

Larsen and Marx 2.2: Sample Spaces and the Algebra of Sets

These notes reflect material from our text, *Introduction to Mathematical Statistics and Its Applications, Fifth Edition*, by Richard J. Larsen and Morris L. Marx, Pearson, ISBN 978-0-321-69394-5, 2012.

Experiments

Four key concepts: *experiment, sample outcome, sample space, event*

Examples of experiments involving random processes:

flip a coin, flip two coins

roll a die, roll two dice

flip a coin until you see the first h

choose a random number in the interval $I = [0, 1]$

For each of these experiments, describe the sample space, S , by listing its sample outcomes, $s \in S$.

Definition 1 *An event, A , is a subset of S .*

Exercises from Larsen and Marx, Section 2.2: 1, 3, 6, 8, 10, 11

The Algebra of Sets

unions, intersections, complements, mutually exclusive events

Exercises from Larsen and Marx, Section 2.2: 16, 19, 21, 26

Venn diagrams

Exercises from Larsen and Marx, Section 2.2: 31, 33, 39

To hand in for homework:

Homework exercises from Larsen and Marx, Section 2.2: 10, 11, 26, 39