

Question: A student says that if you throw a die, it will show up 1 or not 1. Therefore, the probability of getting 1 and the probability of getting 'not 1' each is equal to $\frac{1}{2}$. Is this correct? Give reasons.

Solution:

Let

Parameter	Values	Description
X	1	if 1
	0	if not 1(2,3,4,5,6)

Then

$$p_X(0) = \frac{5}{6} \quad (1)$$

$$p_X(1) = 1 - p_X(0) \quad (2)$$

$$= 1 - \frac{5}{6} \quad (3)$$

$$= \frac{1}{6} \quad (4)$$

$$\Rightarrow p_X(0) \neq p_X(1) \quad (5)$$

Since, $p_X(1)$ and $p_X(0)$ are not equal.

\therefore The given statement is not true