

42. Weighted probability = $\frac{1}{3} \times 1 + \frac{1}{3} \times \frac{1}{2} + \frac{1}{3} \times \frac{3}{4}$

$$= \frac{1}{3} + \frac{1}{6} + \frac{3}{12}$$

$$= \frac{4+2+3}{12} = \frac{9}{12} = \frac{3}{4}$$

Req. prob. = $\frac{\frac{1}{3} \times 1}{\frac{3}{4}} = \boxed{\frac{4}{9}}$

44.

5W 7B

3W 12B

Weighted probability

$$= \frac{1}{2} \times \frac{5}{12} + \frac{1}{2} \times \frac{8}{15}$$

$$= \frac{5}{24} + \frac{4}{10}$$

$$= \frac{50+24}{240} = \frac{74}{240} = \frac{37}{120}$$

Req. prob. = $\frac{1}{2} \times \frac{3}{15}$

$$\frac{37}{120}$$

$$84$$

$$= \frac{4 \times 3}{37} = \boxed{\frac{12}{37}} \text{ A } 10.$$