Example 1.3. Two dice are thrown. What is the probability that at least one of them shows six?
We give two solutions. The first one uses the sum and the product rules. Consider three cases:

- Both dice show six. This is one outcome.
- The first dice shows six, the second does not. Five outcomes.
- The first dice does not show six, the second does. Five outcomes as well.

Thus in total we have $1 + 5 + 5 = 11$ possibilities. To compute the probability, we have to divide by the total number of possibilities, which is $6 \cdot 6 = 36$.
The second solution uses the difference rule. A "bad" outcome is one where neither of the dice shows six. For each of the dice there are 5 possibilities, so that this number is $5 \cdot 5 = 25$. To count the "good" outcomes, we subtract 25 from the number of all possible outcomes: $36 - 25 = 11$.