

40.

Weighted probability of

$$= \frac{1}{2} \left(\frac{1}{2} \right) + \frac{1}{2} (1)$$

$$= \frac{1}{4} + \frac{1}{2}$$

$$= \frac{3}{4}$$

$$\text{Req. prob.} = \frac{\frac{1}{2} \times \frac{1}{2}}{\frac{3}{4}} = \boxed{\frac{1}{3}} \text{ Ans.}$$

$$\begin{aligned} \textcircled{b} \text{ Weighted probability} &= \frac{1}{2} \times \frac{1}{4} + \frac{1}{2} \times 1 \\ &= \frac{1}{8} + \frac{1}{2} \\ &= \frac{5}{8} \end{aligned}$$

$$\text{Req. prob.} = \frac{\frac{1}{2} \times \frac{1}{4}}{\frac{5}{8}} = \boxed{\frac{1}{5}} \text{ Ans.}$$

$$\begin{aligned} \textcircled{c} \text{ Weighted probability} &= \frac{1}{2} \times \frac{1}{8} + \frac{1}{2} \times 0 \\ &= \frac{1}{16} \end{aligned}$$

$$\text{Req. prob.} = \frac{\frac{1}{2} \times \frac{1}{8}}{\frac{1}{16}} = \boxed{1} \text{ Ans.}$$