

AI1110 Assignment 6

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[CBSE class 12 Chapter 13 example 4]

In a school, there are 1000 students, out of which 430 are girls. It is known that out of 430, 10% of the girls study in class XII. What is the probability that a student chosen randomly studies in Class XII given that the chosen student is a girl?

Solution: See Table I and Table II for input probabilities

Events	Description
$X = 0$	Student is girl
$X = 1$	Student is boy
$Y = i$	Student is in class i

TABLE I

Probability	Value
$\Pr(X = 0)$	$\frac{430}{1000} = \frac{43}{100}$
$\Pr(Y = 12, X = 0)$	$\frac{43}{1000}$
$\Pr(Y = 12 X = 0)$?

TABLE II

The desired probability is obtained using Table II as follows

$$\Pr(Y = 12|X = 0) = \frac{\Pr(Y = 12, X = 0)}{\Pr(X = 0)} \quad (1)$$

$$\Pr(Y = 12|X = 0) = \frac{\frac{43}{1000}}{\frac{43}{100}} = \frac{1}{10} \quad (2)$$