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#Solution exercise 1
x<-seq(1:12)
#Alternative solution
x<-seq(1,12,1)
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#Solution exercise 2
rep(c(6,2,4),4)
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#Solution exercise 3
> z<-c(rep(9,6),rep(2,5),rep(5,4))
> z
 [1] 9 9 9 9 9 9 2 2 2 2 2 5 5 5 5
> m<-matrix(z,5,3)
> m
      [,1] [,2] [,3]
[1,]    9    9    2
[2,]    9    2    5
[3,]    9    2    5
[4,]    9    2    5
[5,]    9    2    5
```

```
#Solution exercise 4
> set.seed(100)
> x<-runif(20)
> x
 [1] 0.30776611 0.25767250 0.55232243 0.05638315 0.46854928 0.48377074 0.81240262
 [2] 0.37032054 0.54655860 0.17026205
 [11] 0.62499648 0.88216552 0.28035384 0.39848790 0.76255108 0.66902171 0.20461216
 [21] 0.35752485 0.35947511 0.69029053
> mean(x)
 [1] 0.4627744
> median(x)
 [1] 0.4335186
> var(x)
 [1] 0.05133108
> sd(x)
 [1] 0.2265636
```

```
#Solution exercise 5
> mydata<-read.table("data2.txt", header=F,sep="")#read the file
> title=c("height", "shoesize", "gender", "population")
> names(mydata)<-title#add titles
> mydata
  height shoesize gender population
1    181      44   male    kuopio
2    160      38 female    kuopio
3    174      42 female    kuopio
4    170      43   male    kuopio
5    172      43   male    kuopio
6    165      39 female    kuopio
7    161      38 female    kuopio
8    167      38 female    tampere
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9      164      39 female tampere
10     166      38 female tampere
11     162      37 female tampere
12     158      36 female tampere
13     175      42  male tampere
14     181      44  male tampere
15     180      43  male tampere
16     177      43  male tampere
17     173      41  male tampere
> names(mydata)#headers
[1] "height"      "shoesize"    "gender"      "population"
> mydata$height#column height
[1] 181 160 174 170 172 165 161 167 164 166 162 158 175 181 180 177 173
> table(mydata$gender)

female  male
      9      8
> table(mydata$population)

kuopio tampere
      7      10

> table(mydata$gender,mydata$population)#cross-table

      kuopio tampere
female      4      5
male        3      5

> mydata.male<-subset(mydata,gender=="male")#split by gender
> mydata.male
  height shoesize gender population
1     181      44  male    kuopio
4     170      43  male    kuopio
5     172      43  male    kuopio
13    175      42  male    tampere
14    181      44  male    tampere
15    180      43  male    tampere
16    177      43  male    tampere
17    173      41  male    tampere
> mydata.female<-subset(mydata,gender=="female")
> mydata.female
  height shoesize gender population
2     160      38 female    kuopio
3     174      42 female    kuopio
6     165      39 female    kuopio
7     161      38 female    kuopio
8     167      38 female    tampere
9     164      39 female    tampere
10    166      38 female    tampere
11    162      37 female    tampere
12    158      36 female    tampere

> m<-median(mydata$height)#split by a numeric attribute

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```
> m
[1] 170
> mydata.short<-subset(mydata,height<=m)
> mydata.short
  height shoesize gender population
2    160        38 female    kuopio
4    170        43  male    kuopio
6    165        39 female    kuopio
7    161        38 female    kuopio
8    167        38 female tampere
9    164        39 female tampere
10   166        38 female tampere
11   162        37 female tampere
12   158        36 female tampere
> mydata.tall<-subset(mydata,height>m)
> mydata.tall
  height shoesize gender population
1    181        44  male    kuopio
3    174        42 female    kuopio
5    172        43  male    kuopio
13   175        42  male tampere
14   181        44  male tampere
15   180        43  male tampere
16   177        43  male tampere
17   173        41  male tampere
```