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Unit overview

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Exercise: Independence of event complements

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Exercise: Independence of event complements

1/1 point (graded)

Suppose that A and B are independent events. Are A^c and B^c independent?

Yes, they are independent ▾ ✔ **Answer:** Yes, they are independent

Answer:
We saw in the previous segment that for any 2 generic events E_1 and E_2, independence of E_1 and E_2 implies independence of E_1 and E_2^c. In the case of this particular problem, we can apply this result with $E_1 = A$ and $E_2 = B$ to conclude that since A and B are assumed to be independent, then A and B^c are also independent.

Independence is symmetric, so A and B^c being independent is the same as B^c and A being independent. If we now reuse the generic result with $E_1 = B^c$ and $E_2 = A$, we can conclude that B^c and A^c are also independent, which by symmetry is the same as A^c and B^c being independent.

To summarize:
A and B independent $\Rightarrow$ A and B^c independent $\Rightarrow$ B^c and A independent $\Rightarrow$ B^c and A^c independent $\Rightarrow$ A^c and B^c independent

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✔ Correct (1/1 point)