Assignment

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Question 11.16.3.10

One of the four persons John, Rita, Aslam or Gurpreet will be promoted next month. Consequently the sample space consists of four elementary outcomes S = John promoted, Rita promoted, Aslam promoted, Gurpreet promoted You are told that the chances of John's promotion is same as that of Gurpreet, Rita's chances of promotion are twice as likely as Johns. Aslam's chances are four times that of John.

1) Determine
   a) P (John promoted)
   b) P (Rita promoted)
   c) P (Aslam promoted)
   d) P (Gurpreet promoted)
2) If A = John promoted or Gurpreet promoted, find P (A).

Solution:

Event	Description
E_1	Promotion of John
E_2	Promotion of Rita
E_3	Promotion of Aslam
E_4	Promotion of Gurpreet

Given that,

$$\Pr(E_2) = 2 \times \Pr(E_1) \tag{1}$$

$$\Pr(E_3) = 4 \times \Pr(E_1) \tag{2}$$

$$\Pr(E_4) = \Pr(E_1) \tag{3}$$

Also,

$$\Pr(E_1) + \Pr(E_2) + \Pr(E_3) + \Pr(E_4) = 1$$

Hence, we get

1) a) $\Pr(E_1) = \frac{1}{8}$

   b) $\Pr(E_2) = \frac{1}{4}$

   c) $\Pr(E_3) = \frac{1}{2}$

   d) $\Pr(E_4) = \frac{1}{8}$

2) $\Pr(E_1 + E_4) = \frac{1}{4}$