

Solution of Quiz 5

- (1) In how many ways can 17 distinct CS books and 25 distinct Math books be ordered on a shelf if the Math books are to be together?

Answer: $(18!)(25!)$.

- (2) How many 7 digit decimal numbers are available if repetition is not allowed?

Answer: $9 P(9,6) = (9)(9)(8)(7)(6)(5)(4)$.

- (3) In how many ways can 20 books ordered on a shelf be rearranged so that exactly 8 of them keep their original positions? (Your answer should include derangements)

Answer: $C(20, 8)D_{20-8}$.

- (4) In how many ways can 8 identical red marbles and 13 distinct blue marbles be placed in 40 distinct boxes at most one marble to a box?

Answer: $C(40,8) P(32,13)$.

- (5) In how many ways can 8 identical red marbles and 13 distinct blue marbles be placed in 40 distinct boxes?

Answer: $C(40 + 8 - 1, 8)40^{13}$.