Compound Events Example with Dice

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Khan Academy Video – Die Rolling Probability

Probability- 2 Dice "No Ones"

```
library(data.table)
die_6 <- data.table(face = c(1:6))
die_6
```

```
##    face
## 1:    1
## 2:    2
## 3:    3
## 4:    4
## 5:    5
## 6:    6
```

```
die_4 <- data.table(face = c(1:4))
die_4
```

```
##    face
## 1:    1
## 2:    2
## 3:    3
## 4:    4
```

Probability of getting no ones with roll of two dice

Total possible outcomes = 6 * 4 = 24

Theoretical P(no ones) = (5*3)/Total Possibile Events = 15/24 = 0.625 = 62.5 %

Simulate throwing 2 dice 1,000 times

```
n <- 1000
throw_6 <- data.table(face = sample(die_6$face, n, replace=TRUE))
# throw_6 <- data.table(face = sample(die_6[,face], n, replace=TRUE))
# throw_4 <- data.table(face = sample(die_4$face, n, replace=TRUE))
throw_4 <- data.table(face = sample(die_4[,face], n, replace=TRUE))
No_Ones <- throw_6 != 1 & throw_4 !=1
Sum_No_Ones <- sum(No_Ones)
Sum_No_Ones
```

```
## [1] 627
```

```
P_No_Ones <- (Sum_No_Ones / n) * 100
paste("Probability of throwing no ones with 2 dice =",P_No_Ones,"%")
```

```
## [1] "Probability of throwing no ones with 2 dice = 62.7 %"
```