

Math 170S Homework #1

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2023-01-20

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Problem 1

```
mean(c(245, 223, 265, 201, 229, 221, 278, 299, 289, 281, 277, 275, 274, 221, 221, 234, 225, 228, 231, 236, 239, 240))
## [1] 251.2188
var(c(245, 223, 265, 201, 229, 221, 278, 299, 289, 281, 277, 275, 274, 221, 221, 234, 225, 228, 231, 236, 239, 240))
## [1] 592.9506
sd(c(245, 223, 265, 201, 229, 221, 278, 299, 289, 281, 277, 275, 274, 221, 221, 234, 225, 228, 231, 236, 239, 240))
## [1] 24.35058
median(c(245, 223, 265, 201, 229, 221, 278, 299, 289, 281, 277, 275, 274, 221, 221, 234, 225, 228, 231, 236, 239, 240))
## [1] 251
IQR(c(245, 223, 265, 201, 229, 221, 278, 299, 289, 281, 277, 275, 274, 221, 221, 234, 225, 228, 231, 236, 239, 240))
## [1] 43.75
```

So the mean is 251.2188, the variance is 592.9506, the standard deviation is 24.35058, the median is 251, and the interquartile range is 43.75

Problem 2

```
Class <- c('0-9', '10-19', '20-29', '30-39', '40-49', '50-59')
Frequency <- c(8, 5, 7, 11, 9, 6)
MidPoint <- c(4.5, 14.5, 24.5, 34.5, 44.5, 54.5)
xf <- Frequency * MidPoint
cf <- c(8, 13, 20, 31, 40, 46)
df <- data.frame(Class, Frequency, MidPoint, xf, cf)
df
```

	Class	Frequency	MidPoint	xf	cf
## 1	0-9	8	4.5	36.0	8

```
## 2 10-19      5      14.5  72.5 13
## 3 20-29      7      24.5 171.5 20
## 4 30-39     11      34.5 379.5 31
## 5 40-49      9      44.5 400.5 40
## 6 50-59      6      54.5 327.0 46
```

```
mean1 <- ((sum(xf)) / 46)
mean1
```

```
## [1] 30.15217
```

```
variance1 <- (sum(Frequency * ((MidPoint - mean1)^2))) / 46
variance1
```

```
## [1] 268.0529
```

```
sd1 <- sqrt(variance1)
sd1
```

```
## [1] 16.37232
```

```
median1 <- 30 + (3/11)*(9)
median1
```

```
## [1] 32.45455
```

```
q1 <- 14.5 + (3.5/5)*9
q3 <- 44.5 + (3.5/9)*9
iqr1 <- q3 - q1
iqr1
```

```
## [1] 27.2
```

So the mean is 30.15217, the variance is 268.0529, the standard deviation is 16.37232, the median is 32.45455, and the interquartile range is 27.2

Problem 3

```
Class2 <- c('30-34', '35-39', '40-44', '45-49', '50-54', '55-59', '60-64')
Frequency2 <- c(12, 15, 10, 9, 11, 13, 8)
MidPoint2 <- c(32, 37, 42, 47, 52, 57, 62)
xf2 <- Frequency2 * MidPoint2
cf2 <- c(12, 27, 37, 46, 57, 70, 78)
df2 <- data.frame(Class2, Frequency2, MidPoint2, xf2, cf2)
df2
```

```
##   Class2 Frequency2 MidPoint2 xf2 cf2
## 1  30-34         12         32 384 12
## 2  35-39         15         37 555 27
## 3  40-44         10         42 420 37
## 4  45-49          9         47 423 46
## 5  50-54         11         52 572 57
## 6  55-59         13         57 741 70
## 7  60-64          8         62 496 78
```

```
mean2 <- ((sum(xf2)) / 78)
mean2
```

```
## [1] 46.03846
```

```
variance2 <- (sum(Frequency2 * ((MidPoint2 - mean2)^2))) / 78
variance2
```

```
## [1] 99.39596
```

```
sd2 <- sqrt(variance2)
sd2
```

```
## [1] 9.969752
```

```
median2 <- 45+(2/9)*(4)
median2
```

```
## [1] 45.88889
```

```
q1_2 <- 37 + (7.5/15)*4
q3_2 <- 57 + (1.5/13)*4
iqr2 <- q3_2 - q1_2
iqr2
```

```
## [1] 18.46154
```

So the mean is 46.03846, the variance is 99.39596, the standard deviation is 9.969752, the median is 45.88889, and the interquartile range is 18.46154