4. Solution: A

For $i = 1, 2$, let

R_i = event that a red ball is drawn form urn i

B_i = event that a blue ball is drawn from urn i .

Then if x is the number of blue balls in urn 2,

$$0.44 = \Pr[(R_1 \cap R_2) \cup (B_1 \cap B_2)] = \Pr[R_1 \cap R_2] + \Pr[B_1 \cap B_2]$$
$$= \Pr[R_1]\Pr[R_2] + \Pr[B_1]\Pr[B_2]$$
$$= \frac{4}{10}\left(\frac{16}{x+16}\right) + \frac{6}{10}\left(\frac{x}{x+16}\right)$$

Therefore,

$$2.2 = \frac{32}{x+16} + \frac{3x}{x+16} = \frac{3x+32}{x+16}$$
$$2.2x + 35.2 = 3x + 32$$
$$0.8x = 3.2$$
$$x = 4$$
