# Expected value

The expected value (or mean) of a discrete random variable is a measure of central location. The mathematical expression of the expected value is as follows:

$$E(x) = \mu = \sum_{i}^{n} x_i f(x_i)$$

where $f(x_i)$ is the probability of $x_i$.

*Illustration*

A company has information available concerning the number of months for carrying out a given project, with their respective probabilities. This illustration shows how to calculate the expected value of the number of months to complete the project.

**Example: completion time for a project**
**Probability distribution**
**Expected value**

| $x_i$ | $f(x_i)$ | $x_i f(x_i)$ |
|-------|----------|--------------|
| 5 | 0.15 | 0.75 |
| 6 | 0.25 | 1.50 |
| 7 | 0.30 | 2.10 |
| 8 | 0.15 | 1.20 |
| 9 | 0.15 | 1.35 |

$$\mu = \sum_{i=1}^{5} x_i f(x_i) = 6.90 \quad \text{months}$$