Quartiles, Deciles and Percentiles

frequency distribution (Continuous)

```
cls= c("145-150","150-155","155-160","160-165","165-170","170-175","175-180","180-185")
f=c(4,6,28,58,64,30,5,5)
f
```

```
[1]  4  6 28 58 64 30  5  5
```

```
midx=seq(147.5,182.5,5)
midx
```

```
[1] 147.5 152.5 157.5 162.5 167.5 172.5 177.5 182.5
```

```
fr.dist=data.frame(cls,f,midx)
fr.dist
```

```
      cls  f  midx
1 145-150  4 147.5
2 150-155  6 152.5
3 155-160 28 157.5
4 160-165 58 162.5
5 165-170 64 167.5
6 170-175 30 172.5
7 175-180  5 177.5
8 180-185  5 182.5
```

```
attach(fr.dist)
```

```
The following objects are masked _by_ .GlobalEnv:

    cls, f, midx
```

```
cl=cumsum(f)
cl
```

```
[1]   4  10  38  96 160 190 195 200
```

```
n=sum(f)
n
```

```
[1] 200
```

```
#Lower quartiles
m1=min(which(cl>=n/4))
m1
```

```
[1] 4
```

```
w=5
l=midx[m1]-w/2
l
```

```
[1] 160
```

```
fr=f[m1]
fr
```

```
[1] 58
```

```
cf=cl[m1-1]
cf
```

```
[1] 38
```

```
q1=l+((n/4-cf)/fr)*w
q1
```

```
[1] 161.0345
```

```
#Median
m2=min(which(cl>=n/2))
m2
```

```
[1] 5
```

```
l=midx[m2]-w/2
l
```

```
[1] 165
```

```
fr=f[m2]
fr
```

```
[1] 64
```

```
cf=cl[m2-1]
cf
```

```
[1] 96
```

```
q2=l+((n/2-cf)/fr)*w
q2
```

```
[1] 165.3125
```

```
# Upper quartile
m3=min(which(cl>=3*n/4))
m3
```

```
[1] 5
```

```
l=midx[m3]-w/2
l
```

```
[1] 165
```

```
fr=f[m3]
fr
```

```
[1] 64
```

```
cf=cl[m3-1]
cf
```

```
[1] 96
```

```
q3=l+((3*n/4-cf)/fr)*w
q3
```

```
[1] 169.2188
```

```
#Fourth Deciles
md4=min(which(cl>=4*n/10))
md4
```

```
[1] 4
```

```
l=midx[md4]-w/2
l
```

```
[1] 160
```

```
fr=f[md4]
fr
```

```
[1] 58
```

```
cf=cl[md4-1]
cf
```

```
[1] 38
```

```
d4=l+((4*n/10-cf)/fr)*w
d4
```

```
[1] 163.6207
```

```
#67th percentile
mp67=min(which(cl>=67*n/100))
mp67
```

```
[1] 5
```

```
l=midx[mp67]-w/2
l
```

```
[1] 165
```

```
fr=f[mp67]
fr
```

```
[1] 64
```

```
cf=cl[mp67-1]
cf
```

```
[1] 96
```

```
p67=l+((67*n/100-cf)/fr)*w
p67
```

```
[1] 167.9688
```