

The distribution function of a random variable  $X$  is a function that assigns, for every point, the probability accumulated up to the above mentioned value. That is :

$$F( X ) = p ( X \leq x )$$

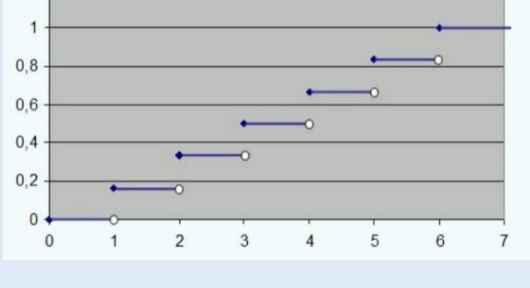
For example, we will compute the distribution function of the random variable  $X$ , resulting from throwing a perfect dice.

The following table shows the values of  $F ( x )$  :

x	F (x)
$x < 1$	0
$1 \leq x < 2$	$\frac{1}{6}$
$2 \leq x < 3$	$\frac{2}{6}$
$3 \leq x < 4$	$\frac{3}{6}$
$4 \leq x < 5$	$\frac{4}{6}$
$5 \leq x < 6$	$\frac{5}{6}$
$x \leq 6$	1

The value of the function distribution in  $-\infty$  will always be 0, while the value in  $+\infty$  will always be 1.

This turns out to be quite intuitive, since the probability that the value of  $x$  is smaller than  $-\infty$  is zero, and the probability that it is less than  $+\infty$  is 1 (since it is always less or equal to  $+\infty$ ).



Since it is a discrete random variable, the distribution function will be discrete. Note that the probability of obtaining a result lower than 5,2 is the same as that of lower than 5,3 or 5,9.