Weighted Dice Simulation

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Simulation

```
source("./roll.R")
ls()
```

```
## [1] "roll"  "roll2"
```

```
replicate(20, roll())
```

```
##  [1]  9  9  7  6  5  8  5  6  6  6  4  5  5  5  7  6 11  4  4  7
```

```
N <- 10000
rolls <- replicate(N, roll())
table(rolls)
```

```
## rolls
##    2    3    4    5    6    7    8    9   10   11   12
##  300  537  869 1096 1403 1609 1410 1092  823  568  293
```

```
options("digits")
```

```
## $digits
## [1] 7
```

```
options(digits = 2)
table(rolls)/N
```

```
## rolls
##     2     3     4     5     6     7     8     9    10    11    12
## 0.030 0.054 0.087 0.110 0.140 0.161 0.141 0.109 0.082 0.057 0.029
```

```
table(rolls)/N * 36
```

```
## rolls
##   2   3   4   5   6   7   8   9  10  11  12
## 1.1 1.9 3.1 3.9 5.1 5.8 5.1 3.9 3.0 2.0 1.1
```

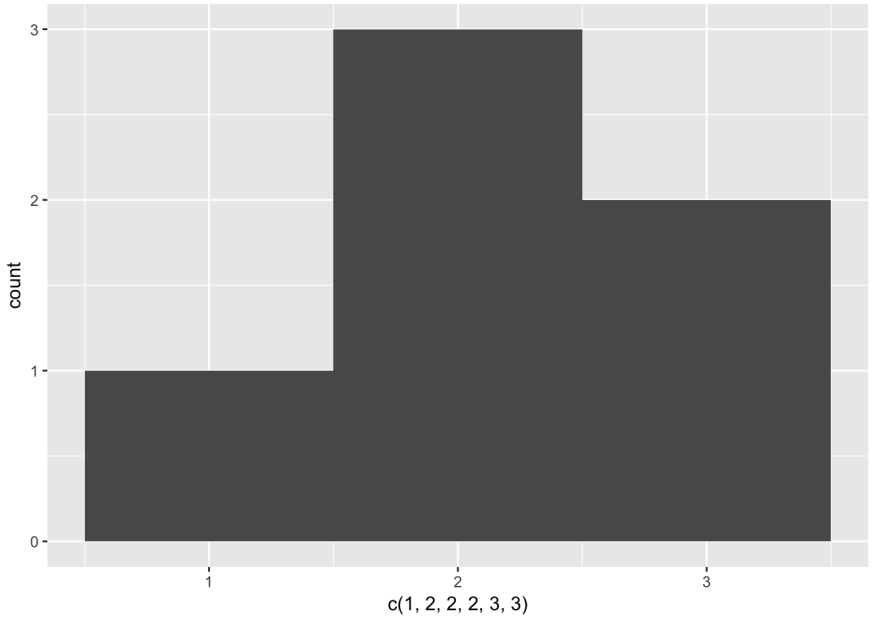
```
options(digits = 1)
table(rolls)/N * 36
```

```
## rolls
##  2  3  4  5  6  7  8  9 10 11 12
##  1  2  3  4  5  6  5  4  3  2  1
```

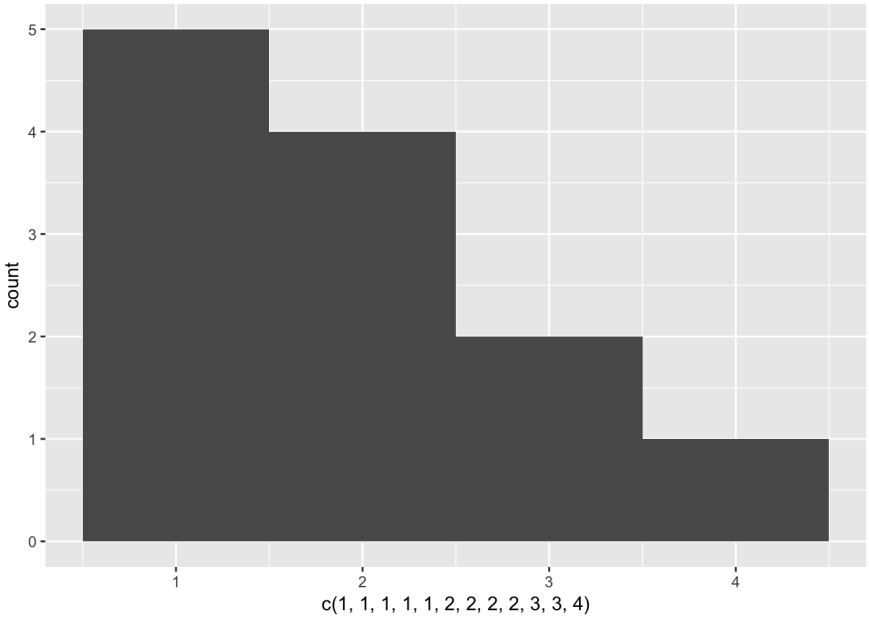
```
options(digits = 7)
```

histogram

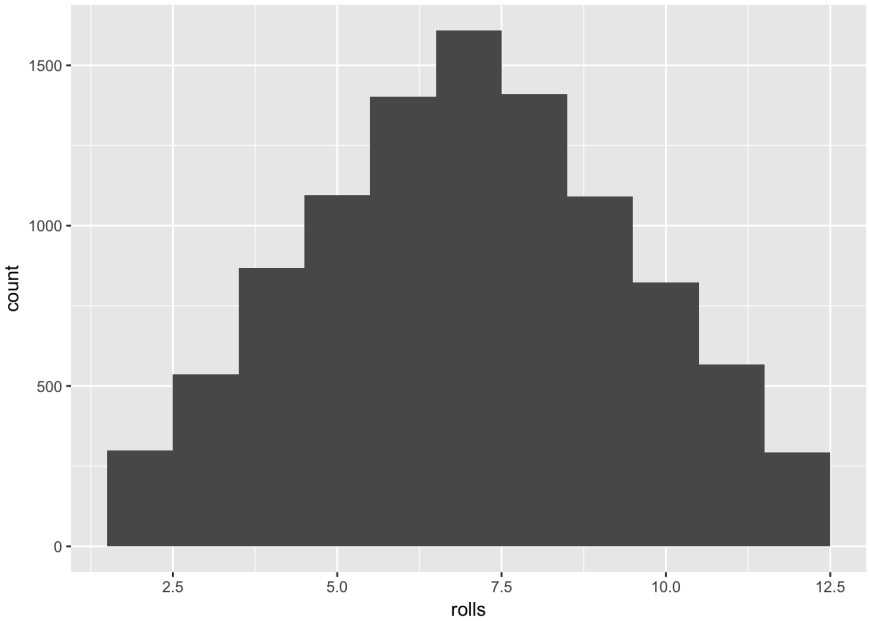
```
library(ggplot2)
qplot(c(1, 2, 2, 2, 3, 3), binwidth = 1)
```




```
qplot(c(1, 1, 1, 1, 1, 2, 2, 2, 2, 3, 3, 4), binwidth = 1)
```




```
qplot(rolls, binwidth = 1)
```



Weighted Dice

```
# roll_w <- roll
# fix(roll.w)
roll_w <-
function() {
die <- 1:6
dice <- sample(die, size = 2, replace = TRUE, prob = c(rep(1/8, 5), 3/8))
sum(dice)
}
roll_w
```

```
## function() {
## die <- 1:6
## dice <- sample(die, size = 2, replace = TRUE, prob = c(rep(1/8, 5), 3/8))
## sum(dice)
## }
```

```
replicate(20, roll_w())
```

```
##  [1]  3  7 10 12 12  8  8  8 12 12  5  8 11  6  6 12 11 12  6  6
```

```
N <- 10000
rolls_w <- replicate(N, roll_w())
table(rolls_w)
```

```
## rolls_w
##    2    3    4    5    6    7    8    9   10   11   12
##  153  309  469  598  770 1562 1479 1183 1155  941 1381
```

```
options("digits")
```

```
## $digits
## [1] 7
```

```
options(digits = 2)
table(rolls_w)/N
```

```
## rolls_w
##     2     3     4     5     6     7     8     9    10    11    12
## 0.015 0.031 0.047 0.060 0.077 0.156 0.148 0.118 0.116 0.094 0.138
```

```
table(rolls_w)/N * 64
```

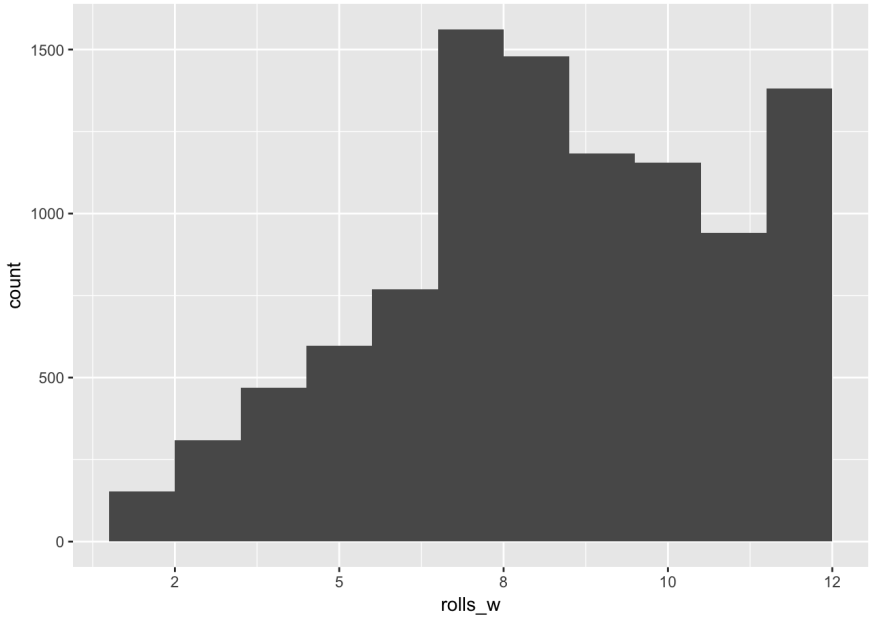
```
## rolls_w
##     2     3     4     5     6     7     8     9    10    11    12
##  0.98  1.98  3.00  3.83  4.93 10.00  9.47  7.57  7.39  6.02  8.84
```

```
options(digits = 1)
table(rolls_w)/N * 64
```

```
## rolls_w
##  2  3  4  5  6  7  8  9 10 11 12
##  1  2  3  4  5 10  9  8  7  6  9
```

histogram

```
qplot(rolls_w, binwidth = 1)
```



dump

```
dump(list = "roll_w", file = "./roll_w.R")
```