Assignment-3

EE22BTECH11012-A.Chhatrapati

Question 10.13.3.37)A child's game has 8 triangles of which 3 are blue and rest are red, and 10 squares of which 6 are blue and rest are red. One piece is lost at random. Find the probability that it is a

(i) triangle
(ii) square
(iii) square of blue colour
(iv) triangle of red colour

Solution:

Variable	Value	Description
X	1	Triangle
X	0	Square
Y	1	Blue coloured
Y	0	Red coloured

$p_X(X=0) = \frac{10}{18}$
$p_X(X=1) = \frac{8}{18}$
$p_X(Y=0) = \frac{9}{18}$
$p_X(Y=1) = \frac{9}{18}$

(i) $p_X(1) = \frac{8}{18}$
(ii) $p_X(0) = \frac{10}{18}$
(iii) $p_{XY}(X=0, Y=1) = \Pr(Y=1|X=0)\, p_X(0)$
$= \frac{6}{10} \times \frac{10}{18} = \frac{6}{18}$
(iv) $p_{XY}(X=1, Y=0) = \Pr(Y=0|X=1)\, p_X(1)$
$= \frac{5}{8} \times \frac{8}{18} = \frac{5}{18}$