example

probability of an event

probability of an event

If A is an event in a discrete sample space A and $O_1, O_2, O_3, \ldots$ are the individual outcomes comprising A, then $P(A) = P(O_1) + P(O_2) + P(O_3) + \ldots$

example

We flip a fair coin twice. What's the probability of obtaining at least one head?

The sample space $S = \{HH, HT, TH, TT\}$

As the coin is fair, all outcomes are equally likely: $P(HH) = P(HT) = P(TH) = P(TT) = \frac{1}{4}$

The event of obtaining at least one head is $A = \{HH, HT, TH\}$

$$\implies P(A) = P(HH) + P(HT) + P(TH) = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{7}$$

probability of an event

exercise 2

Roll two dice, each with numbers 1–6. Let X denote the first roll and Y the second roll.

(a) Find the probability of $P(X) = 1$

(b) Let $Z = \min(X, Y)$ and find the probability $P(Z) = 6$

(c) Let $Z = \min(X, Y)$ and find the probability $P(Z) = 3$

6						
5						
4						
3						
2						
1						
	1	2	3	4	5	6