



# INDIAN SCHOOL AL WADI AL KABIR

**Class XI**, Mathematics *Worksheet- PERMUTATIONS AND COMBINATIONS*

## MCQ (1 Mark)

Q.1.	How many distinct triangles can be formed using 10 non-collinear points?						
A	120	B	90	C	100	D	720
Q2.	How many natural numbers are there between 100 and 1000 with distinct digits ?						
A	900	B	720	C	648	D	1000
Q3.	If $nC_2 = nC_8$ , find $nC_2$						
A	10	B	100	C	90	D	45
Q4.	Evaluate: $20C_{13} + 20C_{14} - 20C_6 - 20C_7$ ,						
A	1	B	0	C	20	D	80
Q5.	How many four-letter codes can be formed using the first 10 letter of the English alphabet, if no letter can be repeated?						
A	10000	B	9999	C	5040	D	$26^4$
Q6.	If $\frac{1}{5!} + \frac{1}{6!} = \frac{x}{7!}$ then value of $x$						
A	25	B	36	C	49	D	18
Q7	It is required to seat 5 men and 4 women in a row so that the women occupy the even places. How many such arrangements are possible?						
A	2880	B	3600	C	2400	D	360

Q8	If ${}^5P_r = 2 \cdot {}^6P_{r-1}$ , then value of r.						
A	5	B	3	C	8	D	6
<b>VERY SHORT ANSWER (2 Marks)</b>							
Q9	A convex polygon has 27 diagonals. Find the number of sides						
Q10	There are 10 points, out of these 4 points are collinear. Find the number of straight lines obtained from the points?						
Q11	There are 10 points, out of these 4 points are collinear. Find the number of triangles obtained from the points?						
Q12	Find r if $nC_r - 7C_3 = 7C_2$						
Q13	How many words with or without meaning can be formed using all letters of the word "ALGEBRA"						
<b>LONG ANSWER TYPE- 1(3Marks)</b>							
Q14	Find n and r if $nP_r = 120$ and $nC_r = 20$						
Q15.	If all words formed by using all the letters of the word LIMIT, are arranged in dictionary order, what is the rank of the word 'TIILM'						
Q16.	In a question paper there are 6 questions in section A and 7 questions in section B. How many ways one can attempt 8 question such that at least 3 questions to be answered from each section.						
Q17	Find the number of words with or without meaning can formed by using all letters of the word "STATISTICS" (a) How many of these words starts with S and ends with S? (b) How many of these words are with vowels together? (c) How many of these words starts with vowels together and consonants together?						
Q18	In a certain city, all telephone numbers have 5 digits, the first two digits always being 41 or 42 or 46 or 62 or 64. How many telephone numbers have all six digits distinct?						
Q19	Find the number of integers greater than 7000 that can be formed with the digits 3, 5, 7, 8 and 9 where no digits are repeated.						
Q20	If $nC_4$ , $nC_5$ and $nC_6$ are three consecutive terms of an AP, find n .						

Q21	Find the number of arrangements of the letters of the word INDEPENDENCE. In how many of these arrangements, (i) do the words start with P (ii) do all the vowels always occur together (iii) do the vowels never occur together
<b>Long ANSWER TYPE-2 (5marks)</b>	
Q22	If $nC_{r-1} : nC_r : nC_{r+1} = 1:7:42$ , then find n and r.
Q23	Find the number of ways of choosing 4 cards from a pack of 52 playing cards. In how many of these (i) four cards of the same suit? (ii) four cards belong to four different suits? (iii) are face cards? (iv) two red cards and two are black cards? v) cards of the same colour?

<b>Answers</b>								
<b>Answers</b>	1	A	2	C	3.	D	4	B
	5	C	6	C	7	A	8	B
	9.	9	10	40	11	116		
	12	3 or 5	13	2520	14	n= 6, r = 3	15	49
	16	1155	17	50400 (i)3360 (ii)3360 (iii)840	18	8400	19	120+72=192
20	n= 7 or 14	21	1663200 (i)138600 (ii) 16800 (iii)1646400	22	n =55 and r =7	23	270725 (i) 286. (ii) 13 <sup>4</sup> (iii) 495 (iv)105625 (v)29900	

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