Alice and Bob each toss a six-sided die. The person with the larger face value wins. If the values are equal the result is a draw. You find out that Bob won. What is the probability that Bob's face value was a 6?

Solution: Let *B* be the event Bob wins and *S* be the event that Bob's face value is a 6. As all 36 outcomes are equally likely, $P(S|B) = \frac{|S \cap B|}{|B|}$. $S \cap B$ has size 5 as Bob's roll must be a 6 and Alice's cannot be a 6. If *A* is the event Alice wins then $A \cup B$ consists of all outcomes that do not result in a draw so $|A| + |B| = |A \cup B| = 36 - 6 = 30$. By symmetry |B| = 15. Finally P(S|B) = 5/15 = 1/3.