

SD_Assignment 3

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Problem 3.5 Question 1

```
set.seed(1229)
die1.rolls <- sample(x = 1:6, size = 500, replace = TRUE)
die1.rolls

##      [1] 1 3 6 3 6 3 5 6 2 1 4 4 2 3 6 6 6 6 6 3 1 5 3 6 3 5 6 4 4 1 2 3 5 6 3
##     [36] 1 6 4 2 3 3 4 4 2 1 5 4 1 2 6 1 5 5 2 4 5 4 6 5 5 1 4 3 2 4 6 3 5 3 2
##     [71] 1 4 5 3 3 6 2 4 5 5 2 2 1 5 5 1 3 1 2 6 3 2 2 1 4 2 6 3 4 6 6 3 6 6 5
##    [106] 5 4 6 2 1 2 2 2 4 3 3 1 1 4 5 3 1 2 4 4 4 5 1 2 5 1 6 5 3 6 6 5 6 6 6
##    [141] 1 1 3 2 4 1 6 4 5 6 3 5 5 1 6 6 2 5 1 1 3 5 3 5 4 4 3 4 4 2 6 2 5 3 5
##    [176] 4 3 1 2 4 2 4 5 6 1 6 2 6 5 5 2 2 3 1 1 2 3 5 1 6 5 2 3 1 4 4 2 2 6 1
##    [211] 2 6 5 4 6 3 5 2 2 2 5 5 6 6 5 5 5 6 2 4 6 4 2 2 2 5 1 2 1 5 4 6 5 1 3
##    [246] 5 6 3 3 5 4 6 1 1 4 3 1 5 6 2 4 4 4 4 1 1 3 3 6 4 5 4 2 3 2 2 3 1 5 1
##    [281] 3 6 6 1 1 5 2 3 5 6 6 5 5 5 1 1 4 1 6 5 4 5 4 3 3 3 4 5 6 6 5 6 3 3 1
##    [316] 2 4 3 3 5 3 3 5 1 6 1 5 3 6 1 2 1 3 5 4 5 4 4 1 3 2 3 6 2 3 2 1 6 5 1
##    [351] 6 6 5 5 2 4 5 1 1 5 6 5 2 5 2 2 3 2 1 4 3 1 4 3 3 3 1 3 6 4 3 5 4 4 6
##    [386] 2 5 3 5 6 3 4 6 6 4 2 1 6 5 4 4 1 6 6 4 5 4 6 2 3 3 1 6 4 2 3 4 4 2 1
##    [421] 2 5 1 5 3 1 5 4 5 2 3 3 5 6 1 6 2 3 5 6 1 2 1 6 2 3 3 2 3 2 4 3 6 1 4
##    [456] 3 6 1 2 6 4 1 4 1 2 3 6 2 2 1 4 1 1 6 5 1 6 2 3 2 2 5 5 5 3 6 1 3 5 1
##    [491] 2 3 5 4 5 1 6 6 1 1

die2.rolls <- sample(x = 1:6, size = 500, replace = TRUE)
die2.rolls

##      [1] 2 4 6 1 6 6 2 2 1 5 5 6 4 5 3 2 3 6 4 3 5 5 5 3 4 6 2 4 6 3 1 1 6 5 1
##     [36] 3 3 4 1 5 5 1 6 2 3 1 6 3 2 1 6 6 4 6 3 5 5 6 1 1 2 5 1 6 3 4 6 6 6 3
##     [71] 6 3 4 2 4 1 5 6 4 1 1 5 3 1 5 3 6 1 1 3 4 1 6 3 1 1 6 2 6 3 3 1 4 1 2
##    [106] 3 2 5 2 5 4 2 2 4 5 6 1 1 6 2 1 3 1 1 1 5 3 4 2 3 4 5 4 3 3 2 4 5 6 4
##    [141] 5 5 2 6 3 2 4 5 4 4 3 6 6 4 5 3 2 2 5 3 4 6 4 4 1 5 3 2 4 3 5 1 3 4 4
##    [176] 3 1 4 1 1 4 3 1 5 6 4 6 5 3 1 4 3 1 4 2 6 2 3 2 4 4 4 5 3 2 1 5 6 6 5
##    [211] 3 3 6 6 5 2 5 2 4 3 2 5 2 5 2 5 1 6 3 1 3 6 3 6 6 4 2 4 2 2 3 3 1 4 5
##    [246] 4 5 3 4 4 4 6 1 2 1 4 3 6 3 3 5 2 3 3 1 1 5 6 4 6 3 5 6 5 3 4 2 6 5 2
##    [281] 1 3 1 5 1 3 2 6 3 2 1 2 2 3 2 4 3 5 1 3 1 2 4 1 1 4 1 1 3 4 5 4 2 5 3
##    [316] 4 3 4 5 1 5 6 2 2 3 5 6 6 4 1 2 4 1 3 4 3 6 1 5 1 3 2 5 2 1 3 3 6 3 1
##    [351] 2 3 1 3 1 4 2 2 5 1 3 1 2 1 5 1 5 5 6 5 4 6 1 6 6 6 3 1 3 4 2 3 4 2 4
##    [386] 2 3 4 5 1 6 3 6 4 3 3 2 4 1 4 6 5 4 5 1 2 4 3 2 2 1 3 2 6 3 4 4 6 5 6
##    [421] 5 6 2 1 6 2 4 5 4 6 3 4 4 6 5 3 5 4 3 4 2 5 2 5 5 1 3 4 1 6 6 4 1 1 6
##    [456] 6 5 4 4 2 6 3 5 6 6 5 6 4 6 2 2 4 5 4 6 2 1 4 1 4 6 6 4 6 6 2 5 6 6 6
##    [491] 6 5 3 3 5 6 3 6 6 5

x1<-cbind(die1.rolls,die2.rolls)
df<-cbind(x1,SumdRoll=rowSums(x1))
summary(df)

##      die1.rolls      die2.rolls      SumdRoll
##      Min.      :1.000      Min.      :1.00      Min.      : 2.000
##      1st Qu.:2.000      1st Qu.:2.00      1st Qu.: 5.000
```

```
## Median :4.000   Median :4.00   Median : 7.000
## Mean   :3.548   Mean   :3.56   Mean   : 7.108
## 3rd Qu.:5.000   3rd Qu.:5.00   3rd Qu.: 9.000
## Max.   :6.000   Max.   :6.00   Max.   :12.000
```

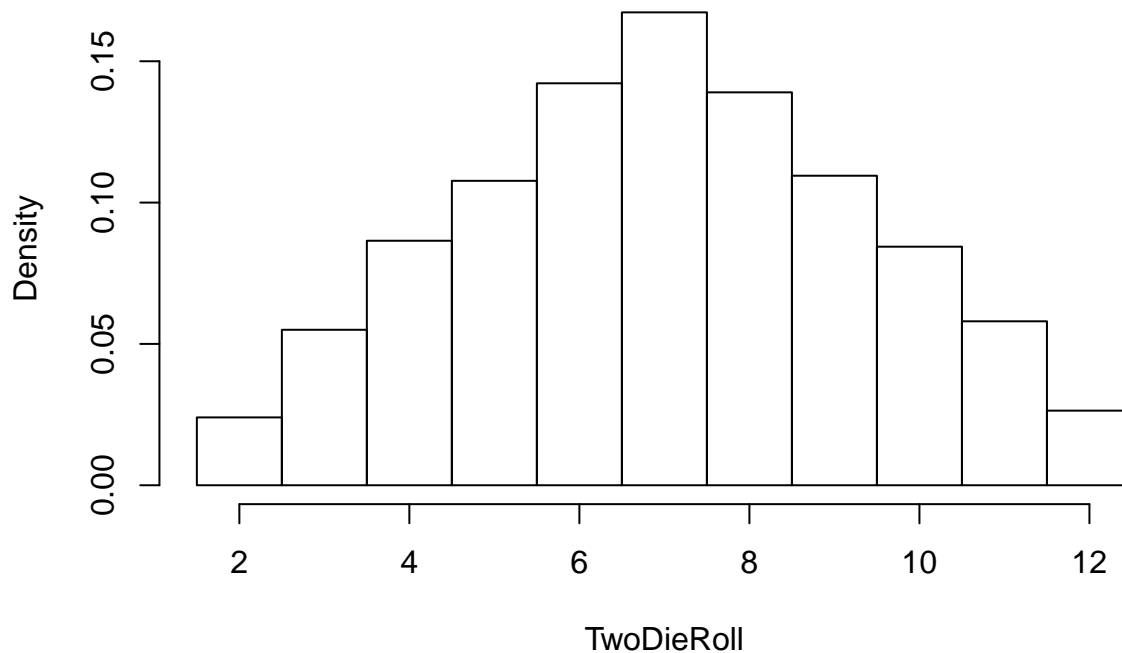
```
hist((die1.rolls + die2.rolls), density = 100, breaks = 1:12, prob = T)
```



Problem 3.5 Question 1C

```
set.seed(1229)
RollDie = function(n) sample(1:6,n,rep=T)
TwoDieRoll = RollDie(10000) + RollDie(10000)
hist(TwoDieRoll,breaks=c(1.5:12.5),prob=T)
```

Histogram of TwoDieRoll



```
mean(TwoDieRoll)
```

```
## [1] 7.0181
```

Problem 3.5 Question 17

```
dy<-c(90)#number of Days
products<-c("OATS","PEAS","BEANS","BARLEY")#Products
whp<-c(1.05,3.17,1.99,.95)#whole Sale Price
rtp<-c(1.29,3.76,2.23,1.65)# Retail Price
salesmin<-c(0,0,0,0)#minimum sales Quantity
salesmax<-c(10,8,14,11)#maximum Sales Quantity
print(producedata<-data.frame(products,whp,rtp,salesmin,salesmax))
```

```
##  products whp rtp salesmin salesmax
## 1    OATS 1.05 1.29         0        10
## 2    PEAS 3.17 3.76         0         8
## 3    BEANS 1.99 2.23         0        14
## 4    BARLEY 0.95 1.65         0        11
```

```
#revenue = (price)*(number of units sold)
print(revenue<-c(rtp*salesmax))
```

```
## [1] 12.90 30.08 31.22 18.15
```

```
#Total Cost
print(cost<-c(whp*salesmax))
```

```
## [1] 10.50 25.36 27.86 10.45
```

```
#profit = revenue - cost  
print(profit<-c(revenue-cost))
```

```
## [1] 2.40 4.72 3.36 7.70
```

```
#one day Results  
print(producedata2<-data.frame(products,cost,revenue,profit))
```

```
##  products  cost revenue profit  
## 1      OATS 10.50   12.90   2.40  
## 2      PEAS 25.36   30.08   4.72  
## 3      BEANS 27.86   31.22   3.36  
## 4     BARLEY 10.45   18.15   7.70
```

```
#Random sample for each produce over 90 days  
oats=runif(dy,0,10)  
peas=runif(dy,0,8)  
beans=runif(dy,0,14)  
barley=runif(dy,0,11)  
#Rounding to get whole Pound Amounts  
produce<-data.frame(round(oats),round(peas),round(beans),round(barley))  
colnames(produce)<-products  
print(produce)
```

```
##  OATS PEAS BEANS BARLEY  
## 1    3    5    4     8  
## 2    2    4    9    10  
## 3    5    2    8    10  
## 4    2    5    1     3  
## 5    5    2   10     3  
## 6   10    2   11     8  
## 7    9    7    5     6  
## 8    2    0   12     6  
## 9    8    7    4     5  
## 10   10    7    9     7  
## 11    7    7    3     1  
## 12    3    2   13     7  
## 13    6    7   10     8  
## 14    4    0   13    10  
## 15    1    3    6     5  
## 16   10    4    5    11  
## 17    9    3    1     2  
## 18    3    7    8     9  
## 19    6    0    4     6  
## 20    0    6   11     5  
## 21    9    3   13     3  
## 22    6    2   12     3  
## 23    4    3    1     8  
## 24    2    3    5    10  
## 25    4    1    1    11  
## 26    3    3    6     8  
## 27    3    6   13     6  
## 28    3    2    6     1
```

## 29	4	2	12	1
## 30	5	1	10	3
## 31	7	2	7	3
## 32	10	1	1	11
## 33	5	5	3	3
## 34	7	7	3	3
## 35	1	7	4	2
## 36	2	5	3	6
## 37	5	3	4	11
## 38	2	6	7	5
## 39	2	8	14	11
## 40	0	4	1	8
## 41	5	1	6	8
## 42	2	2	7	3
## 43	4	7	1	9
## 44	9	6	12	5
## 45	4	6	9	1
## 46	7	2	11	8
## 47	5	8	10	3
## 48	3	7	9	11
## 49	3	6	1	0
## 50	6	0	13	10
## 51	5	0	7	2
## 52	7	6	12	1
## 53	6	4	14	10
## 54	7	1	7	7
## 55	7	3	12	9
## 56	3	7	0	10
## 57	8	3	5	4
## 58	10	5	2	8
## 59	1	0	7	1
## 60	4	3	12	9
## 61	5	8	3	6
## 62	5	7	2	6
## 63	4	1	1	8
## 64	6	6	12	6
## 65	3	3	9	8
## 66	6	1	5	11
## 67	5	1	1	5
## 68	4	5	11	4
## 69	5	5	1	7
## 70	3	3	7	2
## 71	2	1	4	7
## 72	0	3	14	2
## 73	3	1	12	6
## 74	6	1	9	9
## 75	1	6	2	4
## 76	1	8	13	5
## 77	2	5	7	4
## 78	5	8	4	2
## 79	1	6	14	9
## 80	5	4	3	8
## 81	2	1	0	7
## 82	4	6	6	8

```
## 83    7    5    6    3
## 84    7    2    8    9
## 85    5    8    6    9
## 86    8    8   10    5
## 87    5    0   10    3
## 88    5    4   13    8
## 89    3    7    1    6
## 90    6    6    3    7
```

```
#calculate Revenue, Cost and Profit for daily and accumulative over 90 Day Period
revenue<-c(rtp*produce)
produce.revenue<-data.frame(revenue)
colSums(produce.revenue)
```

```
##      OATS      PEAS      BEANS      BARLEY
## 972.36  817.68 1433.93 1247.98
```

```
cost<-c(whp*produce)
produce.cost<-data.frame(cost)
colSums(produce.cost)
```

```
##      OATS      PEAS      BEANS      BARLEY
## 786.87  657.55 1141.13  994.96
```

```
profit=maply('-',revenue,cost,SIMPLIFY=FALSE)
produce.profit<-data.frame(profit)
colSums(produce.profit)
```

```
##      OATS      PEAS      BEANS      BARLEY
## 185.49  160.13  292.80  253.02
```