

## Practice 05.

```
> #Answers to Practice 5 in R
```

```
Q1.
```

```
> px<-c(0.27,0.28,0.23,0.10,0.06,0.02)
```

```
> sum(px)
```

```
[1] 0.96
```

```
> # Not a prob dist; sum must be = 1 or 0.99 considering rounding errors.
```

```
Q2.
```

```
> x<-0:4
```

```
> p<-c(0.23,0.20,0.37,0.06,0.14)
```

```
> sum(p)
```

```
[1] 1
```

```
> w.mean(x,p)
```

```
[1] 1.68
```

```
> w.sd(x,p)
```

```
[1] 1.279687
```

```
Q3.
```

```
> 10.1-2*0.55 # min usual value: mean-2SD
```

```
[1] 9
```

```
> 10.1+2*0.55 # max usual value: mean+2SD
```

```
[1] 11.2
```

```
> # It is usual, since 7 is less than the min usual value.
```

```
Q4.
```

```
> 0.122+0.061+0.022+0.006+0.001+0.000
```

```
[1] 0.212
```

```
Q5
```

```
> y<-c(76, -9) # random variable Y (arbitrary label); use negative for loses
```

```
> pr<-c(1/20, 19/20)
```

```
> w.mean(y,pr) # the expected value is the mean
```

```
[1] -4.75
```

```
Q6
```

```
># It is a binomial experiment: two possible outcomes ( getting a 5 or not);  
a fixed number of outcomes (36), probability of success constant (1/6); trial  
s are independent.
```

```
Q7
```

```
> dbinom(3,4,1/6)
```

```
[1] 0.0154321
```

```
Q8
```

```
> dbinom(2,5,0.70)
```

```
[1] 0.1323
```

```
> round(0.1323, digits=3)
```

```
[1] 0.132
```

```
Q9
```

```
> dbinom(9:10, 10,0.5)
```

```
[1] 0.0097656250 0.0009765625
```

```
> sum(dbinom(9:10, 10,0.5))
```

```
[1] 0.01074219
```

```
> round(0.01074219, digits=3)
```

```
[1] 0.011
```

Q10

```
> sum(dbinom(3:14, 14, 0.08))  
[1] 0.09583482
```

Q11

```
> dbinom(4,10,0.57)  
[1] 0.1401295
```

Q12

```
> dbinom(4,8,0.55)  
[1] 0.262663
```

Q13

```
> dbinom(3,8,0.46)  
[1] 0.2502824
```

Q14

```
> 37*0.2 # mean(binom)=n*p  
[1] 7.4
```

Q15

```
> sqrt(41*0.2*0.8) # sd = sqrt(n*p*q)   where q = 1 - p  
[1] 2.56125  
> round(2.56125, digits=2)  
[1] 2.56
```

Q16

```
> mean<-103*0.26  
> sd<-sqrt(103*0.26*0.74)  
> min<-mean-2*sd  
> max<-mean+2*sd  
> min;max  
[1] 17.8767  
[1] 35.6833
```