$$
\begin{aligned}
P &= P_1 \times P_2 \times P_3 \times \ldots P_n \\
&= \tfrac{365}{365} \times \tfrac{364}{365} \times \tfrac{363}{365} \times \ldots \tfrac{365-n+1}{365} \\
&= \tfrac{365!}{(365-n)!} \times \tfrac{1}{365^n}
\end{aligned}
$$

$$
\begin{aligned}
\text{P(no rain) for one day} &= 80\% \\
\text{P(no rain) for two days} &= (0.80)^2 \\
\text{P(rain) for two days} &= 1 - (1 - p)^n \\
&= 1 - (0.80)^2 \\
&= 36\%
\end{aligned}
$$