Q1

Draw a histogram, frequency curve, frequency polygon, less than type ogive, more than type ogive curve of the following data.

Sales (0'00)	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60
No.of days	5	9	13	28	20	12	10	3

In [1]:
```
sales <- seq(22.5,57.5,5)
```

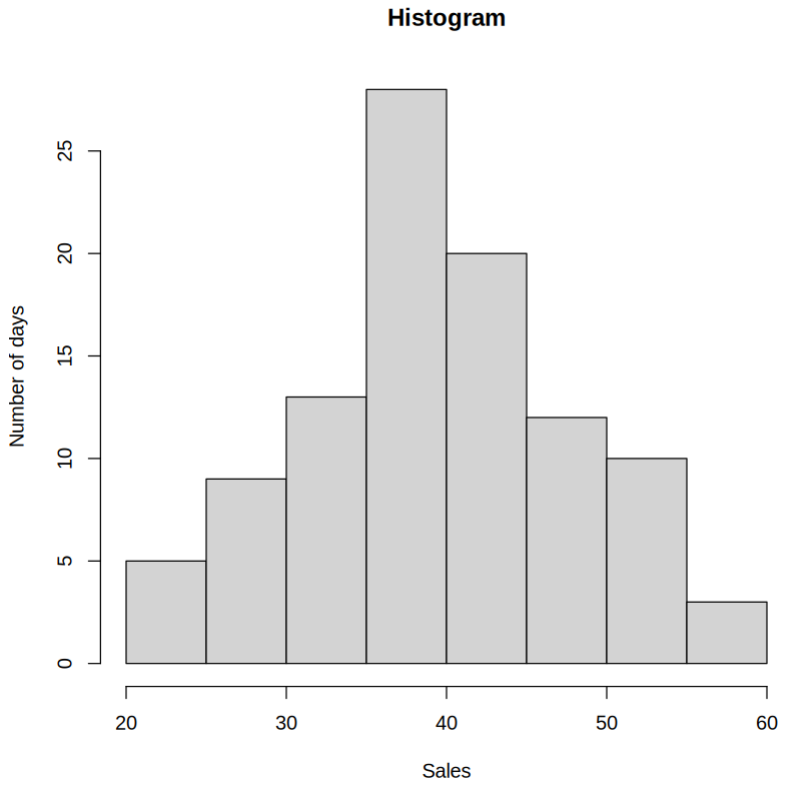
In [2]:
```
w <- 5
```

In [3]:
```
freq <- c(5,9,13,28,20,12,10,3)
```

Histogram

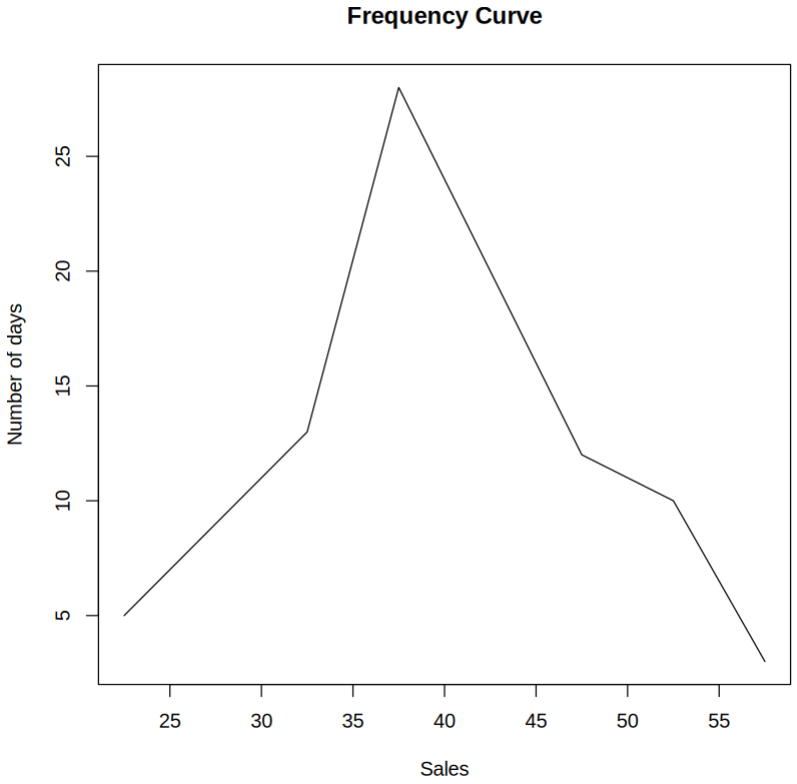
In [4]:
```
y <- rep(sales,freq)
```

In [5]:
```
hist(y,xlab="Sales",ylab="Number of days",main="Histogram")
```



Frequency Curve

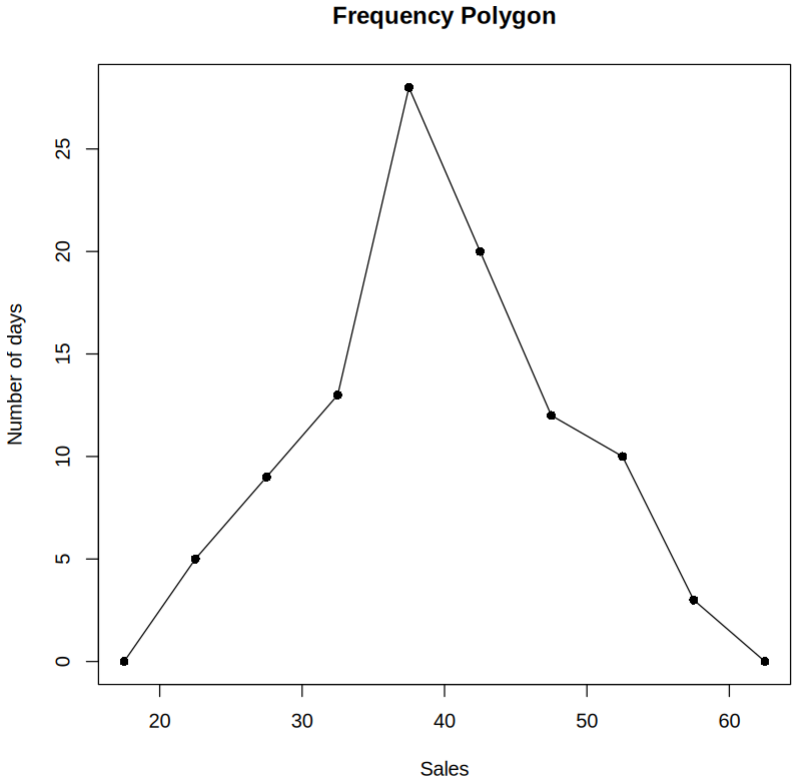
In [6]:
```
plot(sales,freq,'l',xlab='Sales',ylab='Number of days',
     main='Frequency Curve')
```



Frequency Polygon

In [7]:
```
sales <- seq(17.5,62.5,5)
freq <- c(0,5,9,13,28,20,12,10,3,0)
```

In [8]:
```
plot(sales,freq,'l',xlab='Sales',ylab='Number of days',
     main='Frequency Polygon')
points(sales,freq,pch=16)
```



Less than ogive

In [9]:
```
sales <- seq(22.5,57.5,5)
freq <- c(0,5,9,13,28,20,12,10,3)
```

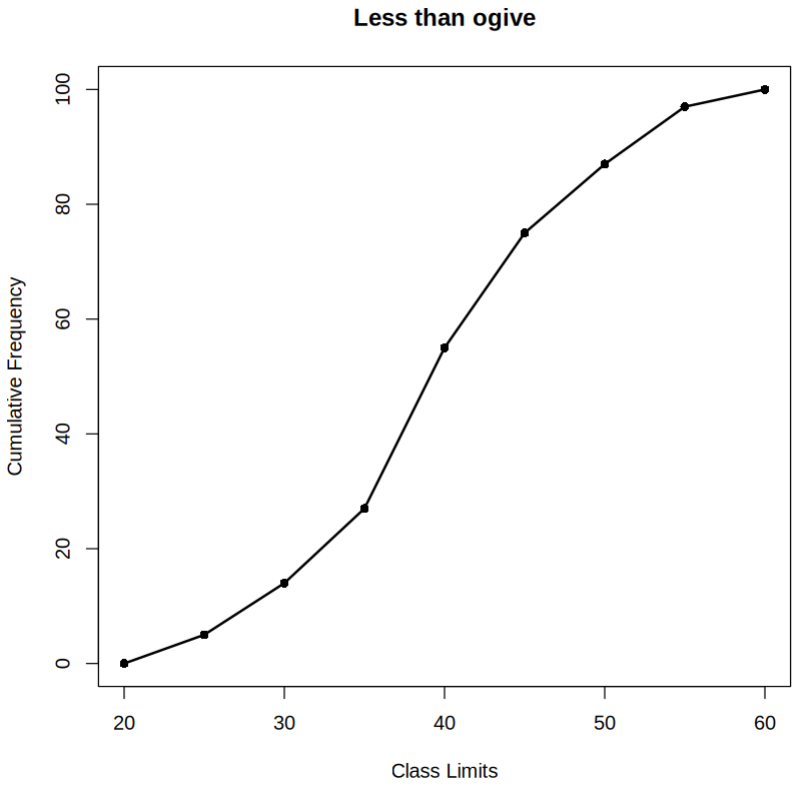
In [10]:
```
lb <- sales-w/2
ub <- sales+w/2
```

In [11]:
```
k <-length(sales)
```

In [12]:
```
lb1 <- c(lb,60)
ub1 <- c(20,ub)
```

In [13]:
```
lcf <- cumsum(freq)
```

In [14]:
```
plot(ub1,lcf,'l',xlim=c(20,60),xlab='Class Limits',
     ylab='Cumulative Frequency',main='Less than ogive',lwd=2)
points(ub1,lcf,pch=16)
```



More than ogive

In [15]:
```
sales <- seq(22.5,57.5,5)
freq <- c(0,5,9,13,28,20,12,10,3)
```

In [16]:
```
lb <- sales-w/2
ub <- sales+w/2
```

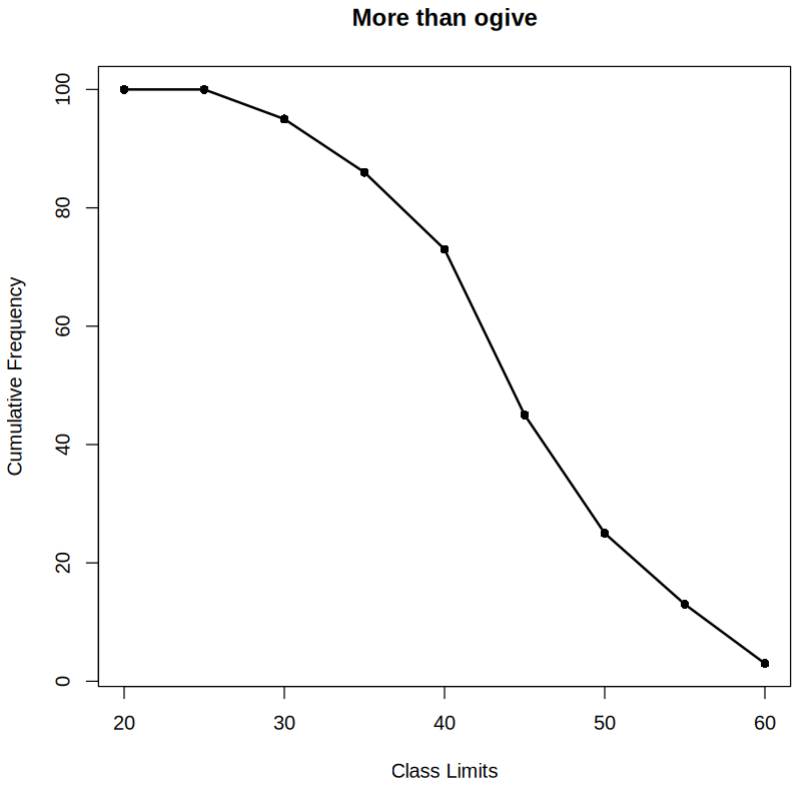
In [17]:
```
k <-length(sales)+1
```

In [18]:
```
lb1 <- c(lb,60)
ub1 <- c(20,ub)
```

In [19]:
```
mcf <- 1:k
```

In [20]:
```
for (i in 1:k)
    {
    mcf[i] = sum(freq[k:i])
}
```

In [21]:
```
plot(lb1,mcf,'l',xlim=c(20,60),xlab='Class Limits',
     ylab='Cumulative Frequency',main='More than ogive',lwd=2)
points(lb1,mcf,pch=16)
```



Q2

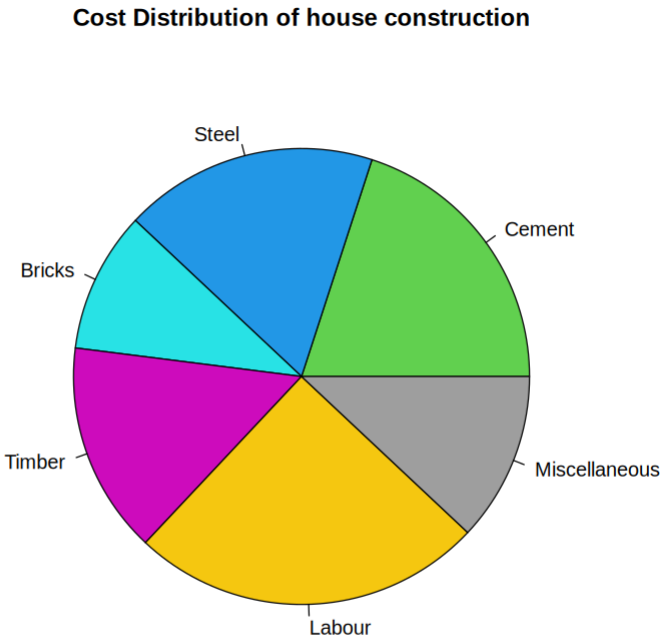
The following figures relate to the cost of construction of a house in a city.

Item	Cement	Steel	Bricks	Timber	Labour	Miscellaneous
% Expenditure	20	18	10	15	25	12

Present the data with the help of a suitable diagram

In [22]:
```
item <- c('Cement','Steel','Bricks','Timber','Labour','Miscellaneous')
expenditure_per <- c(20,18,10,15,25,12)
```

In [23]:
```
pie(expenditure_per,col = 3:8,labels = item,
    main='Cost Distribution of house construction')
```



Q3

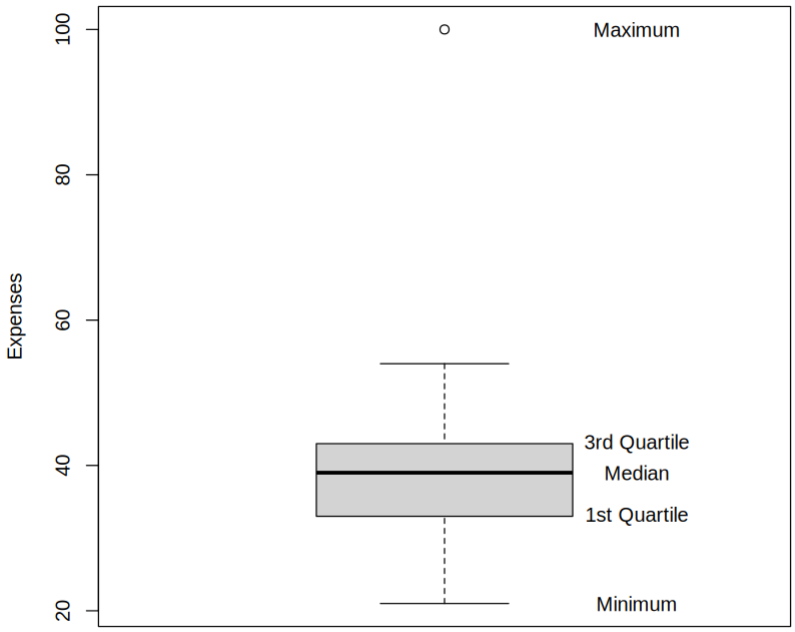
The following data give the daily expenses of 40 school children from a certain locality

```
21,50,35,39,48,46,36,54,42,30,29,42,32,40,34,31,35,37,52,44,39,42,32
```

Draw boxplot and write conclusion

In [24]:
```
expenses <- c(21,50,35,39,48,46,36,54,42,30,29,42,32,40,34,
              31,35,37,52,44,39,42,32,40,34,31,100)
```

In [25]:
```
boxplot(expenses,ylab='Expenses')
summ <- fivenum(expenses)
text(rep(1.3,5),summ,
labels = c('Minimum','1st Quartile','Median','3rd Quartile','Maximum'))
```



- There is one outlier in the given data, as the data point is higher than the upper bound.
- Median expense is 39
- Average expense is ~40.56
- Minimum expense is 21 and maximum expense is 100
- 1st Quantile value is 33, 3rd Quantile value is 43