Name	Weight	Jump1	Jump2	Jump3
Lucky	2.3	1.9	2.3	3.0
Spot	4.6	2.5	3.1	0.5
Tubs	7.1	2.2	3.1	3.8
Hop	4.5	3.2	1.9	2.6
Noisy	3.8	1.3	1.8	1.5
Winner	5.7	2.2	1.3	2.8

1. Basic statistics on Weight, including mean, variance, standard deviation, five number summary and inter-quartile range.

```
DATA JUMP2;
INPUT Name$ 1-6
      Weight 7-10
      Jump1 11-14
      Jump2 15-18
      Jump3 19-22;
AverageJump = (Jump1+Jump2+Jump3)/3 ;
DATALINES;
Lucky  2.3 1.9 2.3 3.0
Spot   4.6 2.5 3.1 0.5
Tubs   7.1 2.2 3.1 3.8
Hop    4.5 3.2 1.9 2.6
Noisy  3.8 1.3 1.8 1.5
Winner 5.7 2.2 1.3 2.8
Run;

PROC MEANS DATA =JUMP2 MEAN VAR STD MIN Q1 MEDIAN Q3 MAX QRANGE MAXDEC=2;
VAR WEIGHT;
RUN;
```

The MEANS Procedure

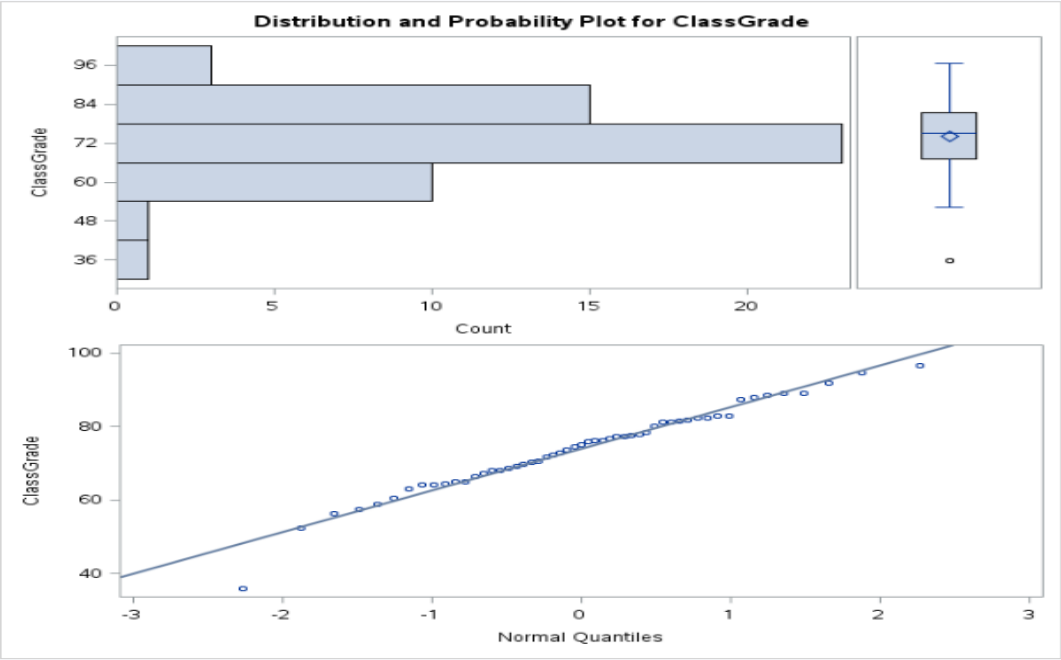
Analysis Variable : Weight								
Mean	Variance	Std Dev	Minimum	Lower Quartile	Median	Upper Quartile	Maximum	Quartile Range
4.67	2.67	1.64	2.30	3.80	4.55	5.70	7.10	1.90

2.

```
21 DATA BLACKBOARD;
22 INFILE '/home/yeopdodo860/my_courses/tjp00/ForSASBlackboard003.csv' delimiter = ',' dsd;
23 Input
24 role $
25 MINITAB1
26 MINITAB2
27 MINITAB3
28 MINITAB4
29 MINITAB5
30 MINITAB6
31 Midterm
32 Final;
33 AveMT = (MINITAB1 + MINITAB2 + MINITAB3 + MINITAB4 + MINITAB5 + MINITAB6)/6;
34 ClassGrade = 0.4*Final+0.4*Midterm+0.2*AveMT;
35 RUN;
36
37 PROC MEANS DATA =BLACKBOARD MEAN VAR STD MIN Q1 MEDIAN Q3 MAX QRANGE MAXDEC=2;
38 VAR ClassGrade;
39 RUN;
40
41 PROC UNIVARIATE DATA = BLACKBOARD NORMAL PLOT;
42 VAR ClassGrade;
43 RUN;
```

The MEANS Procedure

Analysis Variable : ClassGrade								
Mean	Variance	Std Dev	Minimum	Lower Quartile	Median	Upper Quartile	Maximum	Quartile Range
73.96	129.08	11.36	35.80	67.23	75.07	81.47	96.67	14.23



(a) Outliers

In order to check the existence of outliers, we need to check if there is an element from a data set strictly less than the lower fence or greater than the upper fence.

lower fence = LF= Q1 – (1.5 x IQR), 67.23-(1.5 x 14.24)= 45.87

upper fence = LF= Q3 + (1.5 x IQR), 81.47 +(1.5 x 14.24) = 102.83

minimum is 35.80 which can be considered as outlier since it is smaller than lower fence (also, there could be more outliers)

maximum is 96.67 which is not considered as outlier since it is not bigger than upper fence

(b) Five-Number Summary vs data, mean & standard deviation

The Five-Number Summary gives a brief description about the distribution of variables by providing minimum, maximum, median, first quartile, and third quartile values. This has better measure for describing data than mean & standard deviation because not only in normal

distributions but also especially in skewed distributions it gives more accurate values than mean & standard deviation. It gives values by divisions not by the values that represent the overall estimated values of distributions like mean & standard deviation.