```r
#Solution 1.a

dice_toss = read.csv("C:\\Users\\user1\\Downloads\\dicetoss.csv")
df_dice = data.frame(dice_toss)

X = df_dice$Outcome.of.Roll
Y = df_dice$Y..Number.of.Heads

freq_tab = table(X,Y)      #creates a frequency table for X and Y

for (i in c(1:6)){
  for (j in c(1:7)){
    freq_tab[i,j] = freq_tab[i,j]/sum(freq_tab[i,])  #calculates P(Y=j|X=i)
  }
}

YconX = rep(NA,6)
for (i in c(1:6)){
  YconX[i] = sum(freq_tab[i,])
}

dist_tab = cbind(freq_tab,YconX)
dist_tab
write.csv(dist_tab, "D:\\Sucheta\\CMI\\PSWR\\Y_Condition_X")


#Solution 1.b

freq_tab1 = table(Y,X)      #creates a frequency table for X and Y

for (i in c(1:7)){
  sum = sum(freq_tab1[i,])
  for (j in c(1:6)){
    freq_tab1[i,j] = freq_tab1[i,j]/sum  #calculates P(X=j|Y=i)
  }
}

XconY = rep(NA,7)
for (i in c(1:7)){
  XconY[i] = sum(freq_tab1[i,])
}

dist_tab1 = cbind(freq_tab1,XconY)
dist_tab1

write.csv(dist_tab1, "D:\\Sucheta\\CMI\\PSWR\\X_Condition_Y")
```

	0	1	2	3	4	5	6	YconX
1	0.26666667	0.97633136	0.0000000	0.00000000	0.0000000	0.0000000	0.0000000	1.242998
2	0.12500000	0.70796460	0.8276493	0.00000000	0.0000000	0.0000000	0.0000000	1.660614
3	0.07142857	0.38251366	0.7097281	0.63217713	0.0000000	0.0000000	0.0000000	1.795847
4	0.23809524	0.43108504	0.7239497	0.58942629	0.0000000	0.0000000	0.0000000	1.982556
5	0.00000000	0.17647059	0.4232365	0.69769818	0.3032688	0.3845157	0.0000000	1.985190
6	0.00000000	0.05263158	0.3877551	0.08740963	0.4749332	0.4997726	0.5710203	2.073523

```
            1          2           3          4           5          6 XconY
0 0.3333333  0.1666667  0.08333333  0.4166667  0.00000000  0.00000000      1
1 0.2972973  0.2702703  0.13513514  0.1891892  0.08108108  0.02702703      1
2 0.0000000  0.1333333  0.20000000  0.2333333  0.20000000  0.23333333      1
3 0.0000000  0.0000000  0.18181818  0.1818182  0.54545455  0.09090909      1
4 0.0000000  0.0000000  0.00000000  0.0000000  0.16666667  0.83333333      1
5 0.0000000  0.0000000  0.00000000  0.0000000  0.25000000  0.75000000      1
6 0.0000000  0.0000000  0.00000000  0.0000000  0.00000000  1.00000000      1
```