3.5. Independence

Definition 3.4

Two events A and B in a sample space are *independent* if

$$P(A \cap B) = P(A)P(B). \tag{3.4}$$

Theorem 3.6 (Conditional Criterion for Independence)

Two events A and B with nonzero probability are independent if and only if

$$P(A|B) = P(A) \quad \text{or} \quad P(B|A) = P(B). \tag{3.5}$$

Theorem 3.7 (The Product Rule for Probability)

The probability of the intersection of two events A and B is

$$P(A \cap B) = P(A|B)P(B) = P(B|A)P(A). \tag{3.6}$$

Problem Prompt

Do problems 8 and 9 on the worksheet.