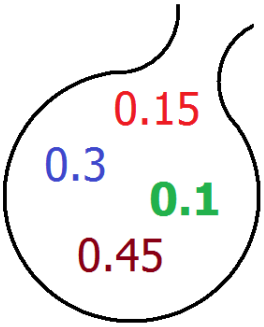
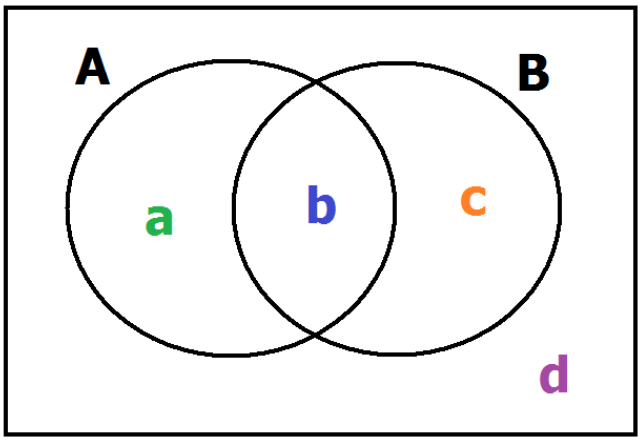
MSV 27: Random Independence

You are given four numbers below in a bag that add to 1.



The numbers a, b, c and d are probabilities
in the Venn diagram below, where a + b + c + d = 1.



If we swap the numbers in the bag for a, b, c and d at random,
what is the probability
that the events A and B are independent?

Hint: show A and B are independent if and only if ac = bd.

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