

Chapter 6

Number and Ranking

NUMBERTEST

In this type of question, generally a set, group or series of numerals is given and the candidate is required to find out how many times a number satisfying the conditions specified in the question occurs.

ILLUSTRATON 1:

In the series given below, how many 8s are there each of which is exactly divisible by its immediate preceding as well as succeeding numbers ?

2 8 3 8 2 4 8 2 4 8 6 8 2 8 2 4 8 3 8 2 8 6

- (1) One (2) Two
(3) Three (4) Four

Sol. (2) Clearly, we may mark such sets of 3 numbers, in which the middle number is 8 and each of the two numbers on both sides of it is a factor of 8, as shown.

2 8 3 8 2 4 8 2 4 8 6 8 2 8 2 4 8 3 8 2 8 6

so there are two such 8s.

ILLUSTRATON 2:

How many 7s are there in the following number series which are preceded by 9 and also followed by 6 ?

7 8 9 7 6 5 3 4 2 8 9 7 2 4 5 9 2 9 7 6 4 7

- (1) Two (2) Three
(3) Four (4) Five

Sol. (2) The 7s satisfying the given conditions are shown below.

7 8 9 7 6 5 3 4 2 8 9 7 2 4 5 9 2 9 7 6 4 7

Hence, there are only two such 7.

RANKING TEST

Generally, the number of persons are arranged in either ascending or descending order of their performance in a certain activity. Let there be n persons who qualified in a certain event. A particular man Rohan is one of them whose rank from the top i.e., top rank T_r is 14 th and his rank from the other side i.e., from the bottom (B_r) is 26th. Then clearly the number of persons who qualify is $T_r + B_r - 1$ i.e., $14 + 26 - 1 = 39$.

$$\Rightarrow n = T_r + B_r - 1 \quad \dots\dots(1)$$

$$T_r = (n + 1) - B_r \quad \dots\dots(2)$$

$$\text{and } B_r = (n + 1) - T_r \quad \dots\dots(3)$$

these rules (1), (ii) and (iii) are very useful in problems on ranks

ILLUSTRATON 3:

Sunita ranked 11 th from the top and 27th from the bottom in a class. How many student are in the class ?

- (1) 38 (2) 28
(3) 40 (4) 37

Sol. (4) $T_r = 11, B_r = 27$.

$$\therefore \text{Number of students in the class} = 11 + 27 - 1 = 37.$$

ILLUSTRATON 4:

In a row of boys, Suresh is seventh from the left and Rohit is twelfth from the right. If they interchange their positions, Suresh becomes twenty- second from the left. How many boys are there in a row ?

- (1) 19 (2) 31
(3) 33 (4) Cannot be found

Sol. (3) Suresh's new position is 22nd from left. But it is the same as Rohit's earlier position which is 12th from right.

$\Rightarrow$ The number of persons in a row.

$$= (22 + 12 - 1) = 33$$

ILLUSTRATON 5:

In a queue, Vijay is fourteenth from the front and Jack is seventeenth from the end, while Mary is in between Vijay and Jack. If Vijay be ahead of Jack and there be 48 persons in the queue, How many persons are there between Vijay and Mary ?

- (1) 8 (2) 7
(3) 6 (4) 5

Sol. (1) Number of persons between Vijay and Jack

$$= 48 - (14 + 17) = 17$$

Now, Mary lies in the middle of these 17 persons i.e., at the ninth position.

$$\therefore \text{Number of persons between Vijay and Mary} = 8$$

Useful Tips

- Position of person from top
 $= [\text{Total no. of persons} - \text{position of person from down}] + 1$.
- Position of person from bottom
 $= [\text{Total no. of persons} - \text{position of person from up}] + 1$.
- Position of person from right
 $= [\text{Total no. of persons} - \text{position of person from left}] + 1$
- Position of person from left
 $= [\text{Total no. of persons} - \text{position of person from right}] + 1$.
- Total no. of persons
 $= [\text{Position of person from top/ right} + \text{position of person from bottom / left}] - 1$.
- If two persons are on a definite position from up and down or left and right) and they interchange their ranks, then
 - Total no. of persons in order
 $= [\text{First position of first person} + \text{second position of second person}] - 1$
 - Second position of first person or second position of second person = Difference of the two positions of second person + first position of second person.
 $= \text{Difference of the two positions of first person} + \text{First position of second person}.$

Miscellaneous Solved Examples

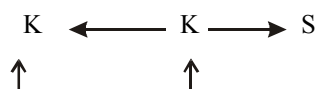
EXAMPLE 1:

In a row of 40 girls, when Komal was shifted to her left by 4 places her number from the left end of the row became 10. What was the number of Swati from the right end of the row if Swati was three places to the right of komal's original position ?

- (1) 22 (2) 23
(3) 25 (4) 24

Sol. (4) On shifting 4 to the left, Komal is 10th from the left end of the row. Thus, komal's original position was 14th from the left end.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17



Swati is 3 places to the right of Komal's original position.

Clearly, swati is 17th from the left end.

Number of girls to the right of swati = $(40 - 17) = 23$.

Thus, Swati is 24th from the right end of the row.

EXAMPLE 2:

In the first and second digits in the sequence 5 9 8 13 2 7 4 3 8 are interchanged. Also the third and fourth digits, the fifth and sixth digits and so on, which digit would be the seventh counting to your left ?

- (1) 1 (2) 4
(3) 7 (4) 8

Sol. (4) The new sequence becomes 9 5 1 8 2 3 4 7 8 3. Counting to the left, the seventh number is 8.

EXAMPLE 3:

Raman is 7 ranks ahead of Suman in a class of 39. If Suman's rank is seventeenth from the last, what is Raman's rank from the start ?

- (1) 14th (2) 15th
(3) 16th (4) 17th

Sol. (3) Suman is 17th from the last and Raman is 7 ranks ahead of Suman. So Raman is 24th from the last.

$\therefore$ Raman rank from the start is $39 + 1 - 24$ i.e., 16th

EXAMPLE 4:

Mohan and Ramesh are ranked seventh and eleventh respectively from the top in a class of 41 students. What will be their respective ranks from the bottom in the class

- (1) 30th and 34th (2) 34th and 30th
(3) 35th and 31st (4) 36th and 32nd

Sol. (3) Rank of Mohan from the bottom = $(41 + 1) - 7 = 35$ th.

Rank of Ramesh from the bottom = $(41 + 1) - 11 = 31$ st.

EXAMPLE 5:

If you count 21 letters in the english alphabet from the end and 20 letters from the beginning, which letter will exactly appear in the middle of the sequence thus formed?

- (1) N (2) L
(3) K (4) M

Sol. (4) By counting 21 letters from the end and 20 letters from the beginning we get the following sequence

F G H I J K L M N O P Q R S T

Obviously, the letter M appears exactly in the middle of the sequence thus formed.

EXAMPLE 6:

Ravi is 7 ranks ahead of Sumit in a class of 39. If Sumit's rank is seventeenth from the last, what is Ravi's rank from the start?

- (1) 14th (2) 15th
(3) 16th (4) 17th

Sol. (3) Sumit is 17th from the last and Ravi is 7 rank ahead of Sumit, so Ravi is 24th from the last. Thus Ravi's rank from the start : $(39 - 24 + 1) = 16$

EXAMPLE 7:

The average of three numbers is 24.

The average of two of these three numbers is $22\frac{1}{2}$.

What is the value of the third number ?

Sol. (27) The total of three numbers is 72 (24×3). The total of two numbers is 45 ($22\frac{1}{2} \times 2$).

The third number must be 27 ($72 - 45$).

EXAMPLE 8:

How many numbers from 1 to 100 are there each of which is not only exactly divisible by 4 but also has 4 as a digit?

- (1) 7 (2) 10
(3) 20 (4) 21

Sol. (1) The numbers from 1 to 100 which are exactly divisible by 4 are 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100.

But each number should have 4 as its digit.

The required numbers are 4, 24, 40, 44, 48, 64, 84.

Clearly, there are 7 such numbers.

EXAMPLE 9:

Manish is fourteenth from the right end in a row of 40 boys. What is his position from the left end ?

- (1) 24th (2) 25th
(3) 26th (4) 27th

Sol. (4) Clearly, number of boys towards the left of Manish = $(40 - 14) = 26$.

So, Manish is 27th from the left end.

Exercise

1

- Manish ranked sixteenth from the top and twenty-ninth from the bottom among those who has passed an examination. Six boys did not participate in the examination and five failed in it. How many boys were there in the class?
(1) 40 (2) 44
(3) 50 (4) 55
- Roshan ranked 11th from the top and thirty one from the bottom in a class. How many students are there in the class?
(1) 42 (2) 43
(3) 41 (4) 40
- If a test score goes up 15% from x to 69, what was the previous test score ?
(1) 52 (2) 60
(3) 65 (4) 68
- What will be the difference between the sum of the odd digits and the sum of the even digits in the number 857423
(1) 0 (2) 1
(3) 2 (4) 4
- A number is greater than 3 but less than 8. Also, it is greater than 6 but less than 10. The number is
(1) 5 (2) 6
(3) 7 (4) 8
- If it is possible to make a number which is perfect square of a two- digit odd number with the second , the sixth and the ninth digits of the number 187642539, which of the following is the digit in the unit's place of that two- digit odd number ?
(1) 1 (2) 7
(3) 9
(4) No such number can be made
- How many combinations of two-digit numbers having 8 can be made from the following numbers ?
8, 5, 2, 1, 7, 6
(1) 9 (2) 10
(3) 11 (4) 12
- How many numbers amongst the numbers 9 to 54 are there which are exactly divisible by 9 but not by 3?
(1) 8 (2) 6
(3) 5 (4) Nil
- In a row of boys facing the North, A is sixteenth from the left end and C is sixteenth from the right end. B, who is fourth to the right of A, is fifth to the left of C in the row. How many boys are there in the row ?
(1) 39 (2) 40
(3) 41 (4) 42
- In a class of 60, where girls are twice that of boys, kamal ranked seventeenth from the top. If there are 9 girls ahead of kamal, how many boys are after him in rank ?
(1) 3 (2) 7
(3) 12 (4) 23
- In a queue, A is eighteenth from the front while B is sixteenth from the back. If C is twentieth from the front and is exactly in the middle of A and B, then how many persons are there in the queue ?
(1) 45 (2) 46
(3) 47 (4) 48
- In a row of 21 girls, when monika was shifted by four place towards the right, she became 12th from the left end. What was her earlier position from the right end of the row ?
(1) 9th (2) 10th
(3) 11th (4) 14th
- The positions of the first and the second digits in the number 94316875 are interchanged. Similarly, the positions of the third and fourth digits are interchanged and so on. Which of the following will be the third to the left of the seventh digit from the left end after the rearrangement ?
(1) 1 (2) 4
(3) 6 (4) None of these
- A bus for Delhi leaves every thirty minutes from a bus stand. An enquiry clerk told a passenger that the bus had already left ten minutes ago and the next bus will leave at 9.35 a.m. At what time did the enquiry clerk give this information to the passenger ?
(1) 9.10 a.m. (2) 8.55 a.m.
(3) 9.08 a.m. (4) 9.15 a.m.
- Ram and Sham are ranked 13th and 14th respectively in a class of 23. What are their ranks from the last respectively?
(1) 10th : 11th (2) 11th; 12th
(3) 11th ; 10th (4) None of these
- How many 5s are there in the following sequence which are immediately followed by 3 but not immediately preceded by 7?
8 9 5 3 2 5 3 8 5 5 6 8 7 3 3 5 7 7 5 3 6 5 3 3 5 7 3 8
(1) One (2) Two
(3) Three (4) Four
- How many even numbers are there in the following sequence of number which are immediately followed by an odd number as well as immediately preceded by an even number?
8 6 7 6 8 9 3 2 7 5 3 4 2 2 3 5 5 2 2 8 1 1 9
(1) One (2) Three
(3) Four (4) Six
- In the following series of numbers, find out how many times 1, 3 and 7 have appeared together, 7 being in the middle and 1 and 3 on either side of 7.
2 9 7 3 1 7 3 7 7 1 3 3 1 7 3 8 5 7 1 3 7 7 1 7 3 9 0 6
(1) 3 (2) 4
(3) 5 (4) More than 5
- In the series;
6 4 1 2 2 8 7 4 2 1 5 3 8 6 2 1 7 1 4 1 3 2 8 6
How many pairs of alternate numbers have a difference of 2?
(1) One (2) Two
(3) Three (4) Four
Rules: If there are N persons standing in a row and ranks of a person both from the top and from the bottom are Tr and Br , then the rules are
(i) $N = Tr + Br - 1$
(ii) $Tr = (N + 1) - Brand$
(iii) $Br = (N + 1) - Tr$.
- Sarita is at 27th position from the top in a class of 43 students. What is her rank from the other side?
(1) 16th (2) 17th
(3) 15th (4) 21th

21. Anmol finds that he is twelfth from the right in a line of boys and fourth from the left, how many boys should be added to the line such that there are 35 boys in the line?
 (1) 19 (2) 13
 (3) 14 (4) 20
22. In a row of students, Deepak is seventh from the left and Madhu is twelfth from the right. If they interchange their positions, Deepak becomes twenty-second from the left. How many students are there in the row?
 (1) 19 (2) 31
 (3) 33 (4) Can't be found
23. If the boy before yesterday was Thursday, when will be Sunday?
 (1) Today (2) Two days after today
 (3) Tomorrow (4) Day after tomorrow
24. Standing on the platform, Amit told Sunita that Aligarh was more than 10 km but less than 15 km from there. Sunita knew that it was more than 12 km but less than 14 km from there. If both of them were correct, which of the following could be the distance of Aligarh from the platform?
 (1) 11 km (2) 12 km
 (3) 13 km (4) 14 km
25. In the following sequence of instructions, 1 stands for Run, 2 stands for Stop, 3 stands for Go, 4 stands for Sit and 5 stands for Wait. If the sequence were to continue, which instruction will come next?
 4 4 5 4 5 3 4 5 3 1 4 5 3 1 2 4 5 4 5 3 4 5 3
 (1) Wait (2) Sit
 (3) Run (4) Stop
26. In a class of 60, the number of girls are twice that of boys. Kamal ranked seventeenth from the top. If there are nine girls ahead of Kamal, how many boys are after him in rank?
 (1) 3 (2) 7
 (3) 12 (4) 23
27. If Thursday was the day after the day before yesterday five days ago, what is the least number of days ago when Sunday was three days before the day after tomorrow?
 (1) Two (2) Three
 (3) Four (4) Five
28. A bus for Delhi leaves every 30 minutes from a bus stand. An enquiry clerk told a passenger that the bus had already left 10 minutes ago and the next bus will leave at 9:35 am. At what time did the enquiry clerk give this information to the passenger?
 (1) 9.10 am (2) 9.15 am
 (3) 8.55 am (4) 8.08 am
29. Rakesh is on 9th position from upwards and on 38th position from downwards in a class. How many students are in class?
 (1) 47 (2) 45
 (3) 46 (4) 48
30. Sarita is on 11th place from upwards in a group of 45 girls. If we start counting from downwards, what will be her place?
 (1) 36th (2) 34th
 (3) 35th (4) Can not be determined
31. Some boys are sitting in a line. Mahendra is on 17th place from left and Surendra is on 18th place from right. There are 8 boys in between them. How many boys are there in the line?
 (1) 43 (2) 42
 (3) 41 (4) 44
32. In a row of students, Ramesh is 9th from the left and Suman is 6th from the right. When they both interchange their positions then Ramesh will be 15th from the left. What will be the position of Suman from the right?
 (1) 12th (2) 13th
 (3) 15th (4) 6th
33. In a row of 21 girls, when monika was shifted by four place towards the right, she became 12 th from the left end. What was her earlier positions from the right end of the row ?
 (1) 9th (2) 10th
 (3) 11th (4) 14th
34. Ram and Sham are ranked 13th and 14th respectively in a class of 23. What are their ranks from the last respectively?
 (1) 10th : 11th (2) 11th; 12th
 (3) 11th ; 10th (4) None of these
35. Manisha ranked sixteenth from the top and twenty-ninth from the bottom among those who has passed an examination. Six boys did not participate in the examination and five failed in it. How many boys were there in the class?
 (1) 40 (2) 44
 (3) 50 (4) 55
36. In the first and second digits in the sequence 5 9 8 13 2 7 4 3 8 are interchanged. Also the third and fourth digits, the fifth and sixth digits and so on, which digit would be the seventh counting to your left ?
 (1) 1 (2) 4
 (3) 7 (4) 8
37. Raman is 7 ranks ahead of Suman in a class of 39. If Suman's rank is seventeenth from the last. What is Raman's rank from the start ?
 (1) 14 th (2) 15 th
 (3) 16 th (4) 17 th
38. Mohan and Ramesh are ranked seventh and eleventh respectively from the top in a class of 41 students. What will be their respective ranks from the bottom in the class
 (1) 30 th and 34th (2) 34 th and 30th
 (3) 35 th and 31 st (4) 36 th and 32 nd
39. Manish is fourteenth from the right end in a row of 40 boys. What is his position from the left end ?
 (1) 24th (2) 25th
 (3) 26th (4) 27th

Exercise

2

DIRECTIONS (QS. 1-3) : Five persons are sitting in a row . One of the two persons at the extreme ends is intelligent and the other one is fair. A fat person is sitting to the right of a weak person. A tall person is to the left of the fair person and the weak person is sitting between the intelligent and the fat person.

- Tall person is at which place counting from right ?
 (1) First (2) Second
 (3) Third (4) Fourth
- Person to the left of weak person possesses which of the following characteristics?
 (1) Intelligent (2) Fat
 (3) Fair (4) Tall

3. Which of the following persons is sitting at the centre?
 (1) Intelligent (2) Fat
 (3) Fair (4) Weak
4. In a row of girls. Rita and monika occupy the ninth place from the right end and tenth place from the left end respectively. If the interchange their places, then Rita and monika occupy seventh place from the right and eighteenth place from the left respectively How many girls are there in the row ?
 (1) 25 (2) 26
 (3) 27 (4) Data inadequate
5. If 3 is subtracted from the middle digit of each of the following numbers and then the positions of the digits are reversed, which of the following will be the last digit of the middle number after they are arranged in descending order?
 589 362 554 371 442
 (1) 1 (2) 2
 (3) 3 (4) 4
6. If the seventh day of a month is three days earlier than Friday, what day will it be on the nineteenth day of the month?
 (1) Sunday (2) Monday
 (3) Wednesday (4) Friday
7. In a row of boys facing the North, A is sixteenth from the left end and C is sixteenth from the right end. B, who is fourth to the right of A, is fifth to the left of C in the row. How many boys are there in the row ?
 (1) 39 (2) 40
 (3) 41 (4) 42
8. In a class of 60, where girls are twice that of boys, Kamal ranked seventeenth from the top. If there are 9 girls ahead of Kamal, how many boys are after him in rank ?
 (1) 3 (2) 7
 (3) 12 (4) 23
9. In a queue, A is eighteenth from the front while B is sixteenth from the back. If C is twentieth from the front and is exactly in the middle of A and B, then how many persons are there in the queue ?
 (1) 45 (2) 46
 (3) 47 (4) 48
10. In a row of girls. Rita and Monika occupy the ninth place from the right end and tenth place from the left end respectively. If the interchange their places, then Rita and Monika occupy seventh place from the right and eighteenth place from the left respectively. How many girls are there in the row ?
 (1) 25 (2) 26
 (3) 27 (4) Data inadequate

11. In a row of 40 girls, when Komal was shifted to her left by 4 places her number from the left end of the row became 10. What was the number of Swati from the right end of the row if Swati was three places to the right of Komal's original positions. ?
 (1) 22 (2) 23
 (3) 25 (4) 24

DIRECTIONS (Qs. 12-14) : Five persons are sitting in a row. One of the persons at the extreme ends is intelligent and other one is fair. A fat person is sitting to the right of a weak person. A tall person is to the left of the fair person and the weak person is sitting between the intelligent and the fat person.

12. Tall person is at which place counting from right ?
 (1) First (2) Second
 (3) Third (4) Fourth
13. Person to the left of weak person possesses which of the following characteristics?
 (1) Intelligent (2) Fat
 (3) Fair (4) Tall
14. Which of the following persons is sitting at the centre?
 (1) Intelligent (2) Fat
 (3) Fair (4) Weak

DIRECTIONS (Qs. 15-16) : Read the following information to answer the questions given below :

- (i) Five boys are standing in a line facing the wall wearing red, green, yellow, white and blue dress.
- (ii) The yellow-dressed boy is not standing at any end of the line
- (iii) The red-dressed boy is not standing at any end of the line.
15. The boy in the middle wears which coloured-dress?
 (1) Green
 (2) Blue
 (3) Either Green or Blue
 (4) Cannot be determined
16. Who is to the right of yellow-dressed boy?
 (1) Data inadequate (2) White
 (3) Green (4) Blue

DIRECTIONS (Qs. 17-18) : Read the following information carefully and answer the questions that follow :

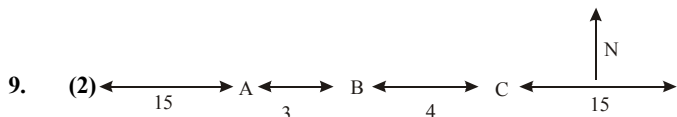
A, B, C, D, E and F are seated in a circle facing the centre. D is between F and B. A is second to the left of D and second to the right of E.

17. Who is facing A?
 (1) B (2) D
 (3) F (4) Either F or B
18. Who among the following is facing D?
 (1) A (2) C
 (3) E (4) Cannot be determined

Hints & SOLUTIONS

Exercise 1

- (4) Number of boys who passed = $16 + 29 - 1 = 44$
 $\therefore$ Total number of boys in the class = $44 + 6 + 5 = 55$
- (3) $T_r = 11, B_r = 31$
 $\Rightarrow$ no. of students = $T_r + B_r - 1 = 11 + 31 - 1 = 41$
- (2) $69 = 60 + (15\% \text{ of } 60)$
- (2) Required difference
 $= (5 + 7 + 3) - (8 + 4 + 2) = 15 - 14 = 1$.
- (3) According to first condition, the number is greater than 3 but less than 8. Such numbers are 4, 5, 6, 7.
 According to the second condition, the number is greater than 6 but less than 10. Such numbers are 7, 8, 9.
 Clearly, the required number is the number satisfying both the above conditions, i.e., 7.
- (2) The 2nd, 6th and 9th digits of the number 187642539 are 8, 2 and 9 respectively.
 The perfect square of a two-digit odd number, formed using these digits, is 289 and $289 = 17^2$.
- (3) The possible two-digit number are
 88, 85, 82, 81, 87, 86, 58,, 28, 18, 78, 68
 These are 11 in number.
- (4) Any number divisible by 9 is also divisible by 3.



Clearly, according to the given conditions, there are 15 boys to the left of A, as well as to the right of C. Also, B lies between A and C such that there are 3 boys between A and B and 4 boys between B and C. So, number of boys in the row

$$= (15 + 1 + 3 + 1 + 4 + 1 + 15) = 40.$$

- (3) Let the number of boys be x .
 Then, number of girls = $2x$.
 $\therefore x + 2x = 60$ or $3x = 60$ or $x = 20$.
 So, number of boys = 20 and number of girls = 40.
 Number of students behind Kamal in rank
 $(60 - 17) = 43$.
 Number of girls ahead of Kamal in rank = 9.
 Number of girls behind Kamal in rank = $(40 - 9) = 31$
 $\therefore$ Number of boys behind Kamal in rank = $(43 - 31) = 12$.
- (3) A is 18th from front and C is 24th
 Number of persons between A and C = 6.
 Since C is exactly in middle of A and B, so number of persons between C and B = 6.

 $\therefore$ Number of persons in the queue
 $= (17 + 1 + 6 + 1 + 6 + 1 + 15) = 47$.
- (4) The change of place by Monika can be shown as under.

 Clearly, Monika's earlier position was 8th from the left and 14th from the right end.
- (4) Changing the positions of the digits as mentioned, we get the number : 49138657.

The seventh digit from the left end of this number is 5.
 The third digit to the left of 5 is 3.

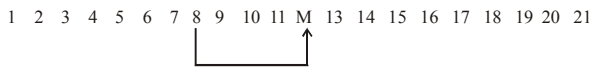
- (4) The next bus will leave at 9.35 a.m. This means that the previous bus had left at 9.05 a.m. But it happened ten minutes before the clerk gave the information to the passenger. Thus, the enquiry clerk gave the information at 9.15 a.m.
- (3) Ram's rank from last = $23 - 13 + 1 = 11$ th
 Sham's rank from last = $23 - 14 + 1 = 10$ th
- (3) The numbers satisfying the given conditions, can be seen as follow: 8 9 5 3 2 5 3 8 5 5 6 8 7 3 3 5 7 7 5 3 6 5 3 3 5 7 3 8
 Clearly there are three such numbers.
- (3) 8 6 7 6 8 9 3 2 7 5 3 4 2 2 3 5 5 2 2 8 1 1 9
- (1) 2 9 7 3 1 7 3 7 7 1 3 3 1 7 3 8 5 7 1 3 7 7 1 7 3 9 0 6
- (2) Clearly there are two such pairs only namely (4, 2); (1, 3)
- (2) Sarita rank from the bottom = $(43 + 1) - 27 = 17$.
- (4) Clearly, number of boys in a line = $12 + 4 - 1 = 15$
 $\therefore$ Number of boys to be added = $35 - 15 = 20$.
- (3) Deepak's new position is 22nd from left. But it is the same as Madhu's earlier position i.e. 12th from the right.
 $\therefore$ there are $(22 + 12 - 1)$ i.e. 33 boys in the row.
- (3) If day before yesterday was Thursday, so today is Saturday. So tomorrow will be Sunday.
- (4) Clearly, according to Sunita, the distance was more than 12 km but less than 14 km which is 13 km.
- (3) The given sequence may be analysed as under:
 4, 45, 453, 4531, 45312, 45, 453, 453
 Following the above sequence, the next number is 1 which stands for 'run'.
- (3) Clearly there are 20 boys and 40 girls. Number of students behind Kamal in rank = $60 - 17 = 43$
 Number of girls ahead of Kamal in rank = 9.
 $\therefore$ Number of girls behind Kamal in rank = $40 - 9 = 31$.
 $\therefore$ Number of boys behind Kamal in rank = $43 - 31 = 12$.
- (1) Day after the day before yesterday is yesterday. Now, five days ago, yesterday was Thursday. So five days ago it was Friday.
 $\therefore$ Today is Wednesday. Now three days before the day after tomorrow is yesterday. Now it is on Monday that we say yesterday was Sunday.
- (2) The next bus will leave at 9.35 am. This means that the previous bus had left at 9.05 am but that happened 10 minutes before the clerk gave the information to the passenger. Thus the enquiry clerk gave the information at 9.15 am.
- (3) Total students
 $= [\text{Rakesh's position from upwards} + \text{Rakesh's position from downwards}] - 1$
 $= [9 + 38] - 1 = 46$
- (3) Sarita's place from downwards
 $= \left[\begin{array}{c} \text{Total} \\ \text{girls} \end{array} - \begin{array}{c} \text{Sarita's place} \\ \text{from upwards} \end{array} \right] + 1 = [45 - 11] + 1 = 35$ th
- (1) Total boys
 $= \left[\begin{array}{c} \text{Mahendra's} \\ \text{place} \\ \text{from left} \end{array} + \begin{array}{c} \text{Surendra's} \\ \text{place} \\ \text{from right} \end{array} \right] + \left[\begin{array}{c} \text{Boys between} \\ \text{them} \end{array} \right]$
 $= [17 + 18] + 8 = 43$

32. (1) Position of Suman from right

$$= \left[\begin{array}{l} \text{Difference of} \\ \text{Ramesh's position} \end{array} + \begin{array}{l} \text{First position} \\ \text{of Suman} \end{array} \right]$$

$$= [(15 - 9) + 6] = 12\text{th}$$

33. (4) The change of place by Monika can be shown as under.



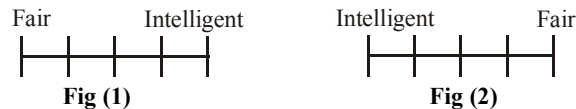
Clearly, Monika's earlier position was 8th from the left and 14th from the right end.

34. (3) Rank of Ram from the last = $23 - 13 + 1 = 11$
and Rank of Shyam from the last = $23 - 14 + 1 = 10$
35. (4) Number of boys who passed = $16 + 29 - 1 = 44$
 $\therefore$ Total number of boys in the class = $44 + 6 + 5 = 55$
36. (4) The new sequence becomes 9 5 1 8 2 3 4 7 8 3 counting to the left, the seventh number is 8.
37. (3) Suman is 17th from the last and Raman is 7 ranks ahead of Suman. So Raman is 24th from the last.
 $\therefore$ Raman rank from the start is $39 + 1 - 24$ i.e., 16th
38. (3) Rank of Mohan from the bottom = $(41 + 1) - 7 = 35$ th.
Rank of Ramesh from the bottom = $(41 + 1) - 11 = 31$ st.
39. (4) Clearly, number of boys towards the left of Manish = $(40 - 14) = 26$.
So, Manish is 27th from the left end.

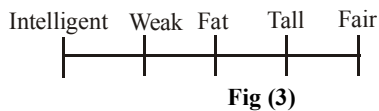
Exercise 2

Qs. 1 to 3

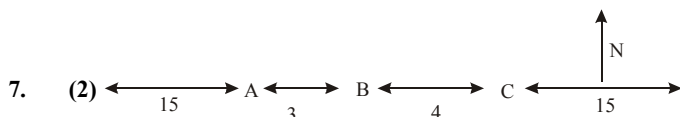
Information given in the question that one of the two person at the extreme ends is intelligent and other one is fair, suggests two conditions as shown in fig. (1) and (2).



Information that a tall person is sitting to the left of fair person rules out the possibility of fig. (1) as no person in fig.(1) can sit to the left of fair person. Therefore, only fig. (2) shows the correct positions of intelligent and fair persons. Now rest -of the information regarding the position of other persons can easily be inserted. The final ranking of their sitting arrangement is as shown in fig. (3).

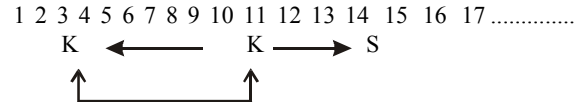


1. (2) 2. (1) 3. (2)
4. (2) Since Rita and Monika exchange places, so Rita's new position is the same as Monika's earlier positions. This position is 17th from the right and 10th from the left
 $\therefore$ Number of girls in the row = $(16 + 1 + 9) = 26$.
5. (3) On subtracting 3 from the middle digits, the numbers become : 559 332 524 341 412
Now, on reversing the positions of digits, we have:
955 233 425 143 214
Arranging these numbers in descending order, we have:
955 425 233 214 143
The middle number is 233 and its last digit is 3.
6. (1) As mentioned, the seventh day of the month is three days earlier than Friday, which is Tuesday.
So, the fourteenth day is also Tuesday and thus, the nineteenth day is Sunday.



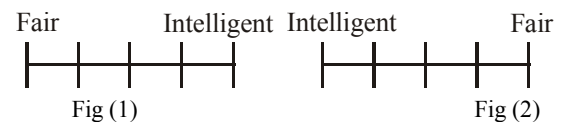
Clearly, according to the given conditions, there are 15 boys to the left of A, as well as to the right of C. Also, B lies between A and C such that there are 3 boys between A and B and 4 boys between B and C. So, number of boys in the row = $(15 + 1 + 3 + 1 + 4 + 1 + 15) = 40$.

8. (3) Let the number of boys be x .
Then, number of girls = $2x$.
 $\therefore x + 2x = 60$ or $3x = 60$ or $x = 20$.
So, number of boys = 20 and number of girls = 40.
Number of students behind Kamal in rank $(60 - 17) = 43$.
Number of girls ahead of Kamal in rank = 9.
Number of girls behind Kamal in rank = $(40 - 9) = 31$
 $\therefore$ Number of boys behind Kamal in rank = $(43 - 31) = 12$.
9. (3) A is 18th from front and C is 24th
Number of persons between A and C = 6.
Since C is exactly in middle of A and B, so number of persons between C and B = 6.
10. (2) Since Rita and Monika exchange places, so Rita's new position is the same as Monika's earlier positions. This position is 17th from the right and 10th from the left
 $\therefore$ Number of girls in the row = $(16 + 1 + 9) = 26$.
11. (4) On shifting 4 the left Komal is 10th from the left end of the row. Thus, Komal's original position was 14th from the left end.

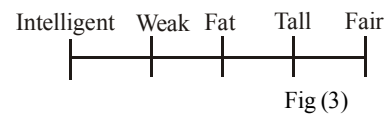


Swati is 3 places to the right of Komal's original positions
Clearly, swati is 17th from the left end.
Number of girls to the right of swati = $(40 - 17) = 23$.
Thus, Swati is 24th from the right end of the row.

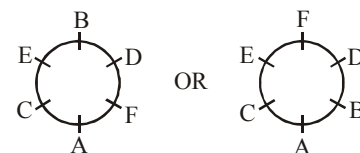
- 12-14 Information given in the question that one of the two person at the extreme ends is intelligent and other one is fair, suggests two conditions as shown in fig. (1) and (2).



Information that a tall person is sitting to the left of fair person rules out the possibility of fig. (1) as no person in fig.(1) can sit to the left of fair person. Therefore, only fig. (2) shows the correct positions of intelligent and fair persons. Now rest -of the information regarding the position of other person can easily be inserted. The final ranking of their sitting arrangement is as shown in fig. (3).



15. (4) Cannot be determined
16. (1) Data inadequate
17. (4)



18. (2) So, either F or B is facing A.
C is facing D.