

Arts/ Sci 2R06 -----Assignment 2

2.18 Solution : (By Minitab)

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
C1	12	0	227.2	14.6	50.7	165.1	178.7	223.8	267.2	312.4

Variable	Range
C1	147.3

a) Range=147.3 b) Average= 227.2 c) Standard Deviation= 50.7

2.22 Solution: a) We are given $\bar{X} = 75$, $s=5$, By Tchebysheff's Theorem:

At least 8/9 of the measurements lies in the interval ($\bar{X} - 3s=60$, $\bar{X} + 3s=90$).

b) At least 3/4 of the measurements lies in the interval ($\bar{X} - 2s=65$, $\bar{X} + 2s=85$).

c) We know at least 75% of the measurements lies in the interval (65, 85) from part(a), since we do not know about the size of the data set and the shape of the data distribution, so that the total proportion of the measurements that are less than 65 and more than 85 should be 25% (no matter the distribution is skewed to the left or right). Therefore, at most 25% of the measurements that are less than 65.

2.42 Solution: (By Minitab)

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
C2	12	0	4.750	0.708	2.454	0.000	3.250	5.500	6.750	8.000

Variable	Range
C2	8.000

a) Five-number summary: Min=0, Q1=3.25, Median= 5.5, Q3=6.75, Max=8, IQR=Q3-Q1=3.5

b) $\bar{X} = 4.75$, $S=2.454$

c) For smallest observation, the z-score=-1.9356, for largest observation, the z-score=1.32
No, there is no observation unusually large or unusually small.

2.48. Solution: (By Minitab)

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3
C3	27	0	1.0522	0.0319	0.1657	0.7500	0.9200	1.0600	1.1700

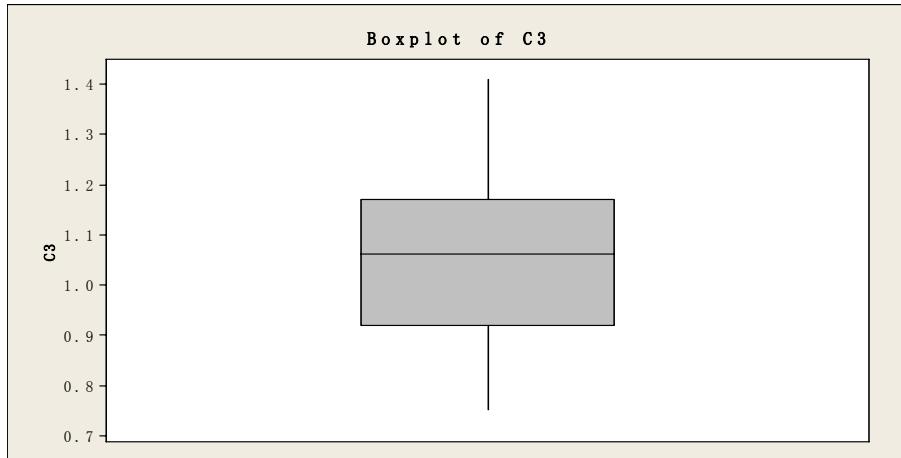
Variable	Maximum	Range
C3	1.4100	0.6600

a) Mean = 1.05, SD= 0.17

b) For meat weight 1.38, the z-score = (1.38-1.05)/0.17=1.94, for meat weight 1.41, z-score=2.12, these two packages are not unusually heavy, because these two observations with z-scores does not exceed 3, that means at least 75% and more likely

95% of the observations lie within two standard deviations of their mean..

c)



The data appears fairly well centered. The median line is slightly to the right and the whiskers on top of (right side) the box is longer than the bottom(left side), and the data does appear to the slightly skewed to the right. No outlier.

2.67 Solution: By Minitab:

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
C4	10	0	59.20	3.28	10.37	40.00	51.25	60.00	69.25	71.00

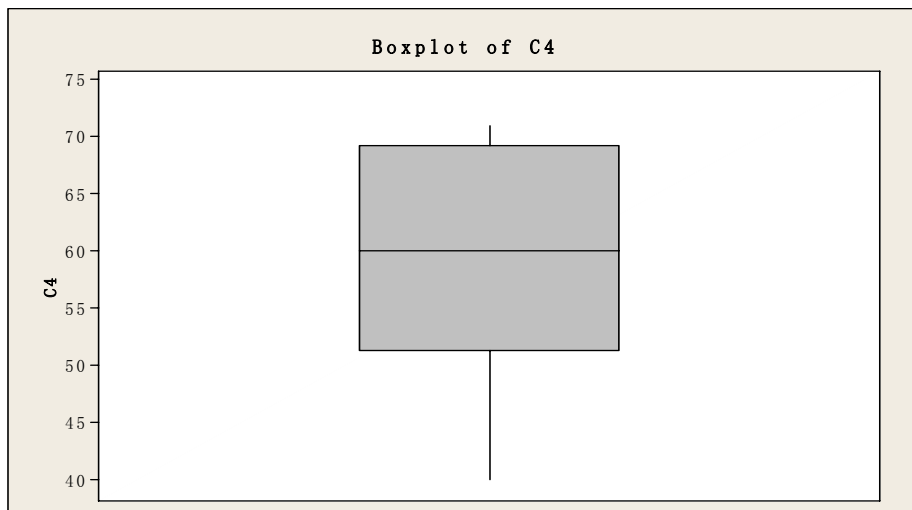
Variable Range

C4 31.00

a) Using the range approximation, range=71-40=31, S/4= 7.75

b) $\bar{X} = 59.20$, $S = 10.37$.

c)



As we can see the box-plot from above, the data distribution is not symmetric distributed, it is skewed to the left. However, within the inter-quartile range, the median is fairly well centered.