Task. Two dice are thrown. What is the probability that the sum of dots shown is 4 or 6?

Solution. The set Ω of all results of throwing two dice is the set of all pairs (i, j), where $i, j \in \{1, 2, \ldots, 6\}$. Therefore the number $|\Omega|$ of elements in Ω is equal to $6 * 6 = 36$.

Let A be the subset of Ω consisting of pairs (i, j) such that $i + j$ is equal either to 4 or to 6. Then A is the following set

$$A = \{(1, 3), (2, 2), (3, 1), (1, 5), (2, 4), (3, 3), (4, 2), (5, 1)\}$$

So it consists of $|A| = 8$ elements.

Then the required probability is equal to

$$p = \frac{|A|}{|\Omega|} = \frac{8}{36} = \frac{4}{9} \approx 0.44.$$

Answer. $\frac{4}{9} \approx 0.44$.