

Expected Value (mean, expectation, or average)

$$E(x) = \sum P(x_i) x_i$$

The expected value gives the central value of the random variable. This is where most of the outputs of the random variable lie when the experiments are repeated many times.

Properties :

→ Linear Principle :

for two random variables  $x$  and  $y$

$$\Rightarrow E(x + y) = E(x) + E(y)$$

→ for a constant  $c$

$$E(x + c) = E(x) + c$$

$$E(cx) = c E(x)$$