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Q. If the probability of solving a statistical problem by A is $\frac{1}{4}$ and by B is $\frac{1}{3}$, when a problem is given to 3 them, probability that the problem will be solved.

Ans. Let us consider that

A = It is the event that 'A' can solve the problem.

B = It is the event that 'B' can solve the problem.

We have been asked to find the probability of solving problem. A problem will be solved either it is solved by 'A' or it is solved by 'B'. In both the cases problem will be solved.

Mathematically, we can write

$$\begin{aligned} P(A \text{ or } B) &= P(A \cup B) \\ &= P(A) + P(B) - P(A \cap B) \\ &= P(A) + P(B) - P(A \cap B) \\ &= \frac{1}{4} + \frac{1}{3} - \left(\frac{1}{4} \times \frac{1}{3} \right) \\ &= \frac{7}{12} - \frac{1}{12} = \frac{6}{12} = \frac{1}{2} \end{aligned}$$