

```

[1] 0.375
[1] 0.875
[1] "-----放回的情况-----"
[1] 0.4444444
[1] 0.5555556
[1] 0.8888889
[1] "-----不放回的情况-----"
[1] 0.4
[1] 0.4666667
[1] 0.9333333
[1] "-----利用 outer 函数的放回情况-----"
      [,1]      [,2]      [,3]      [,4]      [,5]      [,6]
[1,] "白 1 白 1" "白 1 白 2" "白 1 白 3" "白 1 白 4" "白 1 红 1" "白 1 红 2"
[2,] "白 2 白 1" "白 2 白 2" "白 2 白 3" "白 2 白 4" "白 2 红 1" "白 2 红 2"
[3,] "白 3 白 1" "白 3 白 2" "白 3 白 3" "白 3 白 4" "白 3 红 1" "白 3 红 2"
[4,] "白 4 白 1" "白 4 白 2" "白 4 白 3" "白 4 白 4" "白 4 红 1" "白 4 红 2"
[5,] "红 1 白 1" "红 1 白 2" "红 1 白 3" "红 1 白 4" "红 1 红 1" "红 1 红 2"
[6,] "红 2 白 1" "红 2 白 2" "红 2 白 3" "红 2 白 4" "红 2 红 1" "红 2 红 2"
[1] 0.4444444
[1] 0.5555556
[1] 0.8888889
[1] "-----利用 outer 函数的不放回情况-----"
      [,1]      [,2]      [,3]      [,4]      [,5]
[1,] "白 1 白 2" "白 1 白 3" "白 1 白 4" "白 1 红 1" "白 1 红 2"
      [,1]      [,2]      [,3]      [,4]      [,5]
[1,] "白 2 白 1" "白 2 白 3" "白 2 白 4" "白 2 红 1" "白 2 红 2"
      [,1]      [,2]      [,3]      [,4]      [,5]
[1,] "白 3 白 1" "白 3 白 2" "白 3 白 4" "白 3 红 1" "白 3 红 2"
      [,1]      [,2]      [,3]      [,4]      [,5]
[1,] "白 4 白 1" "白 4 白 2" "白 4 白 3" "白 4 红 1" "白 4 红 2"
      [,1]      [,2]      [,3]      [,4]      [,5]
[1,] "红 1 白 1" "红 1 白 2" "红 1 白 3" "红 1 白 4" "红 1 红 2"
      [,1]      [,2]      [,3]      [,4]      [,5]
[1,] "红 2 白 1" "红 2 白 2" "红 2 白 3" "红 2 白 4" "红 2 红 1"
[1] 0.4
[1] 0.4666667
[1] 0.9333333

```

### 源代码

```

sink("./23.R-Project/output2.doc", append = TRUE, split = TRUE)
# R语言第二次作业, 环境: R, 编译器: VSCode('PPT 第一题, 未要求写, 可以不做!')
# 恰有一次出现正面
p_1 <- dbinom(1, size = 3, prob = 0.5)
print(p_1)

```

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# 至少有一次出现正面
p_2 <- 1 - dbinom(0, size = 3, prob = 0.5)
print((p_2))
print('-----放回的情况-----')
x <- c('白 1', '白 2', '白 3', '白 4', '红 1', '红 2')
# 取到两只都是白球的概率
p_3 <- dbinom(2, size = 2, prob = 2 / 3)
print(p_3)
# 取到两只球颜色相同的概率
p_4 <- dbinom(2, size = 2, prob = 1 / 3) + dbinom(2, size = 2, prob = 2 / 3)
print(p_4)
# 取到两只球中至少有一只是白球的概率
p_5 <- 1 - dbinom(0, size = 2, prob = 2 / 3)
print(p_5)
print('-----不放回的情况-----')
# 考虑不放回的情况
# 取到两只都是白球的概率
sam <- choose(4, 1) * choose(3, 1)
all <- choose(6, 1) * choose(5, 1)
p_6 <- sam / all
print(p_6)
# 取到两只球颜色相同的概率
p_7 <- p_6 + (choose(2, 1) / all)
print(p_7)
# 取到两只球中至少有一只是白球的概率
p_8 <- 1 - (choose(2, 1) / all)
print(p_8)
print('-----利用 outer 函数的放回情况-----')
output <- outer(x, x, FUN = 'paste')
print(output)
counts_3 <- 0
counts_4 <- 0
for (x_1 in x){
  for (x_2 in x){
    if (substr(x_1, 1, 1) == '白' & substr(x_2, 1, 1) == '白'){
      counts_3 <- counts_3 + 1
    }
    if (substr(x_1, 1, 1) == '红' & substr(x_2, 1, 1) == '红'){
      counts_4 <- counts_4 + 1
    }
  }
}
all_2 <- length(x) **2
a_4 <- counts_3 / all_2

```

```

print(a_4)
a_5 <- (counts_3 + counts_4) / all_2
print(a_5)
a_6 <- 1 - counts_4 / all_2
print(a_6)
print('-----利用 outer 函数的不放回情况-----')
counts_1 <- 0
counts_2 <- 0
x <- c('白1', '白2', '白3', '白4', '红1', '红2')
for (x_1 in x){
  y <- x[-which(x == x_1)]
  out <- outer(x_1, y, FUN = "paste")
  print(out)
  for (y_1 in y){
    if (substr(x_1, 1, 1) == '白' & substr(y_1, 1, 1) == '白'){
      counts_1 <- counts_1 + 1
    }
    if (substr(x_1, 1, 1) == '红' & substr(y_1, 1, 1) == '红'){
      counts_2 <- counts_2 + 1
    }
  }
}
all <- length(x) * length(y)
a_1 <- counts_1 / all
print(a_1)
a_2 <- a_1 + (counts_2 / all)
print(a_2)
a_3 <- 1 - (counts_2 / all)
print(a_3)
sink()

```