. (Chapter 3) Using the given digraph, with time in minutes,

- (a) Determine which, if any, of the tasks are independent.
- (b) Create a priority list for critical path scheduling.
- (c) Use the priority list from part (b) to schedule these tasks on two processors.
- (d) Is the scheduling from part (c) optimal? Why or why not?



4. (Chapter 5)

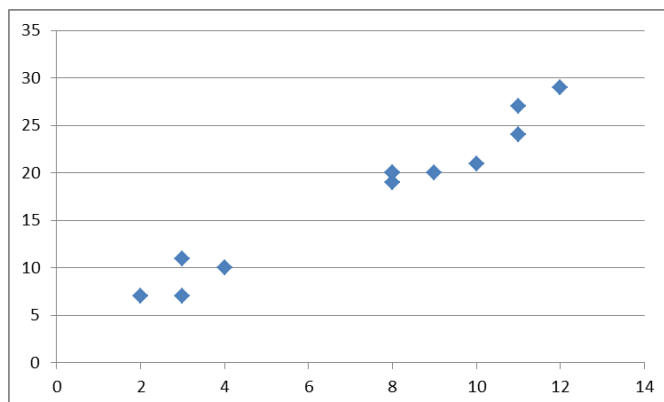
- (a) Display the data below in a stemplot, a boxplot and a histogram with class size of 4. What is the mean?  
0, 0, 2, 4, 4, 4, 10, 11, 12, 13, 13, 16, 18, 18, 20
- (b) What is the standard deviation for the data set 70, 73, 79?
- (c) A data set has a minimum value of 7,  $Q_1 = 14$ ,  $M = 17$ ,  $Q_3 = 22$ , and maximum value of 35. Are there any low or high outliers? Explain your answers.
- (d) A normal curve has a mean of 80 and standard deviation of 20. Sketch the curve and determine the probability that a data value falls between 100 and 120.

5. (Chapter 6)

Use the given scatterplot to answer the following questions

- (a) Would you expect the correlation between the variables to be around 0.9, 0.5 or 0.2?
- (b) Sketch a regression line and use it to estimate the value of  $y$  when  $x$  is 6.

$y =$  \_\_\_\_\_



**6. (Chapter 7)** A survey of 480 people found that 144 of them had run a red light in the past week. Determine the following

- (a)  $p =$  \_\_\_\_\_
- (b) Standard deviation = \_\_\_\_\_
- (c) 95% confidence interval = \_\_\_\_\_

**7. (Chapter 16)** A code  $a_1a_2a_3a_4a_5a_6$  uses the last digit as a check digit. The check digit is found using the formula

$$a_1 + a_3 + 3(a_2 + a_4) + 5a_5 \pmod{10}$$

- (a) What is the check digit for the code 23714?
- (b) Find the value of the missing digit  $x$  in the code 46 $x$ 782

**8. (Chapter 17)**

(a) Use a Huffman code to assign a binary code to the letters that occur with the following probabilities:

A	B	C	D
0.10	0.20	0.27	0.43

- (b) Use the Caesar cipher with a shift of 10 to encode the message PHONE.
- (c) Use a decimation cipher with a key of 17 to encode CASE.

**9. (Chapter 13)**

(a) Wagner and Brahms assign point values to the six musical instruments as shown in the table. Use the adjusted winner procedure to determine who gets which instruments and which instrument or instruments must be shared (if any).

Item	Wagner	Brahms
trumpet	14	5
saxophone	39	22
flute	26	10
harp	5	10
mandolin	6	5
banjo	10	48

(b) Larry, Moe, Shemp, and Curly inherit a race car. Larry bids \$58000, Moe bids \$64000, Shemp bids \$48000, and Curly bids \$60000 on the car. What is the fair division arrived at using the Knaster inheritance procedure?

**10. (Chapter 14)** A group of 4 people, U, W, A, and X decide to pool their money and purchase a bag of 100 identical rare coins. U contributed \$921, W contributed \$127, A contributed \$144, and X contributed \$51.

Use Webster's method to apportion the coins. Comment on your results.

**11. (Chapter 9)** An election has three candidates and the table below shows the number of votes that a certain order of voting received.

ABC	ACB	BAC	BCA	CAB	CBA
15	7	14	13	17	11

- (a) Who wins using the Borda Count method?
- (b) Who wins using the Hare method?