

# AI1103: Assignment 1

Diya Goyal  
CS20BTECH11014

Download all python codes from

<https://github.com/diya-goyal-29/AI1103/tree/main/Assignement\%201/Code>

and latex - tikz codes from

<https://github.com/diya-goyal-29/AI1103/blob/main/Assignment%201/Assignment%201.tex>

## Question 1.19 :

Harpreet tosses two different coins simultaneously (say, one is of rupee 1 and other of rupees 2). What is the probability that she gets at least one head?

**Solution :**

$n$ = Total number of coins	2
The total no. of outcomes	4
$p$ = probability of head	$\frac{1}{2}$
$q$ = probability of tail	$\frac{1}{2}$
$X$ = number of heads	

Probability of at least one head

$$= Pr(X = 1) + Pr(X = 2) \quad (0.0.1)$$

$$= {}^2C_1 (p) (q) + {}^2C_2 (p^2) \quad (0.0.2)$$

$$= {}^2C_1 \left(\frac{1}{2}\right) \left(\frac{1}{2}\right) + {}^2C_2 \left(\frac{1}{2}\right)^2 \quad (0.0.3)$$

$$= 2 \left(\frac{1}{4}\right) + \frac{1}{4} \quad (0.0.4)$$

$$= \frac{3}{4} \quad (0.0.5)$$

$$= 0.75 \quad (0.0.6)$$