

$$\textcircled{1-} \quad C(250, 2) = 250! / (2! \times (250-2)!) \\ = \frac{250 \times 249}{2} = \textcircled{31,124}$$

There are 31,124 ways to choose 2 students from A1 De partment with population of 250 students

$$\textcircled{2-} \quad C(n, r) = \frac{n!}{r!(n-r)!} = \frac{5!}{2! \times (5-2)!} = \textcircled{10}$$

There are 10 distinct binary strings that can be formed from three 0's and two 1's

$$\textcircled{3-} \quad C(3, 3) = 1$$

wherever is 1 bit string of length 5 that starts and ends with 1's

$$\textcircled{4-} \quad C(30, 3) = \frac{30!}{3! \times (30-3)!} = \textcircled{40,600}$$

$$\textcircled{5-} \quad C(6, 3) = \frac{6!}{3! \times (6-3)!} = 20$$

There are 20 ways to select 3 books from 6 existing books ~~from~~

6- • $P(\text{rolling at least one 7 in three rolls})$

= $1 - P(\text{not rolling a 7 in three rolls})$

$$= 1 - \left(\frac{125}{216} \right) = \underline{\underline{\frac{91}{216}}}$$

7) $C(2,1) \times C(4,2) = 2 \times 6 = 12$

$$C(4,3) = 4$$

$$12 + 4 = \underline{\underline{16}}$$

8- $32 \times 20 \text{ Eq}$

$$= 32 \times \frac{20}{71 \times (2^6 - 1)} = \underline{\underline{5231.680}}$$