Assignment-1-Probability And Random Variables

CS20BTECH11053

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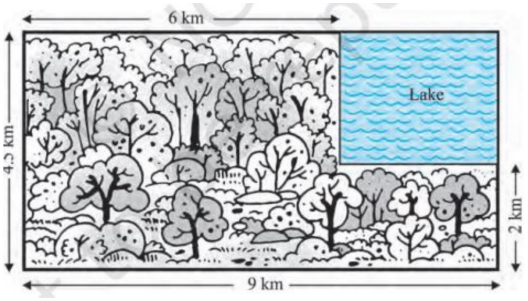
Problem-Statement:A missing helicopter is reported to have crashed somewhere in the rectangular region shown in below figure. What is the probability that it crashed inside the lake shown in the figure?



Solution:

variables	Description
l	Length of the lake
w	Width of the lake
a	Area of the lake
L	Length of the whole region
W	Width of the whole region
A	Area of the whole region

$$l = (9-6)kms = 3kms$$

$$w = (4.5-2)kms = 2.5kms$$

As the lake is rectangular;

$$a = l \times w = 3kms \times 2.5kms = 7.5sq.kms$$

$$L = 9kms$$

$$W = 4.5kms$$

The whole region is of rectangular shape. Hence the area of the whole region is;

$$A = L \times W = 9kms \times 4.5kms = 40.5sq.kms$$

variables	Description
X	Helicopter getting crashed inside lake
Y	Helicopter getting crashed outside lake
P(X)	Probability of occurrence of X
P(Y)	Probability of occurrence of Y

$$P(X) = \frac{a}{A}$$

$$P(X) = \frac{7.5sq.kms}{40.5sq.kms}$$

$$P(X) = \frac{5}{27} = 0.185$$

Therefore, the probability that the helicopter have crashed inside the lake; $P(X) = \frac{5}{27} = 0.185$