

(6) A lot of 100 matches is known to have 10 defective matches. If 8 matches are selected (one by one with replacement) at random, what is the probability that there will be at ~~at~~ least one defective match?

- Probability of defective matches from a lot of $\frac{10}{100} = \frac{1}{10}$
100 matches

$$\therefore p = \frac{1}{10}, \quad q = \frac{9}{10}, \quad n = 8, \quad x \geq 1$$

$$\begin{aligned} P(X = x \geq 1) &= 1 - P(x = 0) = 1 - {}^8C_0 \left(\frac{1}{10}\right)^0 \left(\frac{9}{10}\right)^8 \\ &= 1 - \left(\frac{9}{10}\right)^8 \end{aligned}$$