Quiz 1

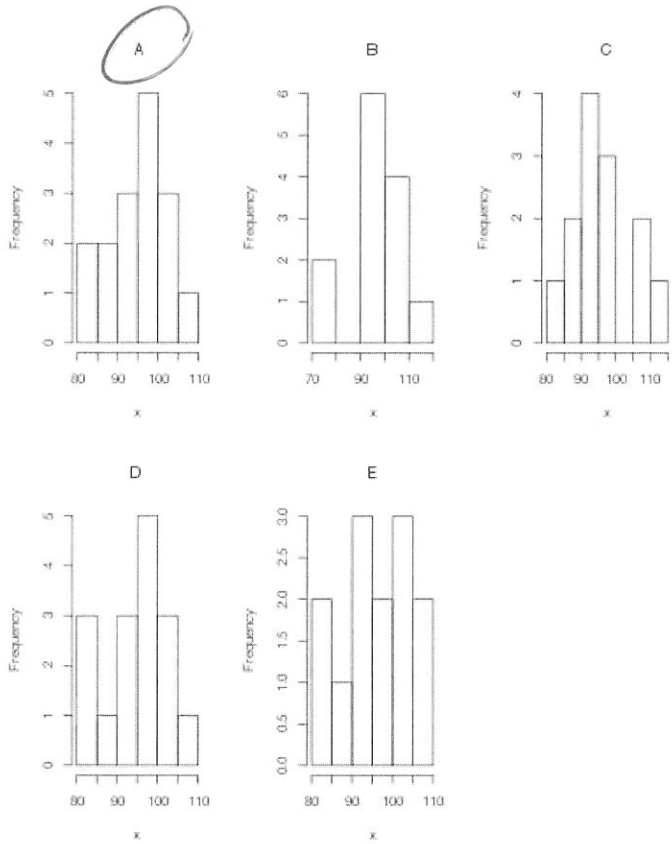
Name: _____

Red ID: _____

1. I randomly select 100 adults and record their gender, as well as whether or not they have received a high school degree. If I would like to display all of my data in one display, which of the following is correct:

a) There are 4 categorical variables, and I can display this data using a contingency table
b) There are 2 categorical variables, and I can display this data using a contingency table
c) There 2 categorical variables, and I can display this data using a bar graph or pie chart
d) There are 2 quantitative variables, and I can display this data using a scatterplot
e) There are 4 categorical variables, and I can display this data using a bar graph or pie chart

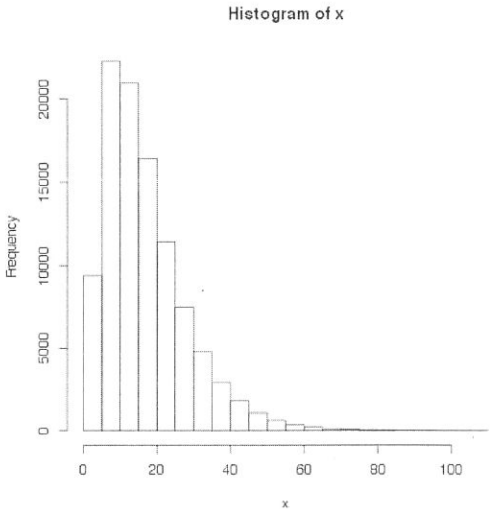
2. Which is the correct histogram for the following data: 82, 84, 85, 87, 93, 93, 94, 96, 96, 96, 97, 99, 101, 102, 104, 108



Use the histogram below to answer questions 3 and 4

3. Which of the following correctly describes the shape of the histogram below

a) Uniform and right skewed
b) Uniform and left skewed
c) Unimodal and right skewed
d) Unimodal and left skewed
e) None of the above



4. Which of the following represent, generally, the correct choice of measure of center and variability for the data in the histogram to the right?

a) Center: Median Variability: IQR
b) Center: Mean Variability: Standard deviation
c) Center: Median Variability: Standard deviation
d) Center: Mean Variability: IQR
e) None of the above

5. For the following data, if you were to follow the procedure used to create a boxplot, which of the observations would be considered outliers? You may draw a boxplot if you like to help answer this question, but you do not have to.

Observation Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Data	32	34	35	42	44	50	51	54	55	55	55	57	57	57	59	59	60	62
Observation Number	19	20	21	22	23	24	25	26	27	28	29	30	31					
Data	62	62	62	63	66	67	68	68	70	71	71	71	86					

a) 86
b) 32, 34, 86
c) 32, 34, 35
d) 32, 34
e) 32, 34, 35, 86

Loc of $M = \frac{n+1}{2} = \frac{31+1}{2} = 16$ 15 obs in each half

Loc of quartile $= \frac{15+1}{2} = 8$ $Q_1 = 54$ $Q_3 = 67$

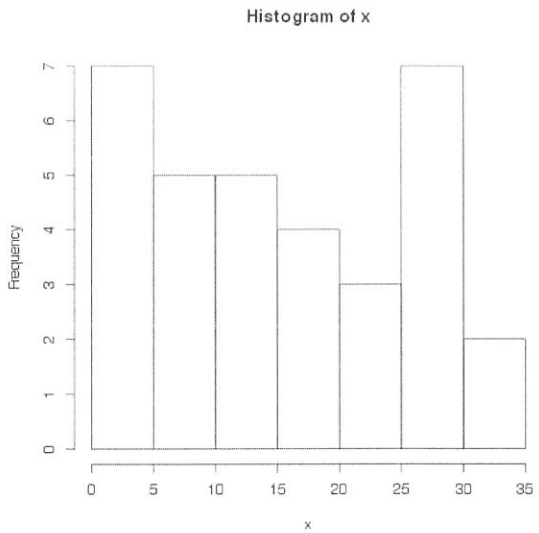
$IQR = 67 - 54 = 13$

lower fence: $Q_1 - 1.5(IQR) = 54 - 1.5(13) = 34.5$

upper fence: $Q_3 + 1.5(IQR) = 67 + 1.5(13) = 86.5$

6. For the histogram to the right, in which bins are Q1, M, and Q3?

a) Q1: (5-10) M: (15-20) Q3: (20-25)
b) Q1: (5-10) M: (10-15) Q3: (25-30)
c) Q1: (5-10) M: (15-20) Q3: (25-30)
d) Q1: (0-5) M: (10-15) Q3: (25-30)
e) Q1: (0-5) M: (15-20) Q3: (25-30)



$n = 7+5+5+4+3+7+2$

$= 33$

Loc of $M = \frac{33+1}{2} = 17$

16 obs in each half

Loc of quartile =

$\frac{16+1}{2} = 8.5$

Use the following data to answer questions 7 through 9

Trees suffering from fire blight, a bacterial infection, were given one of two treatments: either removal of affect limbs, or administration of antibiotic. After 3 years, trees were examined to see if they had survived, resulting in the following data:

	Outcome		
Treatment	Survived	Died	Total
Removal of affected limbs	29	13	42
Antibiotic	21	32	53
Total	50	45	95

7. What proportion of trees were given antibiotic as treatment?

a) 0.56
b) 0.71
c) 0.40
d) 0.34
e) 0.44

$\frac{53}{95}$

8. What proportion of trees survived and had affected limbs removed?

a) 0.69
b) 0.58
c) 0.53
d) 0.14
e) 0.31

$\frac{29}{95}$

9. What proportion of trees given antibiotic died?

a) 0.56
b) 0.47
c) 0.34
d) 0.71
e) 0.60

$\frac{32}{53}$

10. What is the standard deviation for the following data: 4 11 9

a) 3.82
b) 3.61
c) 2.94
d) 4.53
e) 13

from calculator

11. The following data was collected on patients in a mental hospital in a study investigating the relationship between schizophrenia and gender.

Observation number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Gender: 0 = Male 1 = Female	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
Schizophrenic: 0 = No 1 = Yes	0	0	0	1	1	1	1	0	0	1	0	1	1	0	0

Use the data above to fill in the data below

	Diagnosis		
Gender	Not Schizophrenic	Schizophrenic	Total
Male	4	4	8
Female	4	3	7
Total	8	7	15

Which of the following shows the conditional distribution of diagnosis, by gender?

a)

	Diagnosis		
Gender	Not Schizophrenic	Schizophrenic	Total
Male	0.40	0.60	1
Female	0.70	0.30	1
Total			

b)

	Diagnosis		
Gender	Not Schizophrenic	Schizophrenic	Total
Male	0.50	0.50	1
Female	0.57	0.43	1
Total			

c)

	Diagnosis		
Gender	Not Schizophrenic	Schizophrenic	Total
Male	0.50	0.57	
Female	0.50	0.43	
Total	1	1	

d)

	Diagnosis		
Gender	Not Schizophrenic	Schizophrenic	Total
Male	0.40	0.70	
Female	0.60	0.30	
Total	1	1	