

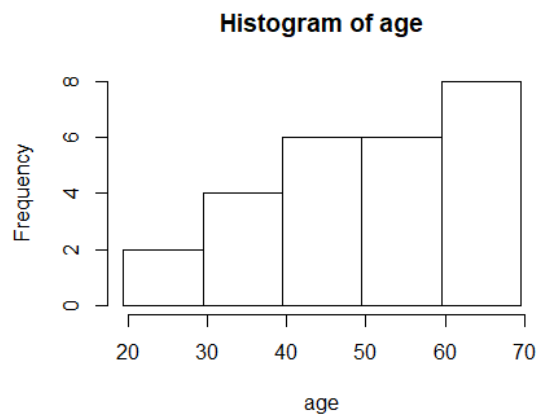
## STA2023 Using R

### Question 11

```
> age<-c(43, 56, 28, 63, 67, 66, 52, 48, 37, 51, 40, 60, 62, 66, 45, 21, 35,  
49, 32, 53, 61, 53, 69, 31, 48, 59)  
> hist(age)
```



```
> hist(age, breaks=c(19.5,29.5,39.5,49.5,59.5,69.5)) # the one in the answer  
key. Both correct
```



### Question 12

```
> scores1<-c(85, 77, 93, 91, 74, 65, 68, 97, 88, 59, 74, 83, 85, 72, 63, 79)  
> stem(scores1)
```

The decimal point is 1 digit(s) to the right of the |

```
5 | 9  
6 | 358  
7 | 24479  
8 | 3558  
9 | 137
```

### Question 13

```
> time<-c(1, 5, 7, 8, 12, 16, 18, 25, 57, 90, 99, 126, 136, 167)
> mean(time)
[1] 54.78571
```

### Question 14

```
> ages<-c(10, 7, 26, 16, 21, 43, 40, 30)
> median(ages)
[1] 23.5
> summary(ages) # alternative:
  Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
  7.00  14.50   23.50   24.12  32.50   43.00
```

### Question 15:

```
> data<-c(20, 42, 46, 42, 49, 42, 49)
> sort(data)
[1] 20 42 42 42 46 49 49
```

```
>#most frequent value is 42 (mode)
```

### Question 16

```
> data1<-c(3, 6, 9, 0, 4, 1, 11, 5, 9, 14, 3, 8, 2, 15, 0, 9)
> range(data1)
[1] 0 15
> midrange=(0+15)/2 # midrange = (min+max)/2
```

### Question 17

```
>install.packages("weighted.Desc.Stat")
> require(weighted.Desc.Stat)
> x<-c(54.5,64.5,74.5,84.5,94.5) # classes'midpoint
> frq<-c(13,6,7,7,7)
> w.mean(x,frq)
[1] 71.75
```

### Question 18

```
> grades<-c(17,18,1,20,13)
> var(grades)
[1] 57.7
```

### Question 19

```
> heights<-c(59.1, 61.3, 62.1, 64.7, 60.1, 58.3, 64.6, 63.7, 66.1)
> weights<-c(87, 94, 91, 119, 96, 90, 123, 98, 139)
> m1<-mean(heights);sd1<-sd(heights)
> CV1<-sd1/m1*100
> CV1
[1] 4.383538
```

```

> m2<-mean(weights);sd2<-sd(weights)
> CV2<-sd2/m2*100
> CV2
[1] 17.53063

```

Variation of weights is higher than the variation of heights for this sample.

#### Question 20

```

>#the following function requires package weighted.Desc.Stat;it was installed
for the question 17 in this session.

```

```

> x<-c(54.5,64.5,74.5,84.5,94.5)
> f<-c(5,13,5,8,9)
> sigma<-w.sd(x,f)
> n<-sum(f)
> s<-sigma*sqrt(n/(n-1))
> s
[1] 14.03064

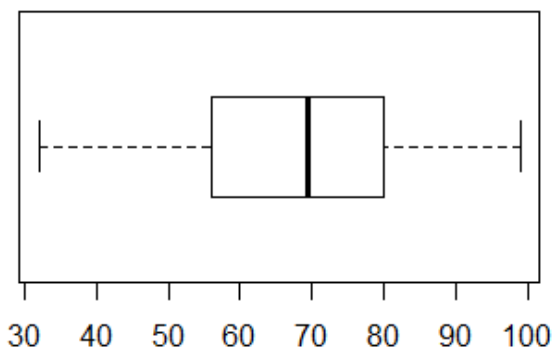
```

#### Question 21

```

> scores2<-c(32, 37, 41, 44, 46, 48, 53, 55, 57, 57, 59, 63, 65, 66, 68, 69,
70, 71, 74, 74, 75, 77, 78, 79, 81, 82, 83, 86, 89, 92, 95, 99)
> summary(scores2)
  Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 32.00  56.50   69.50   67.66  79.50   99.00
> boxplot(scores2, horizontal=TRUE)

```



Question 22: For reference label the one on the left A, the one on the right B:

For both samples, the max and min values are apprx the same; B has a smaller median value. The variation of the B dataset is higher compared to the variation of A. Variation is given by the difference between Q3 and Q1.