Conditional Probability
Roll a dice
Let $A$ be event score greater than 3
Let $B$ be event score is odd


$$
\begin{aligned}
& P(A)=\frac{3}{6}=\frac{1}{2} \\
& P(B)=\frac{3}{6}=\frac{1}{2}
\end{aligned}
$$

$$
P(A \backslash B)=\frac{P(A \cap B)}{P(B)}=\frac{\frac{1}{6}}{\frac{3}{6}}=\frac{1}{6} \times \frac{6}{3}=\frac{1}{3}
$$

Alternative Diagram


Interesting Results

$$
\begin{aligned}
& (A, B)^{\prime} \rightarrow A^{\prime} B^{\prime} \rightarrow B^{\prime} \\
& (A \cup B)^{\prime}=A^{\prime} B^{\prime}
\end{aligned}
$$

$$
\begin{aligned}
& (A \cap B)^{\prime} \rightarrow Q^{\prime} \rightarrow B^{\prime} \quad(A \cap B)^{\prime}=A^{\prime} \cup B^{\prime}, ~ \\
& A^{\prime} \cup B
\end{aligned}
$$

