

Weighted_Dice

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Weighted Dice

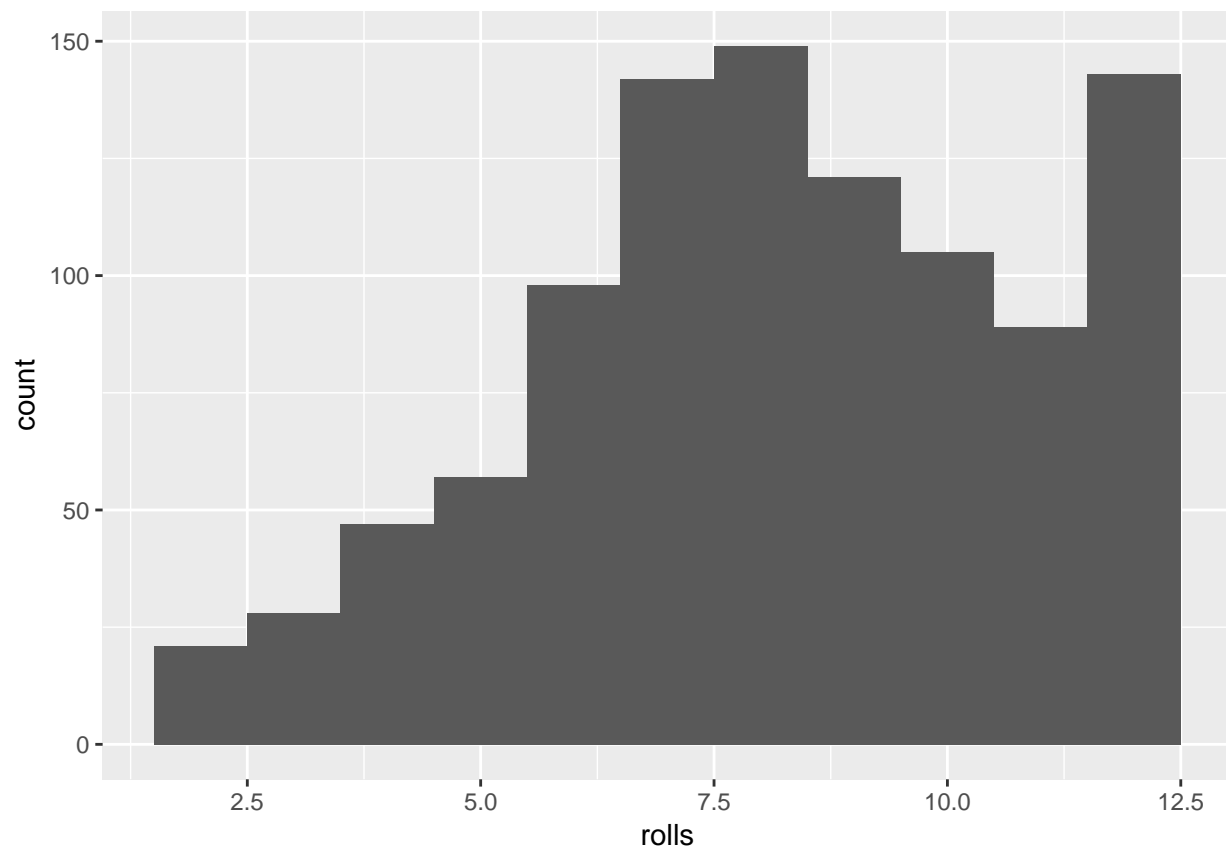
The above program creates a function `roll()` , in which we have weighted our die slightly towards getting a higher number. The function samples the sum output of 2 weighted dice.

```
roll<-function(){  
  die<-1:6  
  prob<-c(1/8,1/8,1/8,1/8,1/8,3/8)  
  dice<-sample(die,size=2,replace = TRUE,prob)  
  sum(dice)  
}  
roll()
```

```
## [1] 10
```

Plotting the graph of 1000 samples of `roll()` function so as to prove that our dices are now weighted towards getting a higher number.

```
library(ggplot2)  
rolls<-replicate(1000,roll())  
qplot(rolls,binwidth=1)
```



Expected Value

Now, Calculating the Expected Value of the Weighted Dices.

```
die<-1:6
rolls<-expand.grid(die,die)
rolls$value<-rolls$Var1+rolls$Var2
prob<-c("1"=1/8,"2"=1/8,"3"=1/8,"4"=1/8,"5"=1/8,"6"=3/8)
rolls$prob1<-prob[rolls$Var1]
rolls$prob2<-prob[rolls$Var2]
rolls$prob<-rolls$prob1*rolls$prob2
sum(rolls$value*rolls$prob)
```

```
## [1] 8.25
```