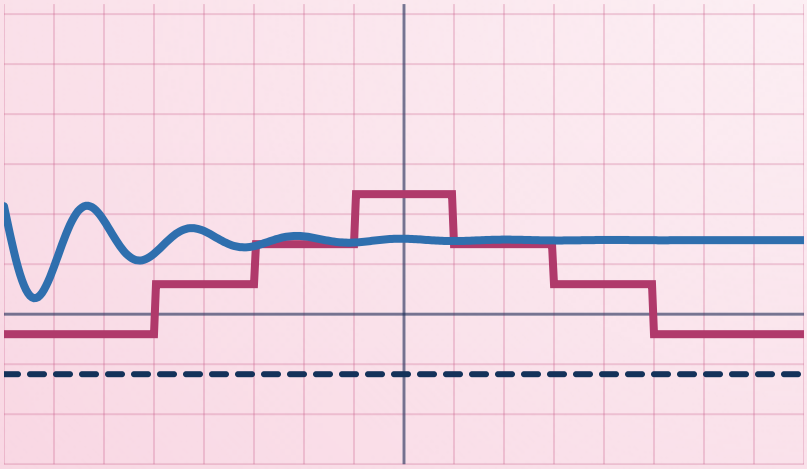
KECUDO

2026 EDITION · COLLEGE MATH SERIES



PROBABILITY & STATISTICS

Class H2

Probability & Random Variables

Measuring chance, one rule at a time

PREMIUM EDITION · KECUDO · H2

13 CHAPTERS · 120 SELF-ASSESSMENT QUESTIONS

INTERACTIVE EDITION + PRINT PDF

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FOUNDATION

Chapter 1

Sample Spaces & Events

A random experiment has a **sample space** S, the set of all outcomes. An **event** is a set of outcomes. When outcomes are equally likely, P(A) = (outcomes in A)/(outcomes in S).

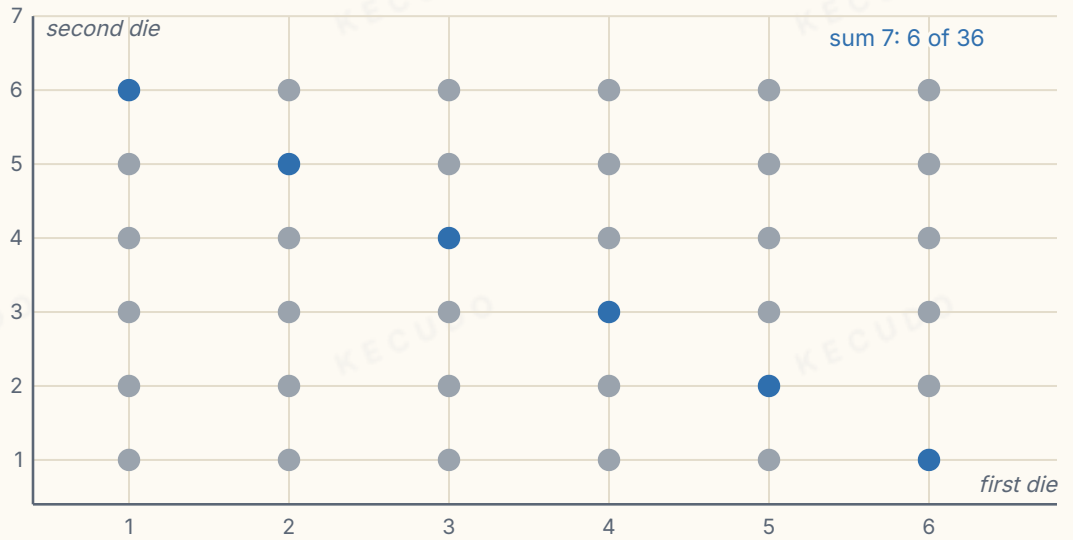


FIG 1.1 Rolling two dice: 36 equally likely outcomes. Six of them (blue) have sum 7, so P(sum 7) = 6/36 = 1/6.

Experiment	Sample space	Event
Flip a coin	{H, T}	heads: {H}
Roll a die	{1, 2, 3, 4, 5, 6}	even: {2, 4, 6}
Next rental's bike type	{City, E-bike, Mountain, Kids}	not Kids

PROBABILITY IS BETWEEN 0 AND 1

0 means impossible and 1 means certain. Probabilities of all outcomes add to 1.

FOUNDATION

Chapter 2

Probability Rules

Complement P(not A) = 1 − P(A) · Addition P(A or B) = P(A) + P(B) − P(A and B)

WORKED EXAMPLE **Kecudo rentals (500 from Class H1)**

1. P(E-bike) = 180/500 = 0.36; P(member) = 200/500 = 0.40.
2. P(member and E-bike) = 120/500 = 0.24.
3. P(E-bike or member) = 0.36 + 0.40 − 0.24 = 0.52.

✓ **Subtract the overlap so it isn't counted twice**

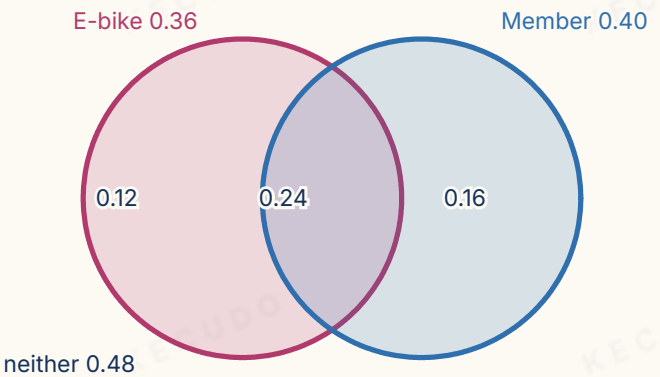


FIG 2.1 The overlap (0.24) belongs to both circles; 0.48 of rentals are neither.

DISJOINT EVENTS

If A and B can't both happen (a rental can't be City and Kids), P(A and B) = 0 and P(A or B) = P(A) + P(B).

CHECK YOUR UNDERSTANDING

Chapter 1: Sample Spaces & Events

5 questions · your answer locks when you choose it

1. P(even) on a fair die:

- **A** 1/6
- **B** 1/2
- **C** 2/3
- **D** 1/3

2. How many outcomes for two dice?

- **A** 36
- **B** 11
- **C** 6
- **D** 12

3. P(sum 7) with two dice:

- **A** 1/12
- **B** 1/6
- **C** 1/7
- **D** 7/36

4. An event is:

- **A** a single number
- **B** the sample space only
- **C** a set of outcomes
- **D** a probability

5. Which cannot be a probability?

- **A** 1.2
- **B** 0.5
- **C** 1
- **D** 0

FINAL EXAM

25 Questions on the Whole Book

Parts A–E · 5 questions each

Part A · Basics

1. The sample space is:

A a probability
B one outcome
C an event's complement
D the set of all outcomes

2. P(not A) =

A 0
B $P(A)^2$
C P(A)
D 1 − P(A)

3. Independent means:

A A causes B
B P(A) = P(B)
C P(A and B) = 0
D P(A | B) = P(A)

4. A random variable is:

A a chart
B a number assigned to each outcome
C a fixed value
D a sample

5. E(X) is the:

A most likely value
B long-run average
C median
D largest value



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Thank you for learning with Kecudo.

NEXT IN THE SERIES

Class H3 · Probability Distributions