3. The following data given the number of minutes required for 15 boy and 15 girl students of a class to complete a task.

Time required for male students	Time required for female students
5.70 6.80 7.25 8.20 8.10 7.20 6.88 7.20 7.35 7.45 6.90 7.22 6.85 6.40 6.20	7.52 8.20 8.32 6.90 6.80 8.30 7.45 9.00 10.50 7.20 10.20 8.26 8.50 8.32 10.00

Test which group is more consistent regarding the time required to complete a task.

For Mean, Median, First Quartile and Third Quartile

SYNTAX:

```
FREQUENCIES VARIABLES=MaleStudents FemaleStudents
  /NTILES=4
  /STATISTICS=MEAN MEDIAN
  /ORDER=ANALYSIS.
```

Statistics

		Time required for male students	Time required for female students
N	Valid	15	15
	Missing	0	0
Mean		7.0467	8.3647
Median		7.2000	8.3000
Percentiles	25	6.8000	7.4500
	50	7.2000	8.3000
	75	7.3500	9.0000

For Range, Inter- Quartile Range, Variation, Coefficient of Variation and Standard Deviation

SYNTAX:

```
EXAMINE VARIABLES=MaleStudents FemaleStudents
 /PLOT BOXPLOT STEMLEAF
 /COMPARE GROUPS
 /STATISTICS DESCRIPTIVES
 /CINTERVAL 95
 /MISSING LISTWISE
 /NOTOTAL.
```

Descriptives

			Statistic	Std. Error
Time required for male students	Mean		7.0467	.16776
	95% Confidence Interval for Mean	Lower Bound	6.6869	
		Upper Bound	7.4065	
	5% Trimmed Mean		7.0574	
	Median		7.2000	
	Variance		.422	
	Std. Deviation		.64973	
	Minimum		5.70	
	Maximum		8.20	
	Range		2.50	
	Interquartile Range		.55	
	Skewness		-.160	.580
	Kurtosis		.561	1.121
Time required for female students	Mean		8.3647	.29737
	95% Confidence Interval for Mean	Lower Bound	7.7269	
		Upper Bound	9.0025	
	5% Trimmed Mean		8.3330	
	Median		8.3000	
	Variance		1.326	
	Std. Deviation		1.15172	
	Minimum		6.80	
	Maximum		10.50	
	Range		3.70	

	Interquartile Range	1.55	
	Skewness	.573	.580
	Kurtosis	-.453	1.121

Coefficient of Variation for Male = $\frac{standard\ deviation}{mean} * 100\%$

$= \frac{.64973}{7.0467} * 100\%$

$= 9.22\%$

Coefficient of Variation for Female = $\frac{standard\ deviation}{mean} * 100\%$

$= \frac{1.15172}{8.3647} * 100\%$

$= 13.76\%$

Since C.V of male < C.V of female, so Male is more consistent regarding the time requirement to complete a task.

2. The following data represents the scores made in an intelligence test by two groups of students from section A and section B of a college.

Student no	Section A	Section B	Student no	Section A	Section B
1	9	10	6	8	8
2	8	8	7	5	7
3	10	6	8	6	8
4	6	8	9	7	5
5	7	9	10	8	8

Test which group is more consistent.

For Mean, Median, first Quartiles and Third Quartiles

SYNTAX:

```
ATASET ACTIVATE DataSet0.

FREQUENCIES VARIABLES=SectionA SectionB

 /NTILES=4

 /STATISTICS=STDDEV VARIANCE RANGE MEAN

 /ORDER=ANALYSIS.
```

Statistics

		Student from secA	Student from secB
N	Valid	10	10
	Missing	0	0
Mean		7.40	7.70
Median		7.50	8.00
Percentiles	25	6.00	6.75
	50	7.50	8.00
	75	8.25	8.25

For Range, Inter-Quartile Range, Variation, Coefficient of Variation and Standard Deviation

SYNTAX:

```
EXAMINE VARIABLES=SectionA SectionB
  /PLOT BOXPLOT STEMLEAF
  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.
```

Descriptives

			Statistic	Std. Error
Student from secA	Mean		7.40	.476
	95% Confidence Interval for Mean	Lower Bound	6.32	
		Upper Bound	8.48	
	5% Trimmed Mean		7.39	
	Median		7.50	
	Variance		2.267	
	Std. Deviation		1.506	
	Minimum		5	
	Maximum		10	
	Range		5	
	Interquartile Range		2	
	Skewness		.117	.687
	Kurtosis		-.365	1.334
Student from secB	Mean		7.70	.448
	95% Confidence Interval for Mean	Lower Bound	6.69	
		Upper Bound	8.71	
	5% Trimmed Mean		7.72	
	Median		8.00	
	Variance		2.011	

	Std. Deviation	1.418	
	Minimum	5	
	Maximum	10	
	Range	5	
	Interquartile Range	2	
	Skewness	-.508	.687
	Kurtosis	.659	1.334

Coefficient of Variation for secA = $\frac{standard\ deviation}{mean} * 100\%$

$= \frac{1.506}{7.40} * 100\%$

$= 20.35\%$

Coefficient of Variation for secB = $\frac{standard\ deviation}{mean} * 100\%$

$= \frac{1.418}{7.70} * 100\%$

$= 18.41\%$

Since the C.V of sec B is < C.V of sec A, so group of sec B is more consistent.

ASSIGNMENT

1. One of the major measures of the quality of services provided by an organization is the speed with which it responds to customer complaints. An internet service provider, had undergone a major improvement by recruiting well trained installation crews, supervisions and office staffs. The business objective of the company was to reduce the time between when the complaint it received and when it is resolved. During a recent month, the company received 50 complaints concerning internet installation. The data from 50 complaints, collected by ISP. Represented the number of hours between the receipt and the resolution of the complaint:
   27,4,52,30,22,36,26,20,23,33,68,165,32,29,28,29,26,25,1,14,13,13,10,5,19,126,110,110,29,61,35,94,31,26,5,12,4,54,5,35,137,31,27,152,2,123,81,74,27,11
   a. Compute the mean, median, first quartile and third quartile.
   b. Compute the range, interquartile range, variance, standard deviation, and coefficient of variation.
   c. Construct a boxplot. Are the data skewed? If so, how?
   d. On the basis of the results of (a) through (b) if you had to tell the president of the company how long a customer should expect to wait to have a complaint resolved, what would you say? Explain.

   For mean, median, first quartile, and third quartile

   SYNTAX:

```
DATASET ACTIVATE DataSet0.

FREQUENCIES VARIABLES=Hour

 /NTILES=4

 /STATISTICS=MEAN MEDIAN

 /ORDER=ANALYSIS.
```

Statistics

Hours between receipt and resolution

N	Valid	50
	Missing	0
Mean		43.04
Median		28.50
Range		164
Percentiles	25	13.75
	50	28.50
	75	55.75

The mean is 43.04, median is 28.50, first quartile is 13.75 and third quartile is 55.75.

For range, inter-quartile range, variance, standard deviation, and coefficient of variation.

SYNTAX:

```
 FREQUENCIES VARIABLES=Hour
/STATISTICS=STDDEV VARIANCE RANGE
/ORDER=ANALYSIS.
```

Descriptives

			Statistic	Std. Error
Hours between receipt and resolution	Mean		43.04	5.929
	95% Confidence Interval for Mean	Lower Bound	31.12	
		Upper Bound	54.96	
	5% Trimmed Mean		39.14	
	Median		28.50	
	Variance		1757.794	
	Std. Deviation		41.926	
	Minimum		1	
	Maximum		165	
	Range		164	
	Interquartile Range		42	
	Skewness		1.488	.337
	Kurtosis		1.309	.662

For Coefficient of variation:

Coefficient of variation= $\frac{standard\ deviation}{mean}$ *100%

= $\frac{41.926}{43.04} * 100\%$

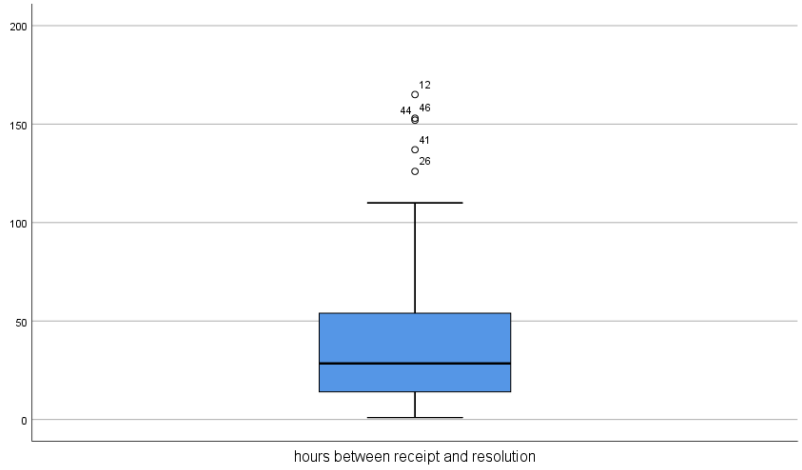
= 97.41%

The range is 164, standard deviation is 41.926, variance is 1757.794, inter-quartile range is 42 and coefficient of variation is 97.41%

For Box plot:

SYNTAX:

```
EXAMINE VARIABLES=Hour
  /PLOT BOXPLOT STEMLEAF
  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.
```



For Skewness:

SYNTAX:

```
DESCRIPTIVES VARIABLES=Hour
  /STATISTICS=SKEWNESS.
```

Descriptive Statistics

	N	Skewness	
	Statistic	Statistic	Std. Error
hours between receipt and resolution	50	1.523	.337
Valid N (listwise)	50		

The graph is positively skewed since 1.523>0.

On the basis of the following results, I would tell the president that customers should wait at least 43.64 hours.