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Slot : L-19-20

- 1. Create a dataframe for the given data

- Emp Id: 1   2   3   4   5   6   7

- Sex   : M   F   F   M   F   F   M

- Salary: 50   52   45   48   55   43   60

- (in thousands)

- Find the summary statistics.

```
> emp = c(1, 2, 3, 4, 5, 6, 7)
> gender=c('M', 'F', 'F', 'M', 'F', 'F', 'M')
> sal=c(50, 52, 45, 48, 55, 43, 60)
> df = data.frame(emp, gender, sal)
> df
  emp gender sal
1  1      M  50
2  2      F  52
3  3      F  45
4  4      M  48
5  5      F  55
6  6      F  43
7  7      M  60
> summary(df)
     emp       gender      sal
 Min.   :1.0   F:4    Min.   :43.00
 1st Qu.:2.5   M:3    1st Qu.:46.50
 Median :4.0          Median :50.00
 Mean   :4.0          Mean   :50.43
 3rd Qu.:5.5          3rd Qu.:53.50
 Max.   :7.0          Max.   :60.00
```

2. Generate 20 random values incremented by 3.

```
> seq(0, 57, by=3)
```

```
 [1]  0  3  6  9 12 15 18 21 24 27 30 33 36 39
[15] 42 45 48 51 54 57
```

Problem3: For a Binomial(7,1/4) random variable named X,
i. Compute the probability of two success
ii. Compute the Probablities for whole space
iii. Display those probabilities in a table
iv. Show the shape of this binomial Distribution

```
> n=7
> p=1/4
> q=1-p
> a = dbinom(2, n, p)
> a
[1] 0.3114624
> a = dbinom(0:7, n, p)
> a
[1] 1.334839e-01 3.114624e-01 3.114624e-01
[4] 1.730347e-01 5.767822e-02 1.153564e-02
[7] 1.281738e-03 6.103516e-05
> table1 = table(a)
> table1
a
 6.103515625e-05 0.00128173828125
          1               1
0.01153564453125 0.05767822265625
          1               1
0.13348388671875 0.17303466796875
          1               1
0.31146240234375
          2
> x=0:7
> plot(x, a, type = 'l')
```
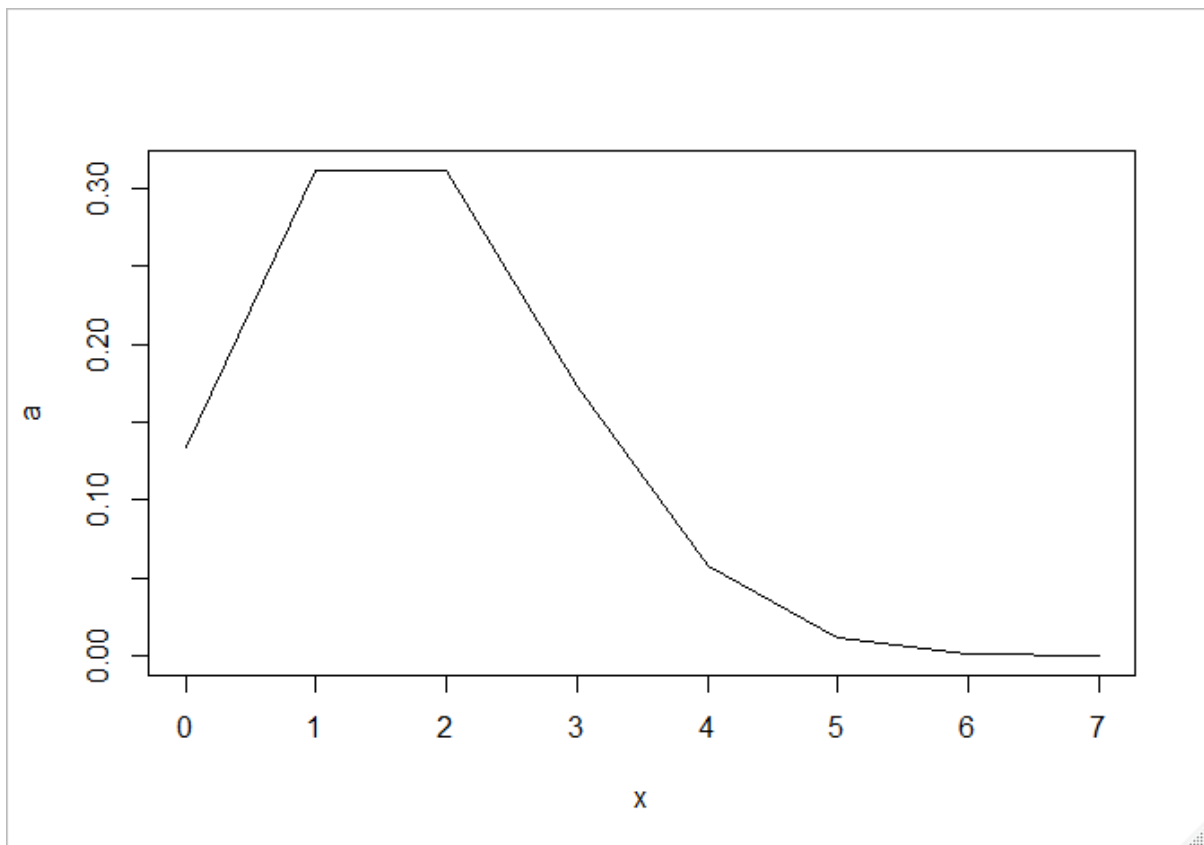
Problem4: Suppose there are twelve multiple choice questions in an English class quiz. Each question has five possible answers, and only one of them is correct. Find the probability of having four or less correct answers if a student attempts to answer every question at random.

```
> n=12
> p=1/5
> a = sum(dbinom(0:4))
> a = sum(dbinom(0:4, n, p))
> a
[1] 0.9274445
```

5.

To find expectation and variance for Discrete Random Variable.

$$x=c(0,1,2,3)$$
$$p=c(1/8,3/8,3/8,1/8)$$

```
> x = c(0, 1, 2, 3)
> p = c(1/8, 3/8,3/8, 1/8)
> exp = sum(x*p)
> exp
[1] 1.5
> v = sum(x^2*p)
> v
[1] 3
> var = v-(exp^2)
> var
[1] 0.75
```

6.   Create a matrix with 3 rows and 4 columns (values arbitrary)

```
> a = seq(12)
> a
 [1]  1  2  3  4  5  6  7  8  9 10 11 12
> ans = matrix(a,ncol = 4, byrow = T )
> ans
     [,1] [,2] [,3] [,4]
[1,]   1    2    3    4
[2,]   5    6    7    8
[3,]   9   10   11   12
```