

$$\text{Eq (2.1)} \Rightarrow 0 \leq P(Y=y) \leq 1$$

$$\text{Eq (2.2)} \Rightarrow \sum_y P(y) = 1$$

$$P(y_i) = r.$$

Since there are 6 faces of a die, we can sum to $n=6$, each face being equally probable for a fair die.

$$\sum_{i=1}^6 P(y_i) = \sum_{i=1}^6 r = 6r.$$

Since this is every possibility $6r = 1$.

$$\therefore r = \frac{1}{6}$$

Therefore, the probability of rolling any number on a die is $\frac{1}{6}$