

④ When a missile is fired from a ship, the probability that it is intercepted is $\frac{1}{3}$ and the probability that the missile hits the target, given that it is not intercepted is $\frac{3}{4}$. If three missiles are fired independently from the ship, then the probability that all the three hit the target is :

soln: Prob. of not getting intercepted = $\frac{2}{3}$
Prob. of hitting target = $\frac{3}{4}$

∴ Prob. that all the 3 hit target is

$$\left(\frac{2}{3} \times \frac{3}{4}\right) \left(\frac{2}{3} \times \frac{3}{4}\right) \left(\frac{2}{3} \times \frac{3}{4}\right) = \frac{1}{2^3} = \frac{1}{8}$$