

# Hoofdstuk 6

## Bijlage 6.1

### Blokje 175

#### Requirements of Probabilities

Given a sample space  $S = \{O_1, O_2, \dots, O_k\}$ , the probabilities assigned to the outcomes must satisfy two requirements.

1. The probability of any outcome must lie between 0 and 1; that is,

$$0 \leq P(O_i) \leq 1 \quad \text{for each } i$$

[Note:  $P(O_i)$  is the notation we use to represent the probability of outcome  $i$ .]

2. The sum of the probabilities of all the outcomes in a sample space must be 1. That is,

$$\sum_{i=1}^k P(O_i) = 1$$

## Bijlage 6.2

### Complement Rule

$$P(A^C) = 1 - P(A)$$

for any event  $A$ .

### Bijlage 6.3

#### **Multiplication Rule**

The joint probability of any two events  $A$  and  $B$  is

$$P(A \text{ and } B) = P(B)P(A|B)$$

or, altering the notation,

$$P(A \text{ and } B) = P(A)P(B|A)$$

#### **Multiplication Rule for Independent Events**

The joint probability of any two independent events  $A$  and  $B$  is

$$P(A \text{ and } B) = P(A)P(B)$$