RANKING AND ORDERING

Basic Introduction and Concepts:

While preparing for competitive exams, Order & Ranking is one of the important topics to be prepared well. In the topic of Ranking, data regarding the position/rank of a person from left-right/top-bottom of a row/class is given & total no. of persons is to be calculated. Also in some questions, the total no. of persons will be given and we will have to calculate the position.

Ordering questions deal with the arrangement of persons according to the data given.The data will be about age, height, weight etc.In the question, it may be asked to arrange the given persons in the increasing order or decreasing order according to the data. Ordering and Ranking questions may also be asked along with data sufficiency questions.

The following are the types of questions that may be asked from this topic:-

1. Total no. of persons based on the given data
2. The position of the person either from the left or right side
3. No.of persons in between two persons
4. No.of persons on either side of a particular person
5. Minimum/Maximum no. of persons in a row
6. Overlapping conditions:
   a. Overlapping case: **When (left + right) positions > Total number of students**
   b. Not overlapping case**: When the Total number of students > (left +right) positions**
7. Ascending/Descending Order according to age, height, marks etc.
8. Position interchanging cases

Note:

1) Read the statement line by line and apply the cases as explained below.
2) Position can be from either side of row and rank is always from the top or bottom of the row

CASE-1

- **Finding ranks/position either from the left or from the right:**

Total no. of persons – (given position/rank of the person – 1) = required position/rank

- **Finding the total number:**

When the rank/position of one person is given from both sides of the row, then the rank/position of the common person from both sides (R1 + R2) – 1(where R1, R2 is the given position/rank)

- **When ranks of two persons and the number of the persons who are sitting between these two persons are given.**
  (a) (R1+R2) + number of middle persons
  (b) (R1+R2) - (number of middle persons +2)

NOTE: Apply condition (b) only for overlapping case.

E.g.1) In a row, the position of Anu is 17th from the left side of the row and position from the right side of the row is 4th. Find total no. of persons in the row?

Solution:

Total no. of persons = (Position of Anu from left + Position of Anu from right) -1
= (17 + 4) – 1 = 21 – 1 = 20

E.g. 2) In a row of 26 persons, the position of Athul from the left side of the row is 12th. Find the position of Athul from the right side of the row?
Solution:
Position of Athul from right side = {(Total no. of persons – Position of Athul from left side) + 1}
= (26 – 12) + 1 = 14 + 1 = 15^{th}
E.g. 3) Raj is 12th from left and Roshni is 10th from right in a row of students.If there are six students between them then how many students are there in a row?
Solution:
Total number of students in the row = 12+10+6 = 28

NOTE:-
If total no. of students is to be calculated and positions of different persons from any side are given then it is always a case of 'cannot be determined' or 'data inadequate' or 'can't say'. This is because we do not know if there is overlapping or not.

E.g.4) In a row Mahith is 15th from the left side of the row and position of Syam from the right side is 28th. Find the total no. of students in the row?
Solution:
Cannot be determined

CASE-2
1) **Total no. of persons = No. of persons after or before the given person in a row + Position of the same person from the other side**
OR
2) **No. of persons after or before the given person in a row = Total no. of persons – Position of the same person from another side**
E.g.1) In a Line, the position of Arun from the left side of the line is 17th and there are 5 persons after Arun in the line. Find total no. of persons in the line?
Solution:
No. of persons in the line = Position of Arun from left + No. of persons after Arun
= 17 + 5 = 22

E.g.2) In a row of 12 persons, the position of Anju from the left side of the row is 4th. Find the no. of persons after Anju?
Solution:
No. of persons after Anju = Total no. of persons – Position of Anju from left
= 12 – 4 = 8

CASE-3
- **Overlapping/Non-overlapping case**

When the positions/ranks of two persons are given from opposite sides and we know the total number of persons, then two cases are there when trying to determine the number of persons between these two persons –

1. **No overlapping**: - i.e. the sum of positions of the two persons from opposite ends <total no. of persons

∴No.of persons in between=Total - (Rank from left + Rank from right)

2. **Overlapping**: - i.e. the sum of positions of the two persons from opposite ends >total no. of persons

∴No.of persons in between=(Rank from left + Rank from right) - Total - 2

E.g.1) In a row of 50 persons, Anil is 12th from the left side of the row and Balu is 22th from the right side. Find the no. of persons sitting between Anil and Balu?

Solution: Here Sum of positions of Anil & Balu from opposite ends = 12 + 22 = 34 < Total no. of persons

∴ No. of persons between Anil & Balu = Total no. of students – (Position of Anil from left + Position of Balu from right)

= 50 – (12+22) = 50 – 34 = 16

E.g.2) In a row of 45 persons, Mani is 26th from the left side of the row and Bharath is 22nd from the right. Find the no. of persons sitting between Mani and Bharath?

Solution:

Here Sum of positions of Mani & Bharath from opposite ends = 26 + 22 = 48 > Total no. of persons

∴ No. of persons between Mani & Bharath = (Position of Mani from left + Position of Bharath from right) – Total no. of students – 2

= (26+22) – 45 – 2 = 48 – 45 – 2 = 1

CASE-4

- **Maximum and minimum no. of persons in a row:**

In the questions where it is asked to find minimum no. of persons in a row then it is always a case of overlapping i.e. given positions of persons from either side overlap each other. Then

Minimum no. of persons = Sum of positions of persons from both sides – Persons between them – 2

E.g. If the position of P from the left side of a row is 13th and the position of Q from the right side of a row is 15th and 3 persons are sitting in the middle of P & Q. Find the minimum number of persons that can be seated in this row?

Solution: Total no. of persons = 13 + 15 – 3 – 2 = 23

In the questions where it is asked to find maximum no. of persons in a row then

Maximum no. of persons = Sum of positions of persons from both sides +Persons between them

E.g. In a line, Sonu's rank is 9^{th} from the left and Sohali's rank is 7^{th} from the right. If 6 students are sitting between them, then find the maximum no. of persons that can be seated in the line?

Solution: Total no. of persons = 9+7+6=22

CASE-5

- **Position interchanging case**

Positions of two persons are given and their positions are interchanged. After interchanging, the position of the 1st person is given from the same side as before interchanging.

- **The position of the 2nd person from the same side as before interchanging = Position of the 2nd person from the same side before interchanging + (Position of the 1st person after interchanging – position of the 1st person before interchanging from the same side)**

E.g. Anju and Gokul are standing in a row of students. Anju is 12th from the left end and Gokul is 18th from the right. If they interchange their positions, Anju is 25th from the left. Find the new position of Gokul from the right side?

Solution:

The new position of Gokul from the right side=Position of Gokul before interchanging + Position of Anju after interchanging-Position of Anju before interchanging

= 18+25-12=31

- **To find the total no. of students, Find the person whose position from both sides can be depicted from the statement. Then add both his positions from opposite ends and subtract 1.**

E.g. Anita's rank is 21st from the left end and Aditi is 11th from the right. If they interchange their positions, Anita is 28th from the left end, then find the total no. of persons?

Solution:

Total no. of persons=28+11-1=38

- **To find no. of persons between them, Difference in the position of the common person whose position from the same side before and after interchanging is given then subtract 1**

E.g. Bhanu's rank is 17th from the left end and Arjun is 11th from the right. If they interchange their positions, Bhanu is 28th from the left end, then find the total no. of persons in between them?

Solution:

Total no. of persons in between them=28-17-1=10

CASE-6

Ordering according to age ,height etc

Here we have to arrange the given persons according to the details given in either ascending or descending order

E.g. Among P, S, J, K, W, each one of them are of different weight, S is heavier than only J.P is heavier than S and W (both) but not as heavy as K. Who among them is the third heaviest?

Solution: As per the arrangement we have

K>P>W>S>J

So the required answer is W

E.g.DATA SUFFICIENCY MODEL

Directions for data sufficiency questions

1.If data in statement I alone is sufficient to answer the question.

2.If data in statement II alone is sufficient to answer the question.

3.If data either in statement I alone or statement II alone are sufficient to answer the question.

4.If data given in both I & II together are not sufficient to answer the question.

5.If data in both statements I & II together are necessary to answer the question

Question:-Who is taller among M, N, O, P & Q?

1. O is taller than M. O is shorter than only N.
2. M is taller than the only Q. O is taller than P and M, but not the tallest.

Solution:

From 1: O is shorter than only N, this means that N is taller than all M, P & Q, so N is tallest.

From 2: M only taller than Q, so Q is shortest, and M is the second shortest, Now O taller than P and M both, but not the tallest. So tallest is N