



$$\text{Pr}(\text{winning}) = \frac{3}{6} + \frac{3}{5} \times \frac{2}{4} + \frac{3}{6} \times \frac{3}{5} \times \frac{2}{4} \times \frac{2}{3} \times \frac{1}{2} \\ + \frac{3}{6} \times \frac{2}{5} \times \frac{3}{4} \times \frac{2}{3} \times \frac{1}{2}$$

$$= \frac{9}{10}$$