Discussion5

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Chapter 1.2

p.35 Exercise 1

Let $\Omega = \{a, b, c\}$ be a sample space. Let $m(a) = 1/2$, $m(b) = 1/3$, and $m(c) = 1/6$. Find the probabilities for all eight subsets of Ω.

$P(\Omega) = 0$ <- subset 8

```
first_subset_a = 1/2
second_subset_b = 1/3
third_subset_c = 1/6

fourth_subset_ab = first_subset_a + second_subset_b
fourth_subset_ab
```

```
## [1] 0.8333333
```

```
fifth_subset_ac = first_subset_a + third_subset_c
fifth_subset_ac
```

```
## [1] 0.6666667
```

```
sixth_subset_bc = second_subset_b + third_subset_c
sixth_subset_bc
```

```
## [1] 0.5
```

```
seventh_subset_abc = first_subset_a + second_subset_b + third_subset_c
seventh_subset_abc
```

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

p.35 Exercise 6

A die is loaded in such a way that the probability of each face turning up is proportional to the number of dots on that face. (For example, a six is three times as probable as a two.) What is the probability of getting an even number in one throw?

```r
#The probability of getting 1 is p, 2 is 2p, 3, = 3p...6 = 6p
#Therefore, p + 2p + 3p + 4p + 5p + 6p = 21p
# Probability is 1/21 * face of the die

basic_die <- matrix(c(1,2,3,4,5,6), byrow = T, ncol = 3)
basic_die
```

```
##      [,1] [,2] [,3]
## [1,]    1    2    3
## [2,]    4    5    6
```

```r
#Die * probability

probability <- basic_die * (1/21)
probability
```

```
##            [,1]      [,2]      [,3]
## [1,] 0.04761905 0.0952381 0.1428571
## [2,] 0.19047619 0.2380952 0.2857143
```

```r
even_probability <- probability[2,1] + probability[1,2] + probability[2,3]

paste(c("The probability of rolling an even number first is ", even_probability))
```

```
## [1] "The probability of rolling an even number first is "
## [2] "0.571428571428571"
```