AI1110 Assignment 3

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Probability, Exercise 15.1, Q9:
Activity: Note the frequency of two-wheelers, three-wheelers and four-wheelers going past during a time interval, infront of your school gate. Find the probability that any one vehicle out of the total vehicles you have observed is a two-wheeler.
Solution: The data collected over a time interval of one hour.

TABLE I
FREQUENCY DISTRIBUTION OF VEHICLES PASSING IN A PARTICULAR TIME INTERVAL

Vehicle	Frequency
Two-wheeler	35
Three-wheeler	30
Four-wheeler	25

From this table, the total number of vehicles that past the gate = 35 + 30 + 25 = 90
Let us denote the events in this activity by a random variable X such that $X \in \{0, 1, 2\}$ where,

TABLE III
EVENT TABLE

Event	Discription
X = 0	The vehicle passed is a two-wheeler
X = 1	The vehicle passed is a three-wheeler
X = 2	The vehicle passed is a four-wheeler

From the above table, the probability that the vehicle passed is a two-wheeler is given by

$$\Pr\left(X = 0\right) = \frac{\text{Total no. of two-wheelers passed}}{\text{Total no. of vehicles passed}} \tag{1}$$

$$\Pr\left(X = 0\right) = \frac{35}{90} \tag{2}$$

$$\Pr\left(X = 0\right) = 0.389 \tag{3}$$

Hence the probability that the vehicle passed is a two-wheeler is 0.389.