

### Answer on Question #40524 – Math - Probability

IN a hospital, there are 200 beds for patients. OF these, 120 are occupied by males and remaining by females. 20% of the males and 40% of the females are suffering from malaria and rest of them for dengue. If a patient is selected at random, find the probability that he/she is a: A female patient B - Male patient C - male patient suffering from malaria D - Female patient suffering from dengue

#### Solution

Total number of beds  $N = 200$ . Number of beds occupied by males  $N_M = 120$ . So, number of beds occupied by females  $N_F = N - N_M = 200 - 120 = 80$ . Number of males suffering from malaria is 20% of total males  $N_{MM} = \frac{20}{100} \cdot N_M = \frac{20}{100} \cdot 120 = 24$ . So, number of males suffering from dengue

$N_{MD} = N_M - N_{MM} = 120 - 24 = 96$ . Number of females suffering from malaria is 40% of total females  $N_{FM} = N_F \cdot \frac{40}{100} = 80 \cdot \frac{40}{100} = 32$ . So, number of females suffering from dengue

$N_{FD} = N_F - N_{FM} = 80 - 32 = 48$ . Hence,

A) Probability that the patient is a female

$$P(F) = \frac{N_F}{N} = \frac{80}{200} = \frac{2}{5}.$$

B) Probability that the patient is male

$$P(M) = \frac{N_M}{N} = \frac{120}{200} = \frac{3}{5}.$$

C) Probability that the patient is a male suffering from malaria

$$P(MM) = \frac{N_{MM}}{N} = \frac{24}{200} = \frac{3}{25}.$$

D) Probability that the patient is a female suffering from dengue =  $48 / 200 = 6 / 25$

$$P(FD) = \frac{N_{FD}}{N} = \frac{48}{200} = \frac{6}{25}.$$