

Probability of a event repeated n times

$$P = {}^n C_r p^r q^{n-r}$$

→ Where

n = Number of times event repeats.

r = Favourable Outcomes.

p = Probability of success for Individual event

q = Probability of Failure.

In above problem

$$n = 5$$

$$p = \frac{1}{2}$$

$$q = 1 - p = \frac{1}{2}$$

$$r = 3, 4, 5 \text{ (because it is atleast 3)}$$

$$\text{Total Probability} = {}^5 C_3 \left(\frac{1}{2}\right)^3 \left(\frac{1}{2}\right)^2 + {}^5 C_4 \left(\frac{1}{2}\right)^4 \left(\frac{1}{2}\right)^1 + {}^5 C_5 \left(\frac{1}{2}\right)^5 \left(\frac{1}{2}\right)^0$$

$$= 10 \cdot \frac{1}{2^5} + 5 \frac{1}{2^5} + \frac{1}{2^5}$$

$$= \frac{16}{32} = \frac{1}{2}$$