6. Order And Ranking Tricks

When we are doing order and ranking we know basically two type of symbols first is greater than(>)and the other one is less than(<). To solve these questions we only know the three things:

**TRICKS**

Symbol of Greater Than and LESS THAN means if A>B IMPLIES THAT (A is greater than B) or B < A (B is smaller than A). These are for the same person:

1. \[ \text{TOTAL} = (\text{TOP} + \text{BOTTOM}) - 1 \]
2. \[ \text{TOTAL} = (\text{LEFT} + \text{RIGHT}) - 1 \]

**Ordering and Ranking** Arrangement is an important topic from the point of view of SBI PO, SBI Clerk, IBPS PO, IBPS Clerk, SSC, CAT and many other competitive exams. There are usually 3-5 questions in any exam from this topic. By following some simple shortcut tricks, you can easily crack the questions in a matter of seconds. This can be helpful in boosting your reasoning ability and, more importantly, your marks in the exam. Time is an important factor in qualifying through these competitive exams, and short tricks are the only way to go about getting through the Reasoning section with ease.

In ordering and ranking arrangement questions, position/rank of a person from left-right/top-bottom of a row/class is to be determined or rank/position is given & total no. of persons is to be calculated. You may also be asked to determine, using data given, which floor which person lives on.

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

Here, different types of ordering & ranking arrangement questions are explained below with the help of different examples. By grasping each type, you can have a complete command over this topic and ensure 3-5 marks in your kitty.

**TRICK 1**

1) Total number of persons = \{ (sum of positions of same person from both sides i.e. left and right side) – 1 \}

OR
2) Position of a person from opposite side = {(Total no. of persons – Position of same person from given side) +1}

**E.g. 1)** In a row of persons, position of A from left side of the row is 27th and position of A from right side of the row is 34th. Find total no. of persons in the row?

**Solution:**

Total no. of students = (Position of A from left + Position of A from right) -1

⇒ Total no. of students = (27 + 34) – 1 = 61 – 1 = 60

**E.g. 2)** In a row of 16 persons, position of A from left side of the row is 12th. Find the position of A from right side of the row?

**Solution:**

Position of A from right side = {(Total no. of persons – Position of A from left side) + 1}

⇒ Position of A from right side = (16 – 12) + 1 = 4 + 1 = 5th

**TRICK 2**

1) Total no. of persons = No. of persons after or before the given person in a row + Position of 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 same person from other side

**E.g. 1)** In a row of persons, position of A from left side of the row is 27th and there are 5 persons after A in the row. Find total no. of persons in the row?

**Solution:**

No. of persons in the row = Position of A from left + No. of persons after A

⇒ Total no. of persons = 27 + 5 = 32

**E.g. 2)** In a row of 18 persons, position of A from left side of the row is 6th. Find the no. of persons after A in the row?

**Solution:**

No. of persons after A = Total no. of persons – Position of A from left
⇒ No. of persons after A in the row = 18 – 6 = 12

**TRICK 3**

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

1. When there is no overlapping: i.e. the sum of positions of the two persons from opposite ends < total number of persons
2. When there is overlapping: i.e. the sum of positions of the two persons from opposite ends > total number of persons

Case i)
No. of students between two different persons = Total no. of students – (Sum of positions of two different persons from opposite sides)

**E.g.1)** In a row of 54 persons, A is 15th from the left side of the row and B is 20th from the right side of the row. Find the no. of persons sitting between A and B?

**Solution:** Here Sum of positions of A & B from opposite ends = 15 + 20 = 35 < Total no. of persons

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

⇒ No. of persons between A & B = 54 – (15+20) = 54 – 35 = 19

Case ii)
No. of students between two different persons = (Sum of positions of two different persons from opposite sides) – Total no. of students – 2

**E.g.1)** In a row of 54 persons, A is 35th from the left side of the row and B is 22nd from the right side of the row. Find the no. of persons sitting between A and B?

**Solution:** Here Sum of positions of A & B from opposite ends = 35 + 22 = 57 > Total no. of persons

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

⇒ No. of persons between A & B = (35+22) – 54 – 2 = 57 – 54 – 2 = 1
TRICK 4  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. In a row Position of A from left side of the row is 18th and position of B from right side of the row is 25th. Find the total no. of students in the row?

Solution: Cannot be determined as position of different persons is given from the same side.

TRICK 5

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

- Position of 2nd person from the same side as before interchanging = Position of 2nd person from same side before interchanging + (Position of 1st person after interchanging – position of 1st person before interchanging from same side)
- To find total no. of students ♣ Find the person whose position from both sides can be depicted from the statement. Add both his positions from opposite ends and subtract 1.
- To find no. of persons between them ♣ Difference in the position of common person whose position from same side before and after interchanging is given then subtract 1

E.g. A and B are standing in a row of persons. A is 18th from left side of the row and B is 24th from right side of the row. If they interchange their positions A becomes 31st from left. Find

1. i) New position of B from right side
   ii) Total no. of persons
   iii) No. of persons between A & B

Solution:

1. i) New position of B from right side = Position of B from right side before interchanging + (Position of A from left side after interchanging – Position of A from left side before interchanging)

⇒ New position of B from right side = 24 + (31 – 18) = 24 + 13 = 37th

1. ii) Total no. of persons = (A’s position from right before interchanging + A’s position from left before interchanging) – 1

⇒ Total no. of persons = (24 + 31) – 1 = 55 – 1 = 54

1. iii) No. of persons between A & B = (Position of A from left after interchanging – Position of A from left before interchanging) – 1
$\Rightarrow$ No. of persons between A & B = $(31 - 18) - 1 = 13 - 1 = 12$

**TRICK 6** If positions of two different persons are given from opposite sides of the row and a third person is sitting exactly in middle of the two and total no. of persons in the row is to be calculated as

1. i) When position of third person sitting is given from either side of row
2. ii) When position of third person is given from either of the two persons between whom he/she is sitting

Then find the position of the 3\textsuperscript{rd} person from both sides of the row and hence find total no. of persons according to type 1

**E.g. 1)** In a row of persons, position of A from left side of the row is 9\textsuperscript{th} & position of B from right side of the row is 8\textsuperscript{th}. If C is sitting just in middle of A & B and position of C from left side of the row is 15\textsuperscript{th}. Find the total no. of persons in the row?

**Solution:** Position of C from left is 15\textsuperscript{th} and A from left is 9\textsuperscript{th} so there are $(15 - 9 - 1 = 5)$ persons are sitting between A and C. As C is sitting in middle of A and B so there must also be 5 persons sitting between B and C.

Thus position of C from right = Position of B from right + 5 + 1 = 8 + 6 = 14\textsuperscript{th}

Total no. of students = (Sum of positions of C from both sides – 1)

$\Rightarrow$ Total no. of students = $(15 + 14) - 1 = 29 - 1 = 28$

**E.g. 2)** In a row of persons, Position of A from left side of the row is 11\textsuperscript{th} and B from right side of the row is 19\textsuperscript{th}. If C is sitting just in middle of A & B and position of C from A is 7\textsuperscript{th}. Find total no. of persons in the row?

**Solution:** Position of C from Left = Position of A from left + Position of C from A = $11 + 7 = 18^\text{th}$

Given C is 7\textsuperscript{th} from A and C is sitting in middle of A and B then also C is at 7\textsuperscript{th} position from B

Position of C from right = Position of B from right + Position of C from B = $19 + 7 = 26^\text{th}$

Total no. of students = (Sum of position of C from both sides – 1)

$\Rightarrow$ Total no. of students = $(18 + 26) - 1 = 44 - 1 = 43$

**TRICK 7** 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 sides overlap each other.

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Then

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

E.g. If position of A from left side of a row is 15\textsuperscript{th} and position of B from right side of a row is 19\textsuperscript{th} and only 1 person is sitting in middle of A & B. Find the minimum number of persons that can be seated in this row?

Solution: Total no. of persons = 15 + 19 – 1 – 2 = 3

Type 8

These are ordering type questions. In this type of question, it is given that there are several people living in an \textit{n}-storey building. Some information will be given about the relative positions of one above or below the other. You need to find which floor each person lives on. These are almost similar to seating arrangement questions. However, you may be required to apply the rules you learnt above, in these problems.

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Ranking And Direction Short Cut:

\textbf{RANKING TEST:} In this type of question, generally a set, group or series of numerals is given and the candidates is asked to trace out numerals following certain given conditions or lying at specific mentioned positions after shuffling according to a certain given pattern.

\textbf{Examples:}

Here is a table.

<table>
<thead>
<tr>
<th>No.</th>
<th>Rank from top</th>
<th>Rank from bottom</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>E</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>F</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>
Let discuss about ‘D’

D’s rank from top = 4 and from bottom = 3

Now total rank = 6 Means total rank = (rank from top + rank from bottom) – 1

Now rank from top = (total rank + 1) – rank from both

Rank from bottom = (total rank + 1) – rank from top

DIRECTION TEST

In this test, the questions consist of a sort of direction puzzle. A successive follow-up of directions is formulated and the candidate is required to ascertain the final direction or the distance between two points. The test is meant to judge the candidate’s ability to trace and follow correctly and sense the direction correctly. The adjoining figure shows the four main directions (North N, South S, East E, West W) and four cardinal directions (North East NE, North West NW, South East SE, South West SW) to help the candidates know the directions.

Always Remember:

left + left           Down
Left + right          Up
Right + left          Up
Right + right         Down
Up + left             Left
Up + right            Right
Down + left           Right
Down + right          Left

Formulas to determine the positioning of a person
1) Left + Right = Total + 1
2) Left = Total + 1 – Right
3) Right = 1 + 1 – left
4) Total = left + Right
Note: the above formulas are only for a single person’s position

Example:

\[
\begin{array}{c}
1 & 2 & 3 & 4 & 5 \\
| \\
3\text{rd from left} \\
3\text{rd from right} \\
\text{Total}= 3 + 3 - 1
\end{array}
\]

Same for vertical & Horizontal

1) Total + 1 = top + Bottom
2) Top = Total + 1 – Bottom
3) Bottom = Total + 1 – Top
4) Total = Top + Bottom

Eg.1: In a row of 40 students, A is 13th from the left end, find the rank from right end.

Ans  Total = 40

A’s rank from right side = Total + 1 – left

= 40 – 13 + 1

= 27 + 1

= 28

Eg2: M a row ‘P’ is 25th from left end, Q is 30th from right end. Find the total no. of students in all.
**An.** Cant be Determined as there are more than 1 possibilities

Case 1

**Note:** When total is not given and 2 persons positions from left and right are given, then answer is C.D

**Eg 3:** In a row of children, A is 17th from left, B is 15th from right.

(1) Find the total number of children in the row

Ans. Can’t be determined, as there are more than 1 possibilities

**Eg 4:** In a row of some children, S is 25th from left, T is 60th from right. If they interchanged their positions, then T becomes 70th from right end

Find

(i) What is S's right-hand position in new position

(ii) What is T's left hand position in earlier position.

(iii) How many numbers of persons between S and T.

(iv) What is the total strength

(v) If 'Q' is placed exactly between S & T then what is his rank from left end?

**Answers**
1) S's new position from left end = 35

2) T's left hand position in earlier position = 35 L

i.e. L = 25 + 9 + 1

= 35

Or

L = 94 + 1 - R

= 95 - 60

= 35

3) Persons in between = 70 - 60 - 1

= 9

Or Persons in between = Total - 25 - 60

= 94 - 25 - 60

= 94 - 85

= 9

4) Total strength = 25 + 60 + 9

= 95

Or Total = 70 + 25 - 1 = 94

5)
Ans: 25 + 4 + 1 = 30 from left
Order and Ranking

Order to left to right
Ranking to top to bottom

Pattern I → when the position of one person from one end is given and total no. of students is also given. We have to determine the position of given person from other end.

Required position = \( N + D \) - Given position

\[
\text{Pattern II} \rightarrow \text{If the position of same person from both ends are given and we have to determine total number of students (N).}
\]

\[
N = (L + R) - 1
\]

\[
\text{Pattern III} \rightarrow \text{If the position of 2 different person from 2 different ends is given and any 3rd person is inserted between these two and we have to determine N.}
\]

\[
N = \text{Total of given position} - 1
\]
If the position of Amit is 22 from left and Sumit is 26th from right, Vikram who is 6th to the right of Amit and 7th to left of Sumit then find the total no. of students in a row?

\[ N = (22 + 26 + 6 + 7) - 1 \]
\[ = 60 \]

Note: This is use when only one person is sitting between two persons.

Number of students in the column where R given N given

\[ N = (L + R) \]
\[ \Rightarrow (L + R) - (N + 2) = 0 \]
\[ \Rightarrow N - (L + R) = 0 \]

In a row of 50 students if the position of Karan is 32 from left and Arjun is 31 from right then find no. of students blue Karan and Arjun.

\[ = (52 + 3) - (50 + 2) \]
\[ = 52 - 52 \]
(a) \((L + R) \geq N \rightarrow\) (overlapping case)

\[\text{In a row of 50 students, if the position of Babu is 45 from left and Gauthi is 25 from right, then find the number of students before Babu and Gauthi?}\]

\[70 - 50 + 2 = 18\]

(b) \(L + R = N \rightarrow\)

\[\text{In a row of 50 students, if the position of Daya is 25 from left and Abhi's position is 25 from right, then find the number of students between Daya and Abhi?}\]

\[0\]

(c) \((L + R) < N \rightarrow\)

\[\text{In a row of 50 students, if the position of Arpita is 10 from left and Alwina is 15 from right, then find the number of students between Arpita and Alwina.}\]

\[28\]

\[\text{weeks} + 7 \text{days} + 11 \text{hrs} + 13 \text{hrs} + 1 \text{day} = 30 \text{days}\]

\[31 + \left[ 3! \right] + \left[ 3! \right] + \left[ 3! \right] + 31 = 30\]

\[(1, 3, 5, 7, 9, 11, 13, 15) \quad \text{15 + 5} +\]
To determine $N$, we need to find the number of students $b/w$ left and right.

### Cases

<table>
<thead>
<tr>
<th>Cases</th>
<th>Difference in Position</th>
<th>$N$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case a</td>
<td>$b/w &gt; L$</td>
<td>$\checkmark$</td>
</tr>
<tr>
<td>Case b</td>
<td>$b/w = L$</td>
<td>$\checkmark$</td>
</tr>
<tr>
<td>Case c</td>
<td>$b/w &lt; L$</td>
<td>$\text{CNP}$</td>
</tr>
</tbody>
</table>

When $b/w$ position $> Left$ position, $\rightarrow$

If the position of Gillchrist is $8^{th}$ from left and Wyden is $16^{th}$ from right. If there are 12 students $b/w$ Gillchrist & Wyden, then determine total number of students ($N$)?

$N = 7 + (1 + \frac{12}{2}) + 15 = 36$.

When $b/w = L - 1$, $\rightarrow$

If Position of Karam is $8^{th}$ from left and Arjun is $16^{th}$ from right, if there are 7 students $b/w$ Karam & Arjun, then determine $N$.

Ans. $31$
When \( B \rightarrow L \) →

1. If the position of Chetan is 8th from left and Bhagat is 16th from right, if there are 4 students b/w Chetan and Bhagat then find total no. of students.

Answer: cannot be determined. (because in this we can determine value by two more people that’s why cannot be determined)

Pattern 6

Minimum N

If the position of Ashima is 8th from left and Bal is 9th from right. Then calculate N.

Answer: Minimum N

\[ A \quad B \]

\[ L(8) \quad R(9) \]

1. If the position of two different person from two different ends is given and number of students in between is not given then N is always cannot be determined.

2. Minimum N = 9

Short trick: 8, 9

Answer: 9. Common no. is greater it will be the answer.
3 persons A, B, & C are sitting in a queue such that there are 5 persons
between A & B & 8 persons between B & C. 3 persons ahead of C and 21 behind A.
Find min. no. of students in the queue?

Ans. 28

N = 15 + 1 + 5 + 1 + 2 + 1 + 3
   = 28

→ position movement / movement logic

L ————> R
     |          |
L(4), R(6)  R

R ————> L
     |          |
R(4), L(2)  L

L(4) L(1)
R(4) R(4)
In a row of 40 girls, Kamal was shifted to left by 4 places from her number. From left end of the row, he became 10th. What was the place of Swati from the right end of the road if Swati was 3 place to the right of Kamal's original position?

\[ N = L + R - 1 \]

\[ 40 = 17 \]
\[ 40 - 17 + 1 = R \]
\[ R = 24 \]

Shanita is 8th to the right of Nikita who is 21 from right. Rani is 10th to the left of Shanita and is 23rd from left. Show how many students are in the room.

\[ N = 23 + 25 - 1 = 47 \]
Interchanging

In a row Amrita is 26th from left and Bala is 23 from right. When they interchange their positions respectively Amrita becomes 34th from left and Bala from right.

1. Total N in a row
2. Find Bala’s position from right hand after interchanging.

\[ N = 56 \]

Bala = 31

\[ \text{For finding interchanged positions,} \]

\[ IP2P = \text{difference of position of 1st person} + \text{original position of 2nd person.} \]
In a row of boys & girls, Radha is 6th from top & Atul is 12th from top. Radha is 4th from top & 1st from bottom among girls. Atul is 7th from the top & 3rd from the bottom among boys. Then find (i) How many children in the row. (ii) How many girls are sitting between Atul & Radha.

\[ R = \text{Radha}, \quad A = \text{Atul} \]

\[
\begin{align*}
& R(6) \quad T(12) \\
& 6(4-\text{top}) \quad 6 + 3 \text{H.} \\
& 3 \text{B. & H.} \\
\end{align*}
\]

\[ N = 39 \]

\[ A \rightarrow T(12) \rightarrow A \]

\[ T(6) \rightarrow B \]

\[ A \rightarrow T(12) \rightarrow A \]

\[ \text{Atul} \rightarrow T(6) \rightarrow B \]

\[ 2 \text{g.} & \ 3 \text{b.} \]

\[ N = 39 \]
Quiz

1. In a group of 40 girls, when Latha was shifted by 4 places towards her right, then she become 12th from the left end what was her earlier position from the right end of the row?
   1) 34
   2) 32
   3) 33
   4) 35
   5) none

2. In a group of 40 boys, Raju is 12th from the left end and Raghu is 17th from the right end. If Dilip is placed exactly between them what is his right hand rank?
   1) 22
   2) 23
   3) 24
   4) 25
   5) none

3. In a row of students, Ravi is 10th to left of Ramesh, who is 30th from the left end. If Ramesh is exactly in the middle of Ravi and Sandeep, then find.
   (I) How many minimum numbers of students is possible in that row?
      (1) 39
      (2) 38
      (3) 40
      (4) 41
      (5) Can’t be determined
   (II) What is the total strength?
      (1) 90
      (2) 80
4. Amit is 24th from the left end and 6th from the right of Sumit. Anuj is 33rd from the right end. Sumit is between Amit and Anuj.

(I) What will be the total strength?

(1) 45
(2) 44
(3) 50
(4) 43
(5) None

(II) What is Anuj’s position from the left end?

(1) 11
(2) 10
(3) 12
(4) 13
(5) None

Answers
1) 3
2) 2
3) 3
II) 5
4) II) 2
ii) 3

Explanation
Dilip's rank from right = 17 + 5 + 1 = 23