



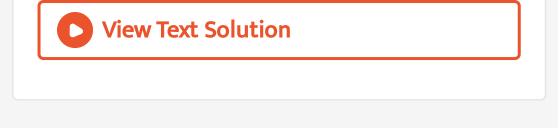
MATHS

BOOKS - MBD MATHS (ODIA ENGLISH)

PERMUTATIONS AND COMBINATIONS

Question Bank

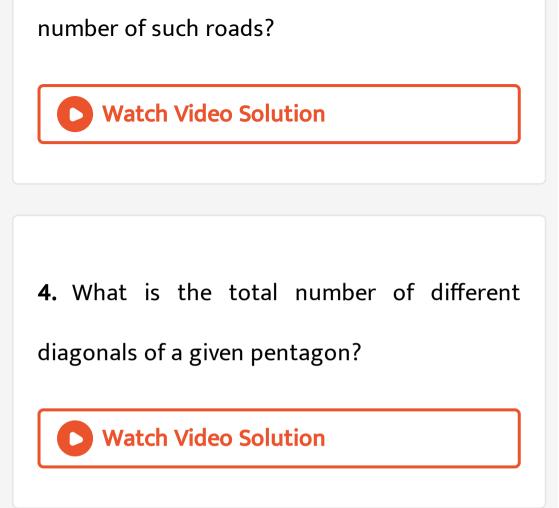
1. What is the total number of functions that can be defined from the set $\{1, 2\}$ to the set $\{1, 2, 3\}$?



2. A die of six faces marked with the integers 1,2,3,4,5,6 one on each face is thrown twice in succession, what is the total number of outcomes thus obtained?

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3. Five cities A,B,C,D,E are connected to each other by straight roads. What is the total



5. There are two routes joining city A to a city

B and three routes joining B to another city C .

In how many ways can a person perform a

journey from A to C?



6. How many different four letter words can be

formed by using the four letters a,b, c, d, while

the letter can be repeated ?



7. What is the sum of all three digit numbers

formed by using the digits 1,2,3,?

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8. How many different words with two letters can be formed by suing the letters of the word JUNGLE, each containing one vowel and one consonant ?

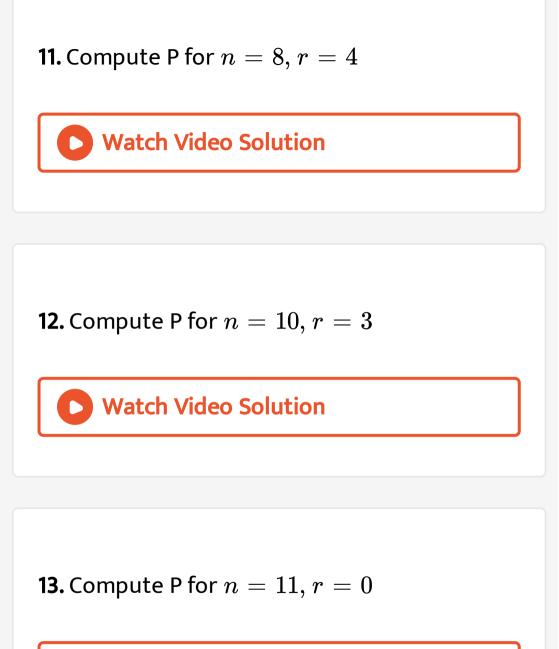
9. There are four doors leading to the inside of

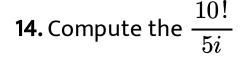
a cinema hall. In how many ways can a person

enter into it an come out ?

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10. Find the number of ways in which 5 different books can be arranged on a shelf.



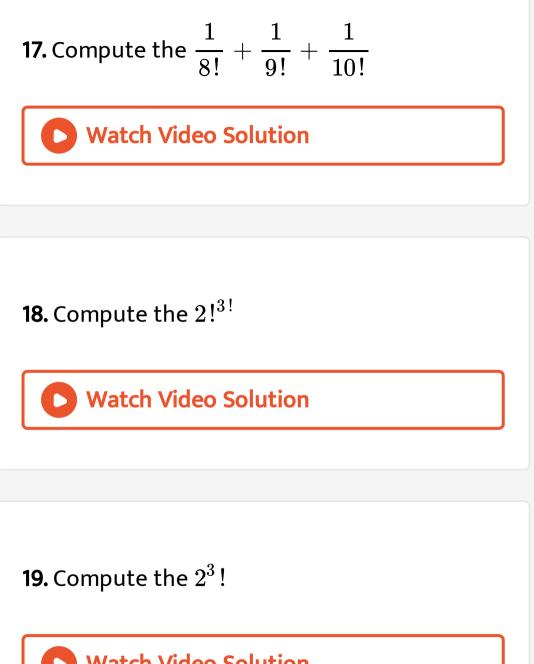


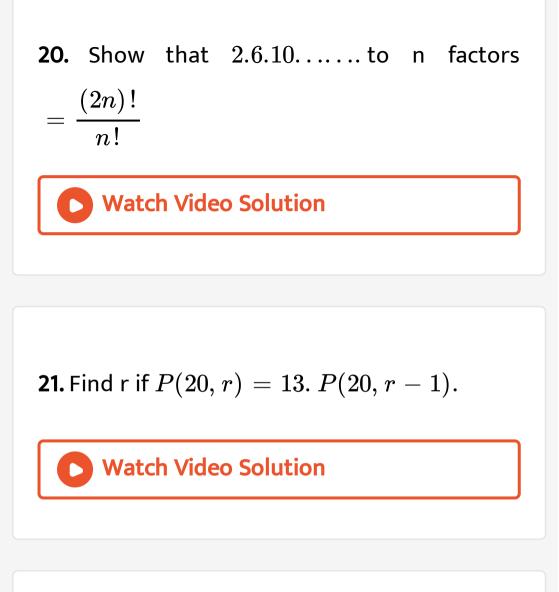


15. Compute the 5! + 6!



16. Compute the $3! \times 4!$



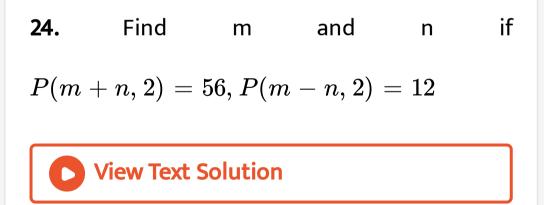


22. Find nifP(n, 4) = 12. P(n, 2)



$P(n-1,3): P(n+1,3) = 5: 12, ext{Find} \ n.$





25. Show that P(n, n) = P(n, n-1)"For all positive integers." Watch Video Solution 26. Show that P(m, 1) + P(n, 1) = P(M + n, 1)for all positive integers m, n. Watch Video Solution

27. How many two digit even number of distinct digits can be formed with the digits 1,2,3,4,5?



28. How many four -digit even numbers with distinct digits can be formed out of digits 0,1,2,3,4,5,6 ?



29. How many integers between 100 and 1000(both inclusive)consists of distinct odd digits ?



30. An unbiased die of six faces, market with the integers 1,2,3,4,5,6, one on each face, is thrown thrice in succession. What is the total number of outcomes ?



31. Find the total number of ways in which the letters of the word PRESENTATION can be arranged.



32. Find the number of all 4-lettered words

(not necessarily having meaning)that can be

formed using the letters of the word BOOKLET.



33. In how many ways can 2 boys and 3 girls sit

in a row so that no two girls sit side by side?



34. Five red marbles, four white marbles and three blue marbles of the same shape and size are placed in a row .Find the total number of possible arrangements.

35. How many of the functions Suppose A is a set of n elements and B is a set with m elements are one - one with (i)m=n ,(ii) m < n, (iii) m>n



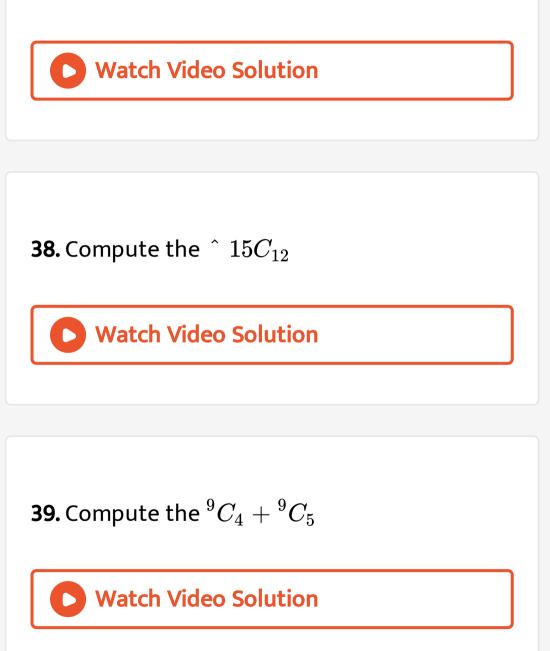
36. In how many ways can three men and three

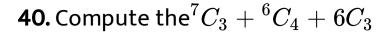
women sit at a round table so that no two

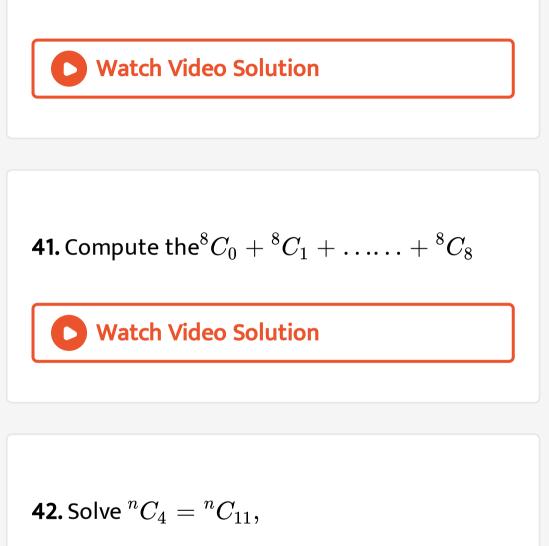
men can occupy adjacent positions?



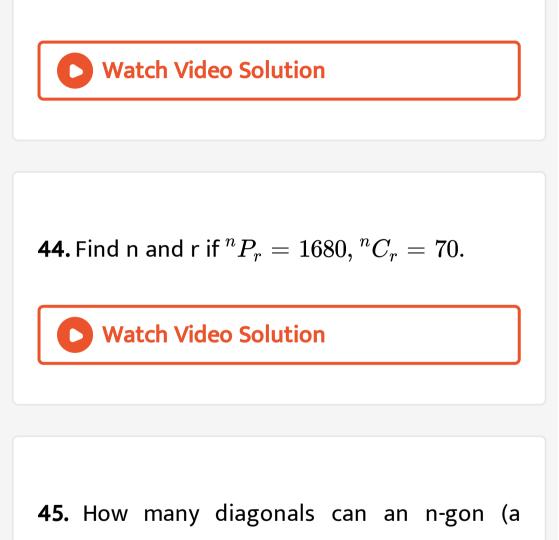
37. Compute the $\ ^{\circ}$ $12C_{3}$







43. Solve
$${}^{2n}C_3$$
 : ${}^nC_3 = 44$: 5



polygon with n sides) have ?

46. If a set A has n elements and another set B has m elements, what is the number of relations from A to B ?

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47. From five consonants and four vowels, how

many words consist of three consonants and

two vowels ?

48. In how many ways can a committee of four

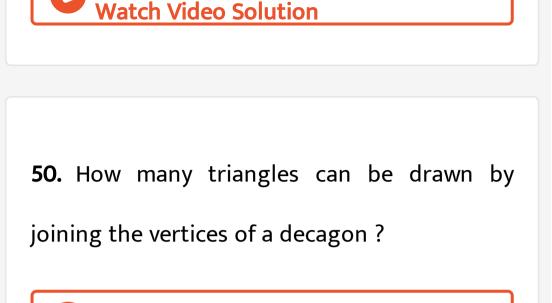
gentlemen and three ladies be formed out of

seven gentlemen and six ladies ?



49. A bag contains 4 black and 5 white balls out of which 6 balls are drawn arbitrarily. In how many ways can this be done? Find also the number of ways such that at least 3 black balls can be drawn .





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51. How many triangles can be drawn by

joining the vertices and the centre of a regular

hexagon?

52. Sixty points lie on a plane, out of which no

three points are collinear. How many straight

lines can be formed by joining pairs of points ?



53. In how many ways can 10 boys and 10 girls

sit in a row so that no two boys sit together ?



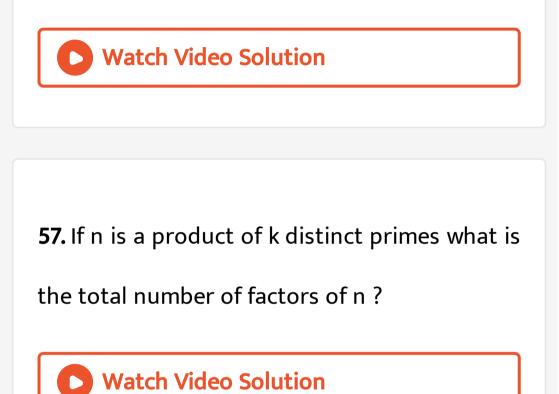
54. In how many ways can six men and seven girls sit in a row so that the girls always sit together ?



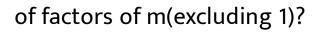
55. How many factors does 1155 have that are

divisible by 3?

56. How many factors does 210 have ?



58. If m has the prime factor decomposition $P_1^{r_1}, P_2^{r_2}, \ldots, P_n^{r_n}$, what is the total number





59. If 20! Were multiplied out, how many consecutive zeros would it have on the right?

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60. How many factors of 10,000 end with a 5

on the right ?



61. A man has 6 friends. In how many ways can

he invite two or more to a dinner party?



62. In how many ways can a student choose 5

courses out of 9 if 2 courses are compulsory?

63. In how many ways can a student choose five courses out of the courses. $C_1, C_2, \ldots, C_9 \text{if} C_1, C_2$ are compulsory and C_6, C_8 can not be taken together ?

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64. A cricket team consisting of 11 players is to be chosen from 8 batsmen and 5 bowlers. In how many ways can the team be chosen so as to include at least 3 bowlers ?



65. There are n+r points on a plane out of which n points lie on a straight line L and out of the remaining r points that lie outside L, no three points are collinear. What is the number of straight lines that can be formed by joining pairs of there points ?



66. There are 10 books in a shelf with different titles:five or these have red cover and others have green cover. In how many ways can these be arranged so that the red books are placed together ?