- A random variable is a function $X \colon \Omega \to \mathbb{R}$.
- (Since Ω is countable, so is range X)
- For any k, we define

$$\mathbb{P}(X = k) = \sum_{\omega \in \Omega : X(\omega) = k} p(\omega).$$

- The collection $(k, \mathbb{P}(X = k))$ where k ranges over range X is called the **probability distribution** of X.