Complementary Events

Definition 1: Complementary events are a **subgroup** of mutually exclusive events. Mutually exclusive events (including complementary events) can't both happen; but when two events are complementary then one or the other must happen.

For example, the events "you get an A in this course" and "you get a B in this course" are mutually exclusive but not complementary; the events "you get a C or better" and "you get a D or worse" are mutually exclusive and complementary.
If two events are complementary, their probabilities must add to 1 (certainty) and each of them is equivalent to *not* the other.

Rule 1: The probability of the complement A, $P^C(A)$, is the probability that the event A would not occur is $P^C(A) = P(notA) = 1 - P(A)$

Example 1: Either it will rain tomorrow, or it will not. Therefore if the weather forecast is for 40% chance (probability) of rain, the probability that it *won't* rain is 100%−40% = 60%.

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