Unit01

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Computing Probabilities of Binomial Probability Model

```
# calcualte the probability for w = 1, which is 1 success in 5 trials
dbinom(x = 1, size = 5, prob = .6)
```

```
## [1] 0.0768
```

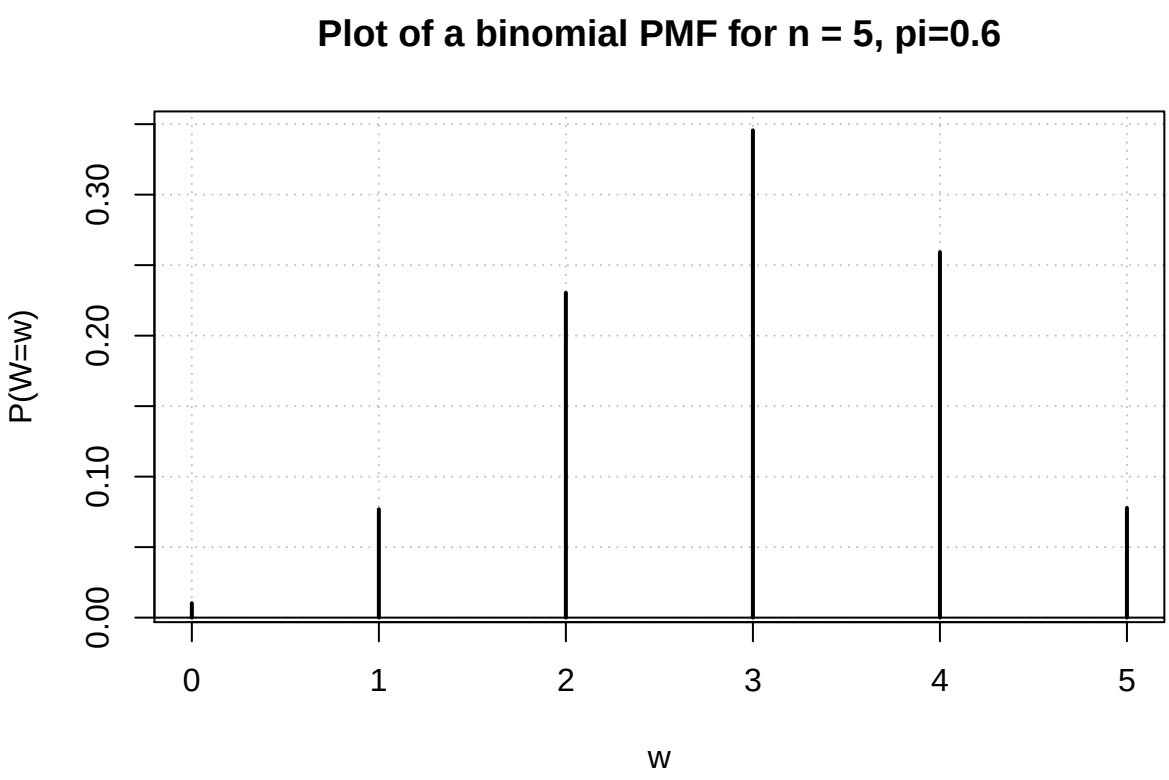
```
# calculate the probabilities for w = 0, 1, 2, 3, 4, 5
dbinom(x = 0:5, size = 5, prob = .6)
```

```
## [1] 0.01024 0.07680 0.23040 0.34560 0.25920 0.07776
```

```
pmf = dbinom(x = 0:5, size = 5, prob = .6)
pmf.df = data.frame(w = 0:5, prob = round(x = pmf, digits = 4))
pmf.df
```

```
##   w   prob
## 1 0 0.0102
## 2 1 0.0768
## 3 2 0.2304
## 4 3 0.3456
## 5 4 0.2592
## 6 5 0.0778
```

```
plot(x = pmf.df$w, y = pmf.df$prob, type = "h", xlab = "w",
     ylab ="P(W=w)", main = "Plot of a binomial PMF for n = 5, pi=0.6",
     panel.first = grid(col="gray", lty = "dotted"),
     lwd = 2)
abline(h=0)
```

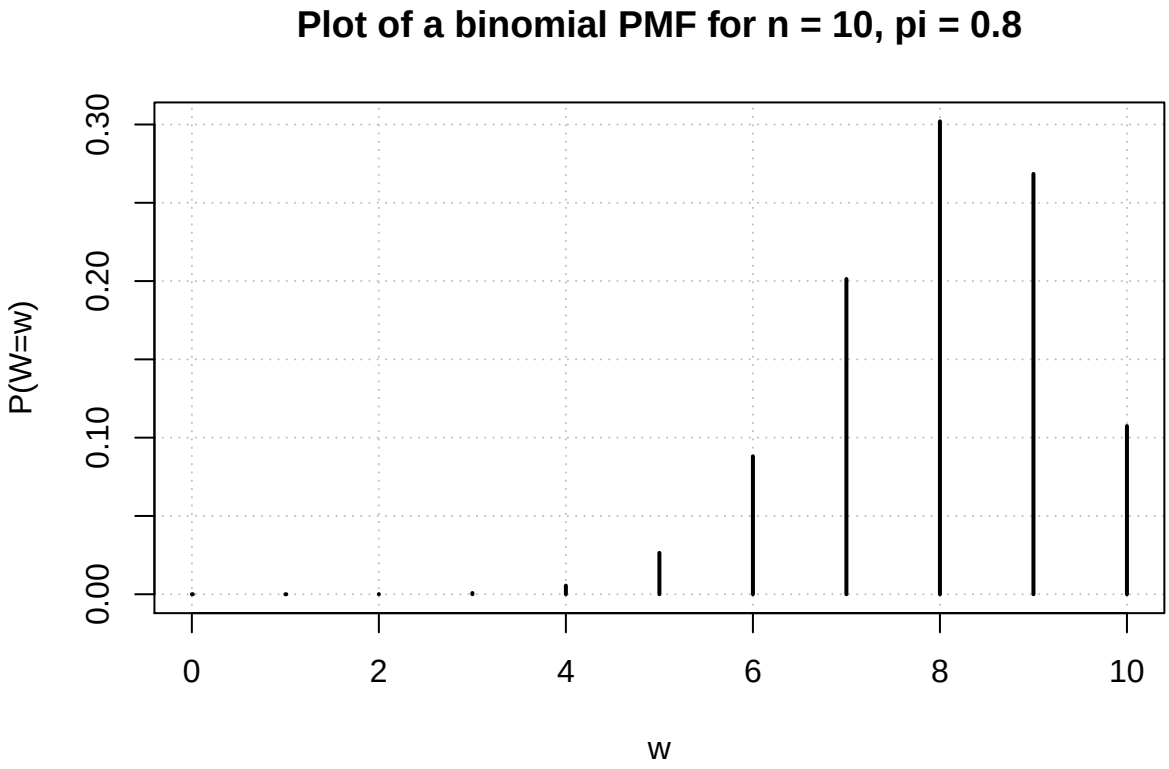


Repeat the implementation in R exercise using pi = 0.2, n = 10. What about pi = 0.8, n = 10? Submit your R script.

```
# pi = 0.8, n = 10
pmf = dbinom(x = 0:10, size = 10, prob = .8)
pmf.df = data.frame(w = 0:10, prob = round(x = pmf, digits = 4))
pmf.df
```

```
##     w   prob
## 1   0 0.0000
## 2   1 0.0000
## 3   2 0.0001
## 4   3 0.0008
## 5   4 0.0055
## 6   5 0.0264
## 7   6 0.0881
## 8   7 0.2013
## 9   8 0.3020
## 10  9 0.2684
## 11 10 0.1074
```

```
plot(x = pmf.df$w, y = pmf.df$prob, type = "h", xlab = "w", ylab = "P(W=w)",
     main = "Plot of a binomial PMF for n = 10, pi = 0.8",
     panel.first = grid(col = "gray", lty = "dotted"), lwd = 2
     )
```


Plot of a binomial PMF for n = 10, pi = 0.8
P(W=w)
0.00
0.10
0.20
0.30
0
2
4
6
8
10
w