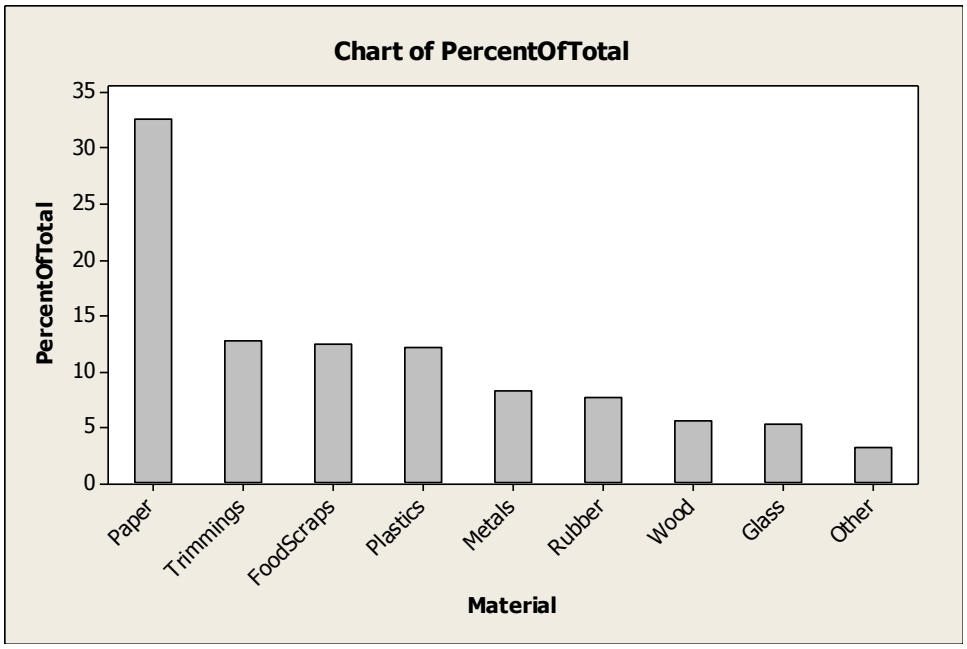
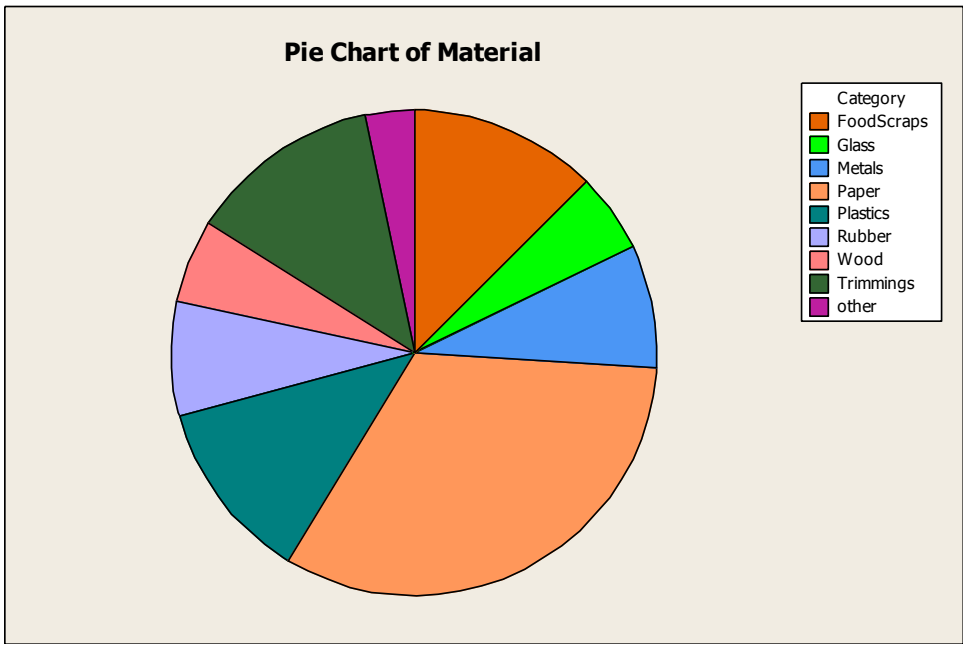
STAT 350 Lab 1 Solutions

Problem 1 (a)



(b)



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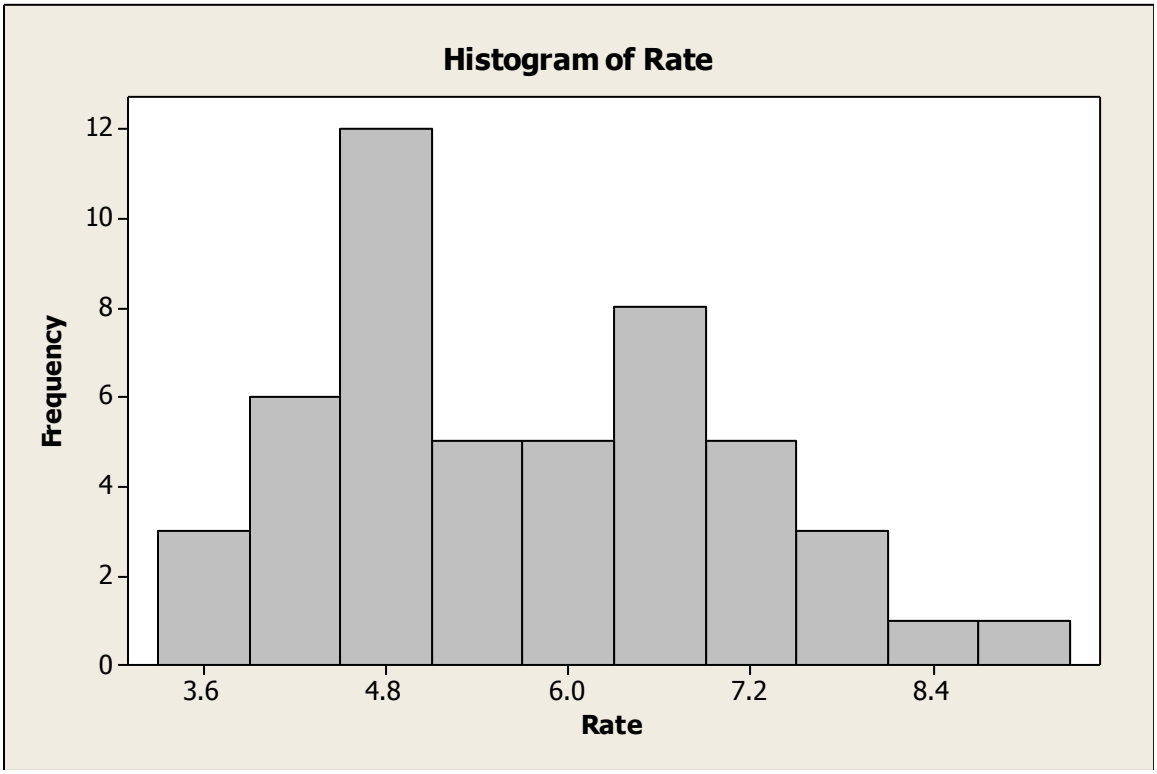
Problem 2

(a)



(b)

Stem-and-Leaf Display: Rate

```
Stem-and-leaf of Rate  N  = 50
Leaf Unit = 0.10

 1   3  3
 5   3  5679
10   4  01224
21   4  56666778999
25   5  0134
25   5  56889
20   6  0234
16   6  55566899
 8   7  134
 5   7  677
 2   8
 2   8  59
```

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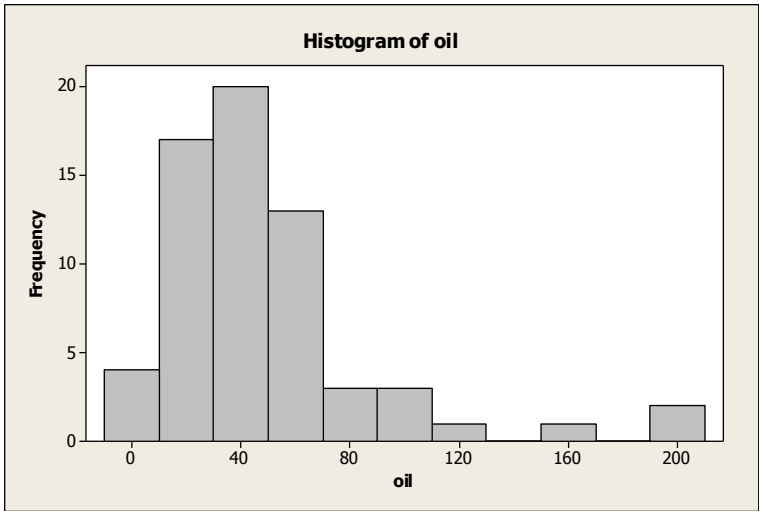
Problem 3

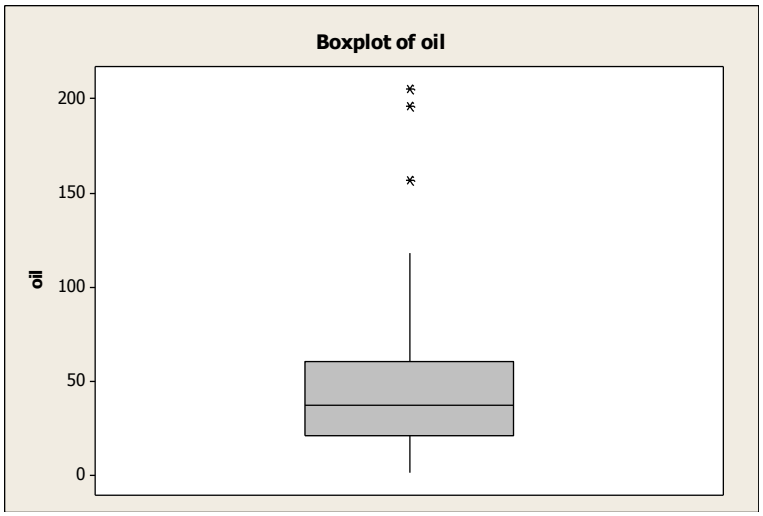


Problem 4 (a) and (b)

Descriptive Statistics: oil

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
oil	64	0	48.25	5.03	40.24	2.00	21.40	37.80	60.75	204.90

(c)



(d) IQR = 60.75 - 21.4 = 39.35
1.5*IQR = 59.025; outliers have values > Q3+1.5*IQR = 60.75 + 59.025 = 119.775
Look at the data file, the following are outliers: 204.9, 196.0, 156.5

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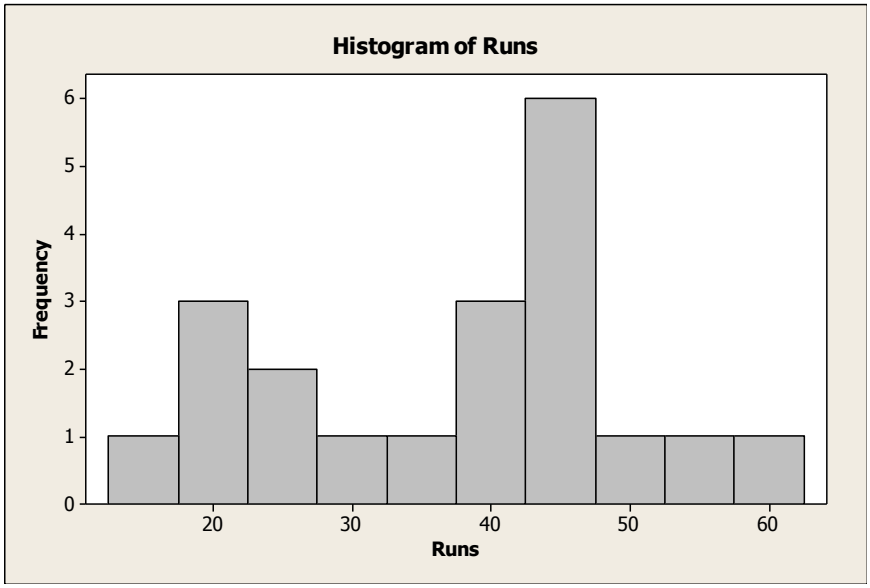
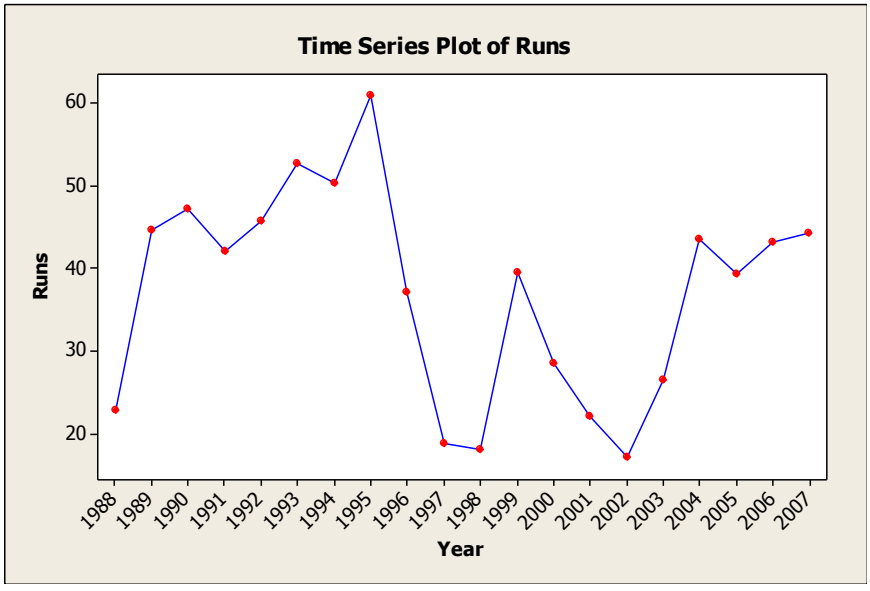
Problem 5.

(a)



Years with runs in the 40 millions are the most common, but the number of runs range from 18.1 million to 60.8 million. Many of the intervals have only one observation.

(b)



It shows an increasing trend through 1995, followed by a sharp decrease. A sharp increase occurred in 1999, followed by another decrease for three years. The remaining year saw an upward trend again.

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Problem 6 and 7

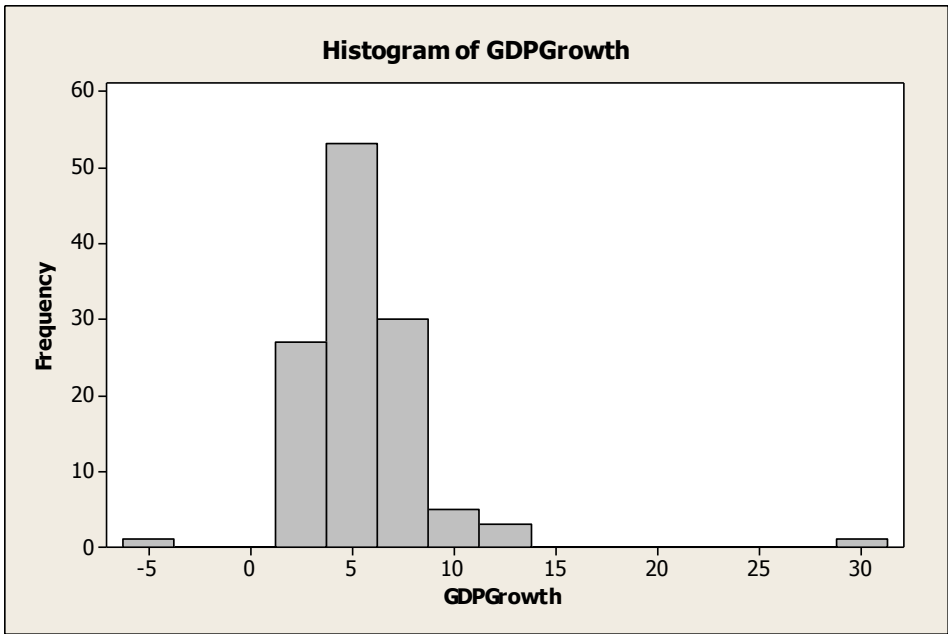
(a) With outliers

Descriptive Statistics: GDPGrowth

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
GDPGrowth	120	0	5.616	0.314	3.442	-6.000	4.000	5.500	6.900	31.000

(b) Zimbabwe : -6.0 and Azerbaij: 31

(Histogram or boxplot Optional)



(c) Without outliers

Descriptive Statistics: GDPGrowth

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
GDPGrowth	118	2	5.499	0.213	2.319	1.500	4.000	5.500	6.900	13.700

Comments:

No change in the values of median and quartiles.

Mean is reduced from 5.616 to 5.499

Standard deviation is reduced from 3.442 to 2.319

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Problem 8

Descriptive Statistics: A

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
A	11	0	7.501	0.613	2.032	3.100	6.130	8.140	9.130	9.260

Descriptive Statistics: B

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
B	11	0	7.501	0.612	2.031	5.250	5.760	7.040	8.470	12.500

Stem-and-Leaf Display: A

```
Stem-and-leaf of A  N  = 11
Leaf Unit = 0.10

 1    3  1
 2    4  7
 2    5
 3    6  1
 4    7  2
(4)   8  1177
 3    9  112
```

Stem-and-Leaf Display: B

```
Stem-and-leaf of B  N  = 11
Leaf Unit = 0.10

 3    5   257
 5    6   58
(3)   7   079
 3    8   48
 1    9
 1    10
 1    11
 1    12  5
```

Comment:

Data set A and B have the same mean (7.5) and standard deviation (2.03). They have different distributions as shown in their stem-and-leaf plots.

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Problem 9

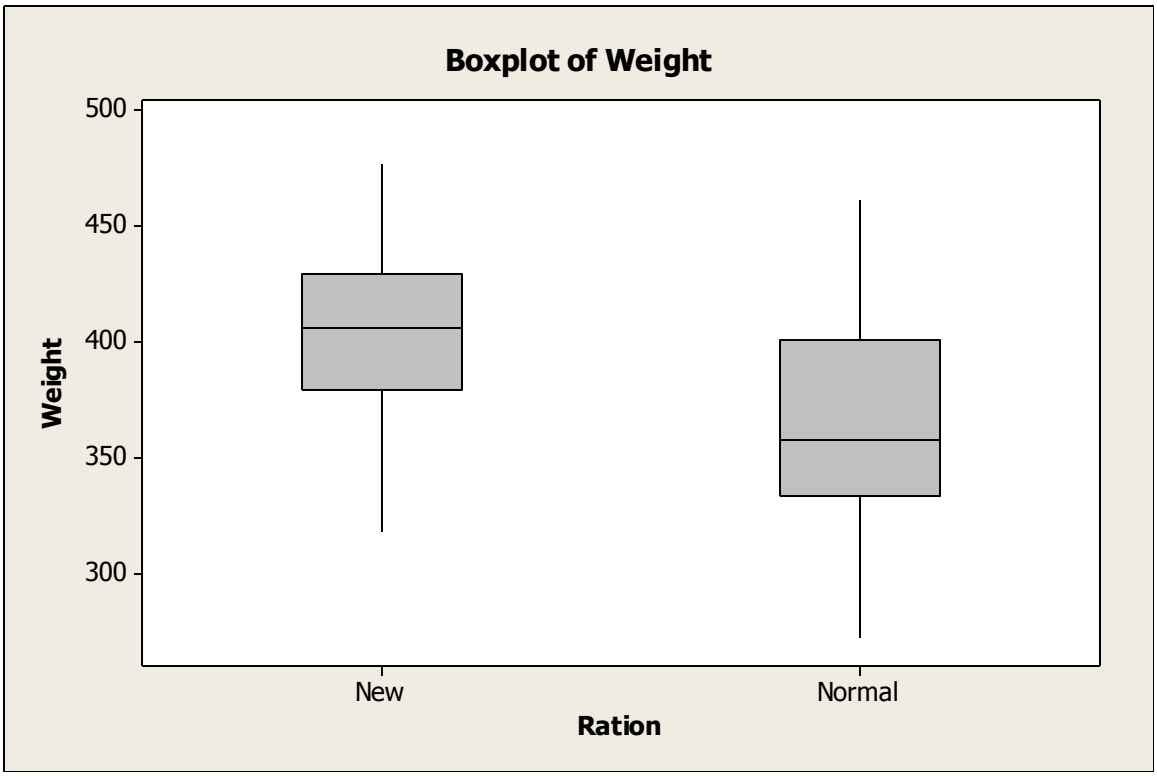
(a)

Descriptive Statistics: Weight

Variable	Ration	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
Weight	New	20	0	402.95	9.55	42.73	318.00	379.25	406.50
	Normal	20	0	366.3	11.4	50.8	272.0	333.0	358.0

Variable	Ration	Q3	Maximum
Weight	New	429.25	477.00
	Normal	401.3	462.0

The five-number summaries highlighted are above.



There is a higher weight gain overall for the new corn.

(b) The values of the mean and standard deviation are highlighted in green. The mean weight gain of chicks fed the new corn is 36.65 grams higher than for chicks fed the normal corn.