

Set Analysis of Survey Data

Verification of Equivalent Sets

Chapter 2 – Sections 4, 5

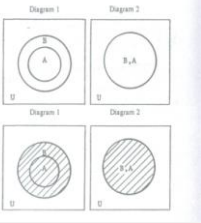
Venn Diagrams – Relationship of Sets

- Draw a diagram, or diagrams, to portray the relationships of the sets as stated.
 - A diagram for every possible situation must be considered.
- Check diagram(s) for contradiction to the given statement.
- If no contradiction the statement is true.

In-class assignment 5 - 1

Example: If $A \subseteq B$ then $A \cup B = A$

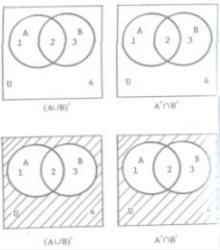
- Diagram 1 shows A a proper subset of B.
- Diagram 2 shows A equal to B.
- Diagrams 3 and 4 show the shading of A union B.
- Diagram 3 shows a contradiction.
- Statement is false.



In-class Assignment 5 - 1

Example: $A \cup B' = A' \cap B'$

- Draw a diagram for each side of the equal sign
- Shade the areas indicated by the label of the diagram.
- The diagrams are the same therefore the statement is true.



In-class Assignment 5 - 1

Survey Data and Venn Diagrams

- Draw a diagram with overlapping circles – one for each set named in the problem.
- Label the sets in the diagram.
 - If 2 sets are named then note that each circle contains 2 areas.
 - If 3 sets are named then note that each circle contains 4 areas.
- Start with the area that is in all of the circles.
- Make sure the total in each circle must equal the date stated.

No in-class assignment problem

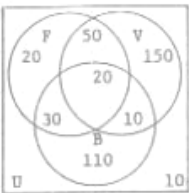
Survey Data

- A travel agency planned for 400 people. The following data was collected.
- 120 are going to Florida
- 230 are going to the Virgin Islands
- 170 are going to Bermuda
- 70 are going to Florida and the Virgin Islands
- 30 are going to the Virgin Island and Bermuda
- 50 are going to Florida and Bermuda
- 20 are going to all three resorts

In-class Assignment 5 – 2, 3

Venn Diagram of the Data Set

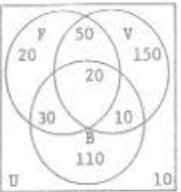
- F is the name of the Florida set
 - 120 is the sum of the numbers in the 4 areas of set F
- V is the name of the Virgin Island set
 - 230 is the sum of the numbers in the 4 areas of set V
- B is the name of the Bermuda set.
 - 170 is the sum of the numbers in the 4 areas of set V



In-class Assignment 5 - 3

Questions to be Answered

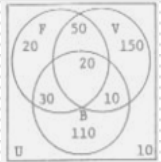
- How many people went to none of these places?
- How many went to Florida and the Virgin Islands but not Bermuda?
- How many went to exactly 2 of these places?
- How many went to neither the Virgin Islands nor Bermuda?
- How many went only to Florida?



In-class Assignment 5 - 3

Description of Areas in a Diagram

- Which area(s) represents those that went to Bermuda but not Florida or the Virgin Islands?
- Which area(s) represent those that went to Florida or the Virgin Islands but not Bermuda?



In-class Assignment 5 - 4