(7) Bag I contains 3 black & 2 white balls, Bag II contains 2 black and 4 white balls. A bag & a ball is selected at random. Determine the probability of selecting a black ball.

Let E_1 = events of bag I is selected $\quad P(E_1) = P(E_2) = \frac{1}{2}$

E_2 = events of bag II is selected

Probability = P(black from bag I) + P(black ball from bag II)

$$= \frac{1}{2} \cdot \frac{3}{5} + \frac{1}{2} \cdot \frac{2}{6}$$

$$= \frac{3}{10} + \frac{2}{12} = \frac{36+20}{120} = \frac{46}{120}$$

$$= \frac{23}{60}$$