

Mathematics for Computing

Set Theory : Venn Diagrams

kobriendublin.wordpress.com

Twitter: @StatsLabDublin

Set Theory : Venn Diagrams

- ▶ Let A, B and C be subsets of a universal set U .
- ▶ Draw a labelled Venn diagram depicting A, B, C in such a way that they divide U into 8 disjoint regions.

Subsets and Elements of Sets

| Region | A | B | C | |
|--------|-----|-----|-----|-------------------|
| 1 | No | No | No | |
| 2 | Yes | No | No | |
| 3 | No | Yes | No | |
| 4 | Yes | Yes | No | |
| 5 | No | No | Yes | |
| 6 | Yes | No | Yes | |
| 7 | No | Yes | Yes | |
| 8 | Yes | Yes | Yes | $A \cap B \cap C$ |

Subsets and Elements of Sets

| Region | A | B | C | |
|--------|-----|-----|-----|-------------------|
| 1 | No | No | No | |
| 2 | Yes | No | No | |
| 3 | No | Yes | No | |
| 4 | Yes | Yes | No | |
| 5 | No | No | Yes | |
| 6 | Yes | No | Yes | |
| 7 | No | Yes | Yes | |
| 8 | Yes | Yes | Yes | $A \cap B \cap C$ |

Subsets and Elements of Sets

| Region | A | B | C | |
|--------|-----|-----|-----|-----------------------|
| 1 | No | No | No | $(A \cup B \cup C)^c$ |
| 2 | Yes | No | No | |
| 3 | No | Yes | No | $B - (A \cap C)$ |
| 4 | Yes | Yes | No | $(A \cap B) - C$ |
| 5 | No | No | Yes | $C - (A \cap B)$ |
| 6 | Yes | No | Yes | $(A \cap C) - B$ |
| 7 | No | Yes | Yes | $(B \cap C) - A$ |
| 8 | Yes | Yes | Yes | $A \cap B \cap C$ |

Subsets and Elements of Sets

Elements of a Set