
You must complete exactly 1 of these 2 problems. Use the back or scratch paper for miscellaneous computations, but show the steps of your work on this page, and circle your answer. You must show the appropriate formulae and all work for full credit.

Problem One. Let A and B be subsets of Ω. The symmetric difference A and B, denoted A ◁ B, is the set of all elements belonging to either A or B, but not both.

(A) Draw a Venn Diagram of A ◁ B.

(B) Express A ◁ B in terms of union and set difference.

Solution:

(A – B) u (B – A)
**Problem Two.** In a certain town, 80% of the households own an automobile, 45% own a home, and 35% own both an automobile and a home.

(A) Draw a Venn Diagram of this situation. Solution below.

For (B) and (C) determine the probability that a household in this town selected at random:

(A) Owns an automobile or a home but not both. Solution: \((0.8 - 0.35 + 0.45 - 0.35) = 0.55\).

(B) Owns neither an automobile nor a home. Solution: \(1.0 - 0.8 - 0.45 + 0.35 = 0.1\)