Ans 2. Let A ⟹ choosing a black ball.

B ⟹ choosing bag.

$$P(B/A) = \frac{P(A/B) * P(B)}{P(A)}$$

$$= \frac{(6/10) * (1/2)}{\frac{1}{2} * \frac{6}{10} + 3/7 * 1/2} \qquad = \frac{7}{12} = 0.583$$

Ans 3. Let A ⟹ speaks truth.

B ⟹ four came on dice.

$$P(A/B) = \frac{P(B/A) * P(A)}{P(B)}$$

$$= \frac{1/6 * 2/3}{1/6 * 2/3 + 5/6 * 1/3} \qquad = \frac{2}{7} = 0.286$$