Problem 1 Vertical: Venn diagrams

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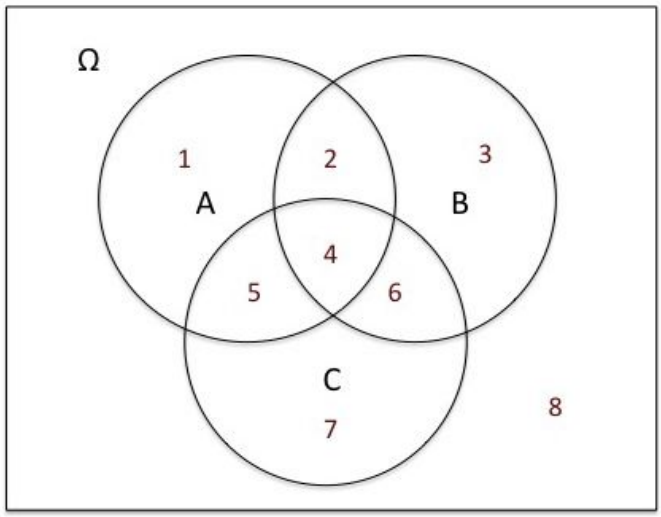
Problem 1: Venn diagrams

5/5 points (graded)

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 ✔

Submit You have used 2 of 3 attempts

✔ Correct (5/5 points)

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