> **YOU & MATHS** Two different numbers are chosen at random from the set {0, 1, 2, 3, 4}. What is the probability that their sum is greater than their product?
>
> (CAN *Canadian Open Mathematics Challenge, COMC*, 2003)

The sample space S is given by all the couples of numbers that can be chosen from the set {0, 1, 2, 3, 4}:

$S = \{(0; 1), (0; 2), (0; 3), (0; 4), (1; 2), (1; 3), (1; 4), (2; 3), (2; 4), (3; 4)\}$.

From this list, we pick the couples of numbers whose sum is greater than their product, which are:

$A = \{(0; 1), (0; 2), (0; 3), (0; 4), (1; 2), (1; 3), (1; 4)\}$.

Thus the probability of choosing at random two numbers whose sum is greater than their product is

$$p = \frac{\text{number of events in } A}{\text{number of events in } S} = \frac{7}{10}.$$