



COUNTING PRINCIPLE – PERMUTATIONS

Find the smallest value of n , which satisfies the inequality : ${}^n P_7 > {}^n P_6$

If ${}^{m+n}P_3 = 210$, ${}^{m-n}P_2 = 6$, find : m , n

Prove that : ${}^n P_r + r \times {}^n P_{r-1} = {}^{n+1} P_r$

From the digits $\{1, 2, 3, 4, 5, 6, 7\}$ find :

- (1) How many 4 - different digit numbers can be formed.
- (2) How many 7 - different digit numbers can be formed.
- (3) How many 5 - different digit numbers such that its unit digit is 4 , can be formed.
- (4) How many 7 - different digit odd numbers can be formed.
- (5) How many 3 - different digit numbers , greater than 400 , can be formed.

(2) How many 3 - different digit numbers > 400 can be formed.

(4) How many 7 - different digit odd numbers can be formed.

Choose the correct answer from those given :

(1) The number of ways of arranging 4 persons in a row is

(a) 1

(b) 2

(c) 24

(d) 120

(2) The number of ways of forming a 2-digit number from the digits 0 , 1 , 2 , 3 equals

(a) 12

(b) 16

(c) 9

(d) 8

(3) If (X, y, z) are geometrical sequence , then $y^2 =$

(a) Xz

(b) $\pm\sqrt{Xz}$

(c) $X^2 z^2$

(d) 2

(4) If ${}^5P_{r+1} = 60$, then $r =$

(a) 5

(b) 4

(c) 3

(d) 2

(5) The sum of the series $\left(1 + \frac{4}{5} + \frac{7}{5^2} + \frac{10}{5^3} + \frac{13}{5^4} + \dots \text{ to 25 terms}\right) = \dots\dots\dots$

(a) $\frac{35}{16}$

(b) $\frac{7}{4}$

(c) 2.18

(d) $\frac{17}{13}$

(6) If ${}^n P_x + {}^x P_n = 1440$, then ${}^{n+4} C_{x-5} = \dots\dots\dots$

(a) 720

(b) 24

(c) 6

(d) 10

(7) The sum of n arithmetic means between the two numbers $a, b = \dots\dots\dots$

(a) $n(a + b)$

(b) $\frac{n}{2}(a + b)$

(c) $\frac{(n+1)(a+b)}{2}$

(d) $\frac{a+b}{2}$

(8) If ${}_{n-1} P_1 = 120$, ${}_{n-r} P_r = 6$, then ${}^n P_r = \dots\dots\dots$

(a) 720

(b) $6 \times 5 \times 4$

(c) $3 \times 5 \times 5$

(d) 6×5

(g) 150

(p) $9 \times 2 \times 4$

(c) $3 \times 2 \times 2$

(q) 9×2

(8) If ${}_{n-1} P_1 = 150$, ${}_{n-1} P_2 = 9$, then ${}_{n-1} P_3 = \dots\dots\dots$

5

5

5

(9) An arithmetic sequence in which $\frac{T_2}{T_3} = \frac{15}{7}$, then $\frac{S_7}{S_3} = \dots\dots\dots$

- (a) $\frac{22}{17}$ (b) $\frac{21}{5}$ (c) $\frac{16}{15}$ (d) $\frac{15}{7}$

(10) If $n \mid 2n - 1 = 12$, then $n = \dots\dots\dots$

- (a) 4 (b) 2 (c) 6 (d) 5

(11) If the unit digit in $\lfloor n \rfloor$ does not equal zero, then $\dots\dots\dots$

- (a) $n > 4$ (b) $n < 4$ (c) $n > 9$ (d) n is an odd number.

(12) If $\sum_{r=1}^n \log\left(\frac{r+1}{r}\right) = 2$, then $n = \dots\dots\dots$

- (a) 10 (b) 20 (c) 99 (d) 100

- (g) 10 (p) 50 (c) 88 (q) 100

(13) If $\sum_{k=1}^L \log\left(\frac{k}{k+1}\right) = 5$, then $L = \dots\dots\dots$