

1. If $\frac{2}{11}$ is the probability of an event, what is the probability of the event not A ?

A) Probability of event $A = \frac{2}{11}$

Probability of event $A +$

Probability of event not $A = 1$

$$\frac{2}{11} + \text{Probability of event not } A$$

$$= 1$$

Probability of event not A

$$= 1 - \frac{2}{11}$$

$$\text{Probability of event not } A = \frac{9}{11}$$

Hence probability of event not A

$$= \frac{9}{11}$$

2. A and B are events such that

$$P(A) = 0.42, P(B) = 0.48 \quad \text{and } P(A \text{ and } B) = 0.16$$

Determine (i) $P(\text{not } A)$, (ii) $P(\text{not } B)$ and (iii) $P(A \text{ or } B)$

A) It is given that

$$P(A) = 0.42, P(B) = 0.48, P(A \text{ and } B) = 0.16$$

(i)

$$P(\text{not } A) = 1 - P(A) = 1 - 0.42 = 0.58$$

(ii)

$$P(\text{not } B) = 1 - P(B) = 1 - 0.48 = 0.52$$

(iii) We know that

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$\therefore P(A \text{ or } B) = 0.42 + 0.48 - 0.16 = 0.74$$

3. The probability that a student will pass the final examination in both English and Hindi is 0.5 and the probability of passing neither is 0.1. If the probability of passing the English examination is 0.75. What is the probability of passing the Hindi examination?

A) Let E and H denote the events that the student will pass in English and Hindi examination respectively.

Then, we have

$$P(E \cap H) = 0.5, P(\bar{E} \cap \bar{H}) = 0.1$$

$$P(E) = 0.75.$$

$$\text{Now, } P(\bar{E} \cap \bar{H}) = 0.1$$

$$\Rightarrow P(\bar{E} \cup \bar{H}) = 0.1$$

$$\Rightarrow 1 - P(E \cup H) = 0.1$$

$$\Rightarrow P(E \cup H) = 0.9$$

$$\Rightarrow P(E) + P(H) - P(E \cap H) = 0.9$$

$$\Rightarrow 0.75 + P(H) - 0.5 = 0.9$$

$$\Rightarrow P(H) = 0.65.$$