



MITx: 6.041x Introduction to Probability - The Science of Uncertainty



Bookmarks

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Lec. 1: Probability
models and
axiomsExercises 1 due Feb
10, 2016 at 23:59 UTCMathematical
background: Sets;
sequences, limits,
and series;
(un)countable sets.

Solved problems

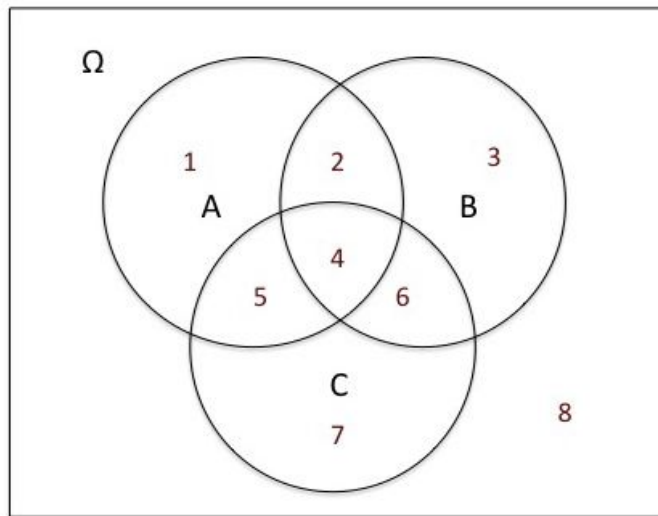
Problem Set 1

Problem Set 1 due Feb
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diagrams

Bookmark

PROBLEM 1: VENN DIAGRAMS (5/5 points)

In this problem, you are given descriptions in words of certain events (e.g., "at least one of the events A, B, C occurs"). For each one of these descriptions, identify the correct symbolic description in terms of A, B, C from Events E1-E7 below. Also identify the correct description in terms of regions (i.e., subsets of the sample space Ω) as depicted in the Venn diagram below. (For example, Region 1 is the part of A outside of B and C .)



Symbolic descriptions:

- Event E1: $A \cap B \cap C$
- Event E2: $(A \cap B \cap C)^c$
- Event E3: $A \cap B \cap C^c$
- Event E4: $B \cup (B^c \cap C^c)$
- Event E5: $A^c \cap B^c \cap C^c$
- Event E6: $(A \cap B) \cup (A \cap C) \cup (B \cap C)$
- Event E7: $(A \cap B^c \cap C^c) \cup (A^c \cap B \cap C^c) \cup (A^c \cap B^c \cap C)$

1. At least two of the events A , B , C occur.

Event E6 ▾



Regions: 2 4 5 6 ▾



2. At most two of the events A , B , C occur.

Event E2 ▾



Regions: 1 2 3 5 6 7 8 ▾



3. None of the events A , B , C occurs.

Event E5 ▾



Region: 8 ▾



4. All three events A , B , C occur.

Event E1 ▾



Region: 4 ▾



5. Exactly one of the events A , B , C occurs.

Event E7 ▾



Regions: 1 3 7 ▾



6. Events A and B occur, but C does not occur.

Event E3 ▾



Region: 2 ▾



7. Either event B occurs or, if not, then C also does not occur.

Event E4 ▾



Regions: 1 2 3 4 6 8 ▾



You have used 1 of 3 submissions

Printable problem set available here .

DISCUSSION

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