

Lecture 7

January 30, 2015

1. Consider two events A and B where $P(A) = 0.30$ and $P(B) = 0.10$ and $P(A \cap B) = 0.03$.
 - (a) Draw the Venn's diagram and identify all the disjoint areas in the diagram.
 - (b) Check that A and B are independent.
 - (c) Check that A' and B are independent.
 - (d) Check that A and B' are independent.
 - (e) Check that A' and B' are independent.

An important note indicated from the problem: It is true in general that if A and B are independent then so are the three pairs of events: (1) A' and B , (2) A and B' , (3) A' and B' .

2. Try 2.5.71. Hint: try to find $A \cap B$ and use the Venn's Diagram. Another way is to use the note in Problem 1.
3. Try 2.5.77
 - (a) Hint: Let p be the probability that a rivet is defective. Use the complement rule to say that 0.8 chance that the seam does not need reworking (i.e. none of the rivet is defective).
 - (b) Same as part (a).
4. Try 2.5.79. Hint: let $x = P(A \cap B)$. Draw the Venn's Diagram and write $P(A \cap B) = P(A)P(B)$ in terms of x .
5. Try 2.5.82. Refer to the lecture.
6. 2.5.86. Refer to the lecture.