

Answer on Question #46343 - Math - Statistics and Probability

6. The following set of data is from a sample of $n=10$)

7 4 9 7 12 8 10 15 7 9

- Compute the mean, median, and mode.
- Compute the first, second and third quartiles.
- Compute the range, variance, standard deviation, and coefficient of variation
- Compute the Z scores. Are there any outliers?

Solution

a. The mean is 8.8

The median is 8.5

The mode is 7 (the most common number).

R code:

```
c <- c(7,4,9,7,12,8,10,15,7,9)
```

```
mean(c)
```

```
median(c)
```

b. The first quartile is 7.5

The second quartile is 8.5

The third quartile is 9.75

R code:

```
quantile(c)
```

c. Compute the range, variance, standard deviation, and coefficient of variation

The range is 4-15

The variance is 9.29

The standard deviation is 3.05

The coefficient of variation is 34.63%

R code:

```
range(c)
```

```
var(c)
```

```
sd(c)
```

```
100*sd(c)/mean(c)
```

d. Compute the Z scores. Are there any outliers?

```
c      z
```

```
7      -0.59
```

```
4      -1.57
```

```
9       0.07
```

```
7      -0.59
```

```
12     1.05
```

```
8      -0.26
```

```
10     0.39
```

```
15     2.03
```

```
7      -0.59
```

```
9       0.07
```

There are no outliers because there are no z-scores greater than 3 or less than -3. Value 15 is a

potential outlier with z-score more than 2.

R code:

```
z <- format((c - mean(c))/sd(c), digits=1)  
cbind(c,z)
```