



MATHS

BOOKS - JBD PUBLICATION

PERMUTATIONS AND COMBINATIONS

Exercise

1. The value of ${}^{12}C_3$ is equal to:

A. 2112

B. 220

C. 36

D. none of these

Answer:



Watch Video Solution

2. The number of permutation of the letters of the word 'ALLAHABAD' are:

A. 9!

B. $\frac{9!}{2!}$

C. $\frac{9!}{4!2!}$

D. $\frac{9!}{2!2!}$

Answer:



Watch Video Solution

3. The value of ${}^{10}C_3$ is:

A. 720

B. 120

C. $\frac{10}{3}$

D. None of these

Answer:



Watch Video Solution

4. The number of diagonals of a regular decagon are:

A. 53

B. 25

C. 30

D. 35

Answer:



Watch Video Solution

5. If $\frac{1}{4!} + \frac{1}{5!} = \frac{x}{6!}$, then x is equal to:

A. 15

B. 36

C. 20

D. 24

Answer:



Watch Video Solution

6. The number of diagonals of a regular polygon of n sides are:

A. $\frac{n - 3}{2}$

B. $n \frac{n - 3}{2}$

C. $n \frac{n - 3}{3}$

D. none of these

Answer:



Watch Video Solution

7. The value of $8P_1$ is:

A. $8!$

B. $7!$

C. 8

D. 7

Answer:



Watch Video Solution

8. The number of straight lines that can be formed by joining 20 points of which 4 points are collinear is:

A. 183

B. 197

C. 185

D. 195

Answer:



Watch Video Solution

9. In how many ways can 5 different beads be arranged to form a necklace?

A. 24

B. 42

C. 44

D. 12

Answer:



Watch Video Solution

10. The value of nP_r , and nC_r will be equal when

A. $n=2r$

B. $r=0$ or 1

C. $n=r$

D. $n=3r$

Answer:



Watch Video Solution

11. ${}^nC_r + 2^n C_{r+1} + {}^nC_{r+2}$ is equal to
 $(2 \leq r \leq n)$

A. ${}^{2n}C_{r+2}$

B. ${}^{n+1}C_{r-1}$

C. ${}^{n+2}C_{r+2}$

D. none of these

Answer:



Watch Video Solution

12. The number of words that can be formed with or without meaning using the letters of the word 'MONDAY', when no letter is repeated is:

A. 120

B. 1

C. 720

D. 0

Answer:



Watch Video Solution

13. The number of arrangements of the letters of the word 'BHARAT' taken all at a time is:

A. 360

B. 120

C. 260

D. none of these

Answer:



Watch Video Solution

14. Find the number of 4-digit numbers that can be formed using the digits 1, 2, 3, 4, 5 if no digit is repeated. How many of these will be even?

A. 120

B. 300

C. 420

D. none of these

Answer:



Watch Video Solution

15. The number of possible words that can be formed using letters of word 'MATHEMATICS' is

A. $\frac{11!}{2!2!3!}$

B. $11!$

C. ${}^{11}C_3$

D. none of these

Answer:



Watch Video Solution

16. In how many ways can 5 boys and 3 girls sit in a row so that no two girls are sit together?

A. 1880

B. 2880

C. 3880

D. none of these

Answer:



Watch Video Solution

17. ${}^n P_5 = 20 \cdot {}^n P_3$, then n is equal to:

A. 8

B. 9

C. 10

D. none of these

Answer:



Watch Video Solution

18. Number of ways in which 8 boys can sit in a circle

A. $7!$

B. $6!$

C. $5!$

D. none of these

Answer:



Watch Video Solution

19. The value of $\frac{{}^nC_r}{{}^nC_{r+1}}$ is equal to:

A. $\frac{r+1}{n-r}$

B. $\frac{n}{n-r}$

C. $\frac{n-r}{r}$

D. none of these

Answer:



Watch Video Solution

20. The value of $\frac{{}^nC_r}{{}^nC_{r-1}}$ is equal to:

A. $\frac{n-2}{r}$

B. $\frac{n}{n-r}$

C. $\frac{n-r}{r}$

D. $n-r+1/r$

Answer:



Watch Video Solution

21. $nC_r + {}^nC_{r+1} = {}^{n+1}C_x$, then x is equal to:

A. $2r$

B. $\frac{r-1}{2}$

C. $r+1$

D. none of these

Answer:



Watch Video Solution

22. If ${}^nC_{12} = {}^nC_8$, then n is equal to:

A. 20

B. 4

C. 8

D. none of these

Answer:



Watch Video Solution

23. Number of ways a cricket team can be selected out of batch of 15 players if a particular player is never chosen is:

A. 560

B. 480

C. 364

D. None of these.

Answer:



Watch Video Solution

24. A man has 6 friends. Number of ways he can invite one or more of them to a tea party is

A. 13

B. 23

C. 63

D. 83

Answer:



Watch Video Solution

25. A polygon has 44 diagonals. The number of its sides is

A. 9

B. 8

C. 7

D. 11

Answer:



Watch Video Solution

26. If ${}^{20}C_r = {}^{20}C_{r+4}$, then rC_3 is equal to:

A. 50

B. 56

C. 66

D. None of these

Answer:



Watch Video Solution

27. If ${}^{20}C_{r+1} = {}^{20}C_{r-1}$, then r is equal to:

A. 10

B. 15

C. 20

D. None of these

Answer:



Watch Video Solution

28. If $mC_1 = nC_2$, then

A. $2m=n$

B. $2m=n(n+1)$

C. $2m=n(n-1)$

D. None of these

Answer:



Watch Video Solution

29.

If

$$C_0 + C_1 + C_2 + \dots + C_n = 256,$$

then ${}^{(2n)}C_2$ is equal to:

A. 110

B. 120

C. 130

D. None of these

Answer:



Watch Video Solution

Example

1. Find the number of different 8-letter arrangements that can be made from the letters of the word DAUGHTER so that all vowels occur together.



Watch Video Solution

2. A class has 30 students, In how many ways can three prizes be awarded so that:
no student gets more than one prize?



Watch Video Solution

3. A class has 30 students, In how many ways can three prizes be awarded so that:
a student may get any number of prizes?



Watch Video Solution

4. A coin is tossed 3 times and the outcomes are recorded. How many possible outcomes are there?



Watch Video Solution

5. How many 3-digit even numbers can be formed from the digits 1, 2, 3, 4, 5, 6 if the digits can be repeated?



Watch Video Solution

6. How many 3-digit even numbers can be formed from the digits 1, 2, 3, 4, 5, 6 if the digits can be repeated?



Watch Video Solution

7. How many 3-digit numbers are there without repetition?



Watch Video Solution

8. If $\frac{1}{6!} + \frac{1}{7!} = \frac{x}{8!}$, find x



Watch Video Solution

9. Show that

$$(2n) \frac{!}{n} \neq [1.3.5. \dots (2n - 1)] 2^n$$

.



Watch Video Solution

10. How many 4-digit numbers are there with no digit repeated?



Watch Video Solution

11. How many numbers are there between 1000 and 9999 so that no digit is repeated.



Watch Video Solution

12. In how many ways can 5 girls be seated in a row so that two girls Ridhi and Sanya are always together?



Watch Video Solution

13. In how many ways can 5 girls be seated in a row so that two girls Ridhi and Sanya are never together?



Watch Video Solution

14. Find the number of permutations of the letters of word 'DISSIMILAR' when all are taken at a time.



Watch Video Solution

15. If $nC_6 = nC_2$, find nC_2 .



Watch Video Solution

16. If $10C_r = {}^{10}C_2$ find the values of r .



Watch Video Solution

17. A bag contains 5 black and 6 red balls.

Determine the number of ways in which 2 black and 3 red balls can be selected.



[Watch Video Solution](#)

18. In how many ways can a student choose a programme of 5 courses if 9 courses are available and 2 specific courses are compulsory for every student?

[Watch Video Solution](#)

19. How many chords can be drawn through 21 points on a circle?

[Watch Video Solution](#)

20. Out of 18 points in a plane, no three are in the same straight line except 5 point which are collinear. Find the number of lines that can be formed by joining them?



Watch Video Solution

21. How many 3-digit numbers can be formed from the digits 1, 2, 3, 4 and 5 assuming that repetition of the digits is allowed?

[Watch Video Solution](#)

22. How many 3-digit numbers can be formed from the digits 1, 2, 3, 4 and 5 assuming that repetition of the digits is not allowed?

[Watch Video Solution](#)

23. If $\frac{n!}{2!(n-2)!} : \frac{n!}{4!(n-4)!} = 2:1$. Find the value of n .

[Watch Video Solution](#)

24. show that 2^{16} divides $32!$. also, find the largest value of n for which $32!$ is divisible by 2^n .



Watch Video Solution

25. What is the largest power of 2 contained in $32!$.



Watch Video Solution

26. How many different words (with or without meaning) can be formed using all the letters of word 'WARDEN'? How many of these words being with w and end with N?



Watch Video Solution

27. Find the value of n such that

$${}^n P_5 = 42 {}^n P_3, \quad n > 4.$$



Watch Video Solution

28. Find n if ${}^{n-1}P_3 : {}^nP_4 = 1 : 9$.



Watch Video Solution

29. Find r if ${}^5P_r = 2 \cdot {}^6P_{r-1}$.



Watch Video Solution

30. How many words, with or without meaning can be made from the letters of the word

MONDAY, assuming that no letter is repeated,
if, 4 letters are used at a time?



Watch Video Solution

31. How many words, with or without meaning
can be made from the letters of the word
MONDAY, assuming that no letter is repeated,
if, all letters are used at a time?



Watch Video Solution

32. How many words, with or without meaning can be made from the letters of the word MONDAY, assuming that no letter is repeated, if, all letters are used but first letter is a vowel?



Watch Video Solution

33. How many words, with or without meaning can be made from the letters of the word MONDAY, assuming that no letter is repeated, if, all letters are used but first letter is a vowel?





34. How many words can be formed by using the letters of the word 'ORIENTAL' so that A and E always occupy the odd places?

A.

B.

C.

D.

Answer:



[Watch Video Solution](#)

35. There are three prizes to be distributed among 6 students. In how many ways can this be done when no boy gets more than one prize.



[Watch Video Solution](#)

36. There are three prizes to be distributed among 6 students. In how many ways can this be done when

there is no restriction as to the number of prizes that a boy may get.



Watch Video Solution

37. There are three prizes to be distributed among 6 students. In how many ways can this be done when no boy gets all prizes.



Watch Video Solution

38. In how many ways can the letters of the word ASSASSINATION be arranged so that all the S's are together ?



Watch Video Solution

39. In how many ways can be letters of word 'ASSASSINATION' be arranged so that:
the arrangements be such that they start with O and end with T?



Watch Video Solution

40. How many different words, with or without meaning can be formed by using the letters of the word 'HARYANA'? Also, find as to: how many of these begin with H and end with N?



Watch Video Solution

41. How many different words, with or without meaning can be formed by using the letters of

the word 'HARYANA'? Also, find as to:

in how many of these H and N are together?



Watch Video Solution

42. How many different words can be formed by using the letters of the word 'ALLAHABAD'

In how many of these do the vowels occupy even positions.



Watch Video Solution

43. How many different words can be formed by using the letters of the word 'ALLAHABAD'

In how many of these, the two L's do not come together?



Watch Video Solution

44. A committee of 7 has to be formed from 9 boys and 4 girls. In how many ways can this be done when the committee consists of: exactly 3 girls ?



[Watch Video Solution](#)

45. A committee of 7 has to be formed from 9 boys and 4 girls. In how many ways can this be done, when the committee consists of:
at least 3 girls?

[Watch Video Solution](#)

46. A committee of 7 has to be formed from 9 boys and 4 girls. In how many ways can this be

done when the committee consists of: atmost
3 girls ?



Watch Video Solution

47. In an examination, a question paper consists of 12 questions divided into two parts i.e., Part I and Part II, containing 5 and 7 questions, respectively. A student is required to attempt 8 questions in all, selecting at least 3 from each part. In how many ways can a student select the questions ?



Watch Video Solution

48. From a class of 25 students, 10 are to be chosen for an excursion party. There are 3 students who decide that either all of them will join or none of them will join. In how many ways can the excursion party be chosen ?



Watch Video Solution

49. A group consists of 4 girls and 7 boys. In how many ways can a team of 5 members be

selected if the team has:

no girl.



Watch Video Solution

50. A group consists of 4 girls and 7 boys. In how many ways can a team of 5 members be selected if the team has:

at least one boy one girl.



Watch Video Solution

51. A group consists of 4 girls and 7 boys. In how many ways can a team of 5 members be selected if the team has:
at least 3 girls.



Watch Video Solution

52. If ${}^nC_{r-1} = 36$, ${}^nC_r = 84$ and ${}^nC_{r+1} = 126$, then find nC_2 .



Watch Video Solution

53. A bag contains 6 white marbles and 5 red marbles. Find the number of ways in which four marbles can be drawn from the bag if they can be of any colour.



Watch Video Solution

54. A bag contains 6 white marbles and 5 red marbles. Find the number of ways in which four marbles can be drawn from the bag if 2 must be white and 2 red.



Watch Video Solution

55. A bag contains 6 white marbles and 5 red marbles. Find the number of ways in which four marbles can be drawn from the bag if they must all be the same colour.



Watch Video Solution

56. There are 10 professors and 20 lecturers out of whom a committee of 2 professors and 3 lecturers is to be formed. Find

In how many ways can be committee be formed?



Watch Video Solution

57. There are 10 professors and 20 lectureres out of whom a committee of 2 professors and 3 lecturers is to be formed. Find
In how many ways a particular professor is included?



Watch Video Solution

58. There are 10 professors and 20 lecturers out of whom a committee of 2 professors and 3 lecturers is to be formed. Find

In how many ways a particular lecture is included?



Watch Video Solution

59. There are 10 professors and 20 lecturers out of whom a committee of 2 professors and 3 lecturers is to be formed. Find

In how many ways a particular lecturer is excluded?



Watch Video Solution