

1. The problem is best solved by using the worst-fit algorithm for bin packing.
2. The study was not an experiment. Only an experiment can give conclusive evidence of course and effect.
3. Obtain a list of student names from the registrar and select 250 names to contact.
4. The first four labels from row 132 are 089, 008, 192, and 445.
5. This type of study is a prospective study since it follows the children over a long period of time.
6.
 - I. True
 - II. False
 - III. False. The margin of error tells us that the percentage of the population who hold this opinion is between 73% ($77\% - 4\%$) and 81% ($77\% + 4\%$).
7. Find the class mark for each class: 3, 8, 13, 18, 23, 28, 33.
Enter the class marks in L_1 and the number of calls in L_2 .

Choose 1-VarStats L_1, L_2 , from the CALC menu.

$$\bar{x} = 13.92$$

$$s = 8.51$$

8. Enter x -values in L_1 and y -values in L_2 .

Choose LinReg ($ax + b$) L_1, L_2 from the CALC menu.

$$a = -.3227841036$$

$$b = 36.84885019$$

This equation is $y = -0.32x + 36.85$

9. $y = -.032x + 36.85$
 $y = -0.32(75) + 36.85$
 $y = 12.85$ hundreds of dollars
 $y = \$1,285$
10. Class width is the difference between the lower class limits of two successive classes.
The lower class limits of the first and second classes are 1 and 31 respectively.
Class width = $31 - 1 = 30$
The number of pieces of data is the sum of the frequencies.
 $n = 15 + 21 + 24 + 9 + 5 + 1 = 75$

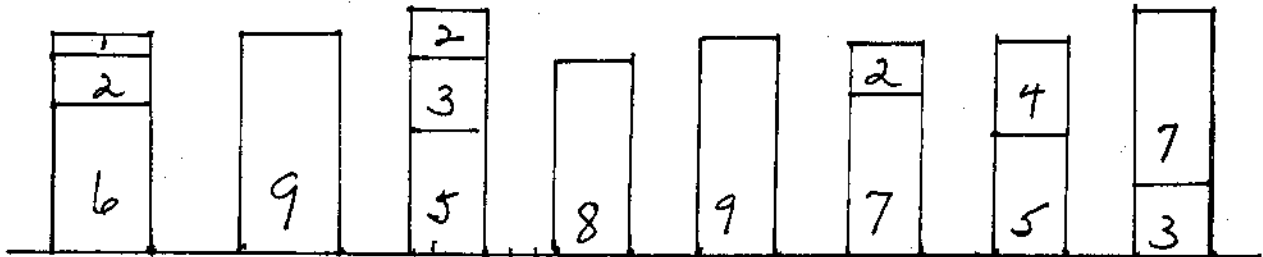
Name: _____

Section: _____

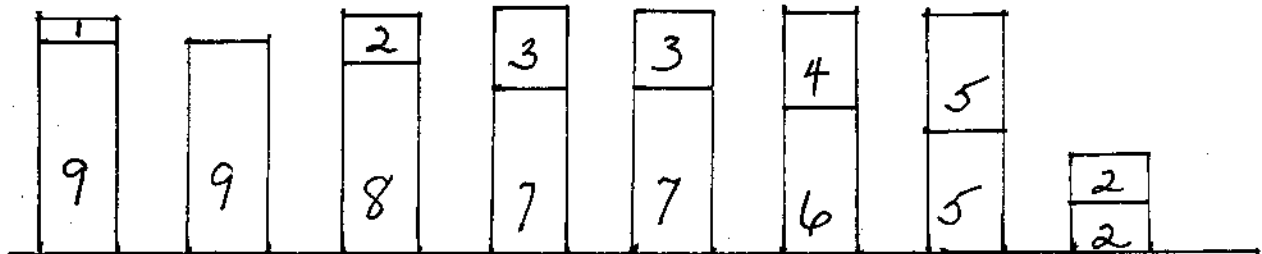
The following questions are free response. Please show all work in order to receive credit.

11. Using bins of capacity 10, apply each of the following algorithms to the following list: 6, 9, 5, 8, 3, 2, 1, 9, 2, 7, 2, 5, 4, 3, 7. (9 points)

a. Worst-fit



b. First-fit-decreasing



12. Determine whether each of the following statements is true or false. (14 points)

a. A prospective study may be used to show cause and effect.

F

b. Random selection of subjects for surveys is used to avoid bias.

T

c. In an experiment, an observed effect is called statistically significant if the experiment will help a large number of people.

F

d. In a double-blind experiment, neither participants nor researchers know who is taking an experimental drug.

T

e. The mean is strongly affected by an outlier in the data but the median is not.

T

f. Quartiles are strongly affected by an outlier in the data but the standard deviation is not.

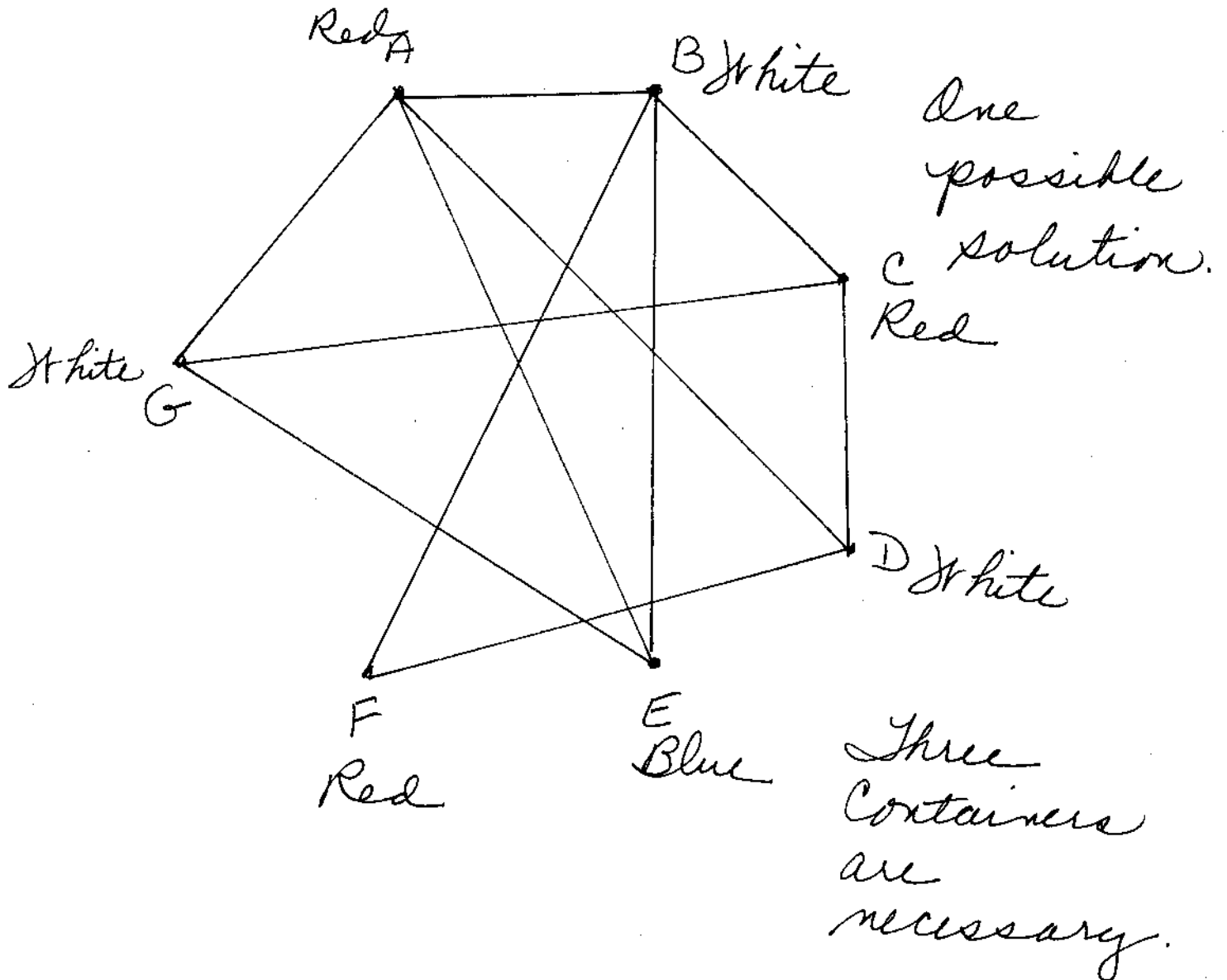
F

g. A response variable attempts to explain observed outcomes.

F

13. The table below shows chemical compounds which cannot be mixed without causing dangerous reactions. Draw the graph which would be useful in determining the minimum number of different containers necessary to dispose of the chemical. What is the minimum number of containers? (8 points)

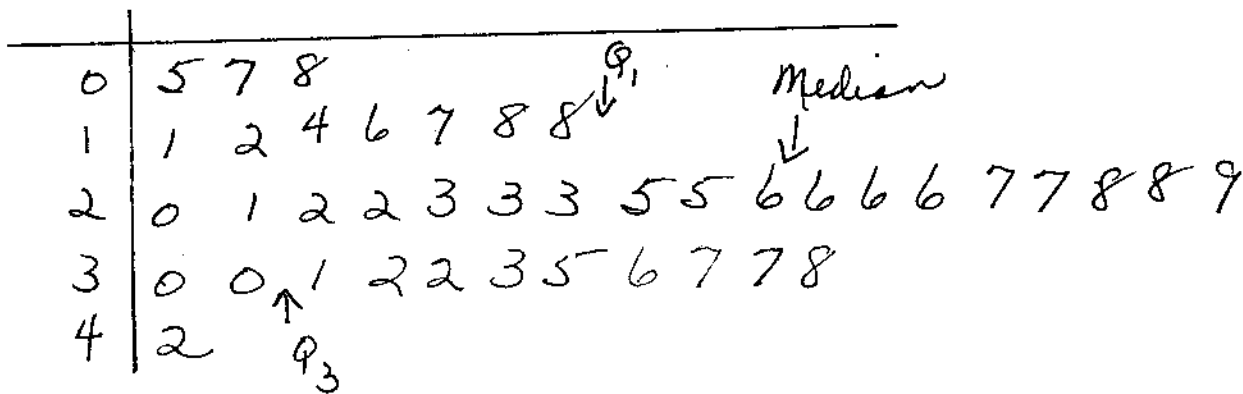
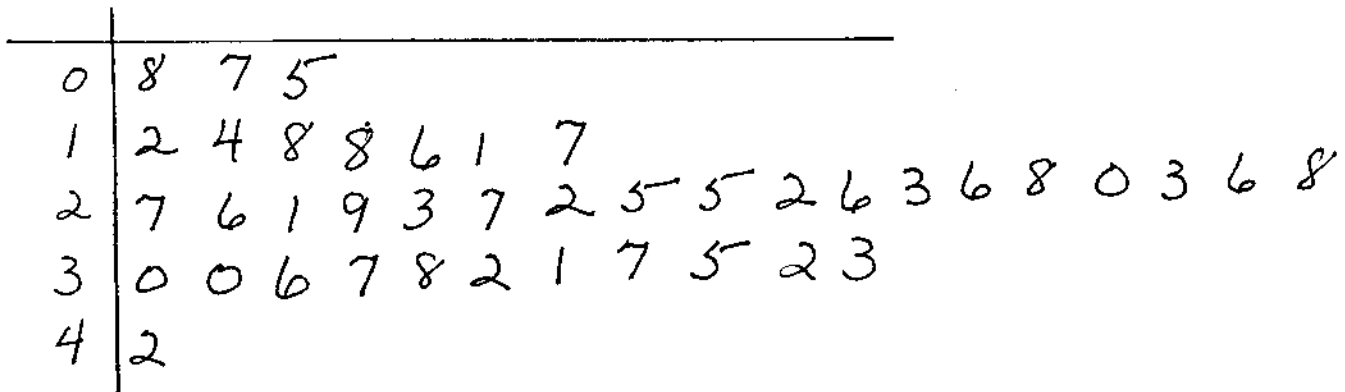
	A	B	C	D	E	F	G
A		X		X	X		X
B	X		X		X	X	
C		X		X			X
D	X		X			X	
E	X	X					X
F		X		X			
G	X		X		X		



14. The forty measurements given below represent the weights, in ounces, of zucchini grown in a garden one summer. (19 points)

12	8	23	14	25	22	16	28	35	26
27	26	30	18	37	26	31	37	20	28
42	21	27	7	25	18	23	11	23	32
30	29	36	22	38	32	26	5	17	33

a. Construct an ordered stemplot of this data.



b. Use the stemplot to calculate the five-number summary. Be sure to indicate how you find your numbers.

Position of median: $\frac{n+1}{2} = \frac{40+1}{2} = 20.5^{th}$ position

median = $\frac{26+26}{2} = 26$

Position of Q_1 and $Q_3 = \frac{20+1}{2} = 10.5^{th}$ position

$Q_1 = \frac{18+20}{2} = 19$ $Q_3 = \frac{30+31}{2} = 30.5$

L	Q_1	m	Q_3	H
5	19	26	30.5	42

c. Construct a frequency distribution with six classes.

$$\text{Range} = H - L = 42 - 5 = 37$$

$$\frac{37}{6} = 6.167 \approx 7$$

Classes	Tally	Frequency
5 - 11		4
12 - 18	+++	6
19 - 25	+++	9
26 - 32	+++ +++	14
33 - 39	+++	6
40 - 46		1

d. Construct a frequency histogram with six classes.

This is one possible solution.

