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$^nC_r =$

$S_3 S_1 S_6 S_7 S_5$ ✓

$\boxed{S_1 S_3 S_5 S_6 S_7}$

30 students

arrange 30 students in chairs $\rightarrow$ $^{30}P_5 = \frac{30!}{25!}$

$= {}^{30}C_5 \; 5!$

↓ select 5

$= {}^{30}C_5 = \frac{30!}{25!\,5!} = \frac{30 \times 29 \times 28 \times 27 \times 26}{5!}$

$= \frac{30 \times 29 \times 28 \times 27 \times 26}{5 \times 4 \times 3 \times 2}$

Arrange n person in 'r' seat $0 \le r \le n$

$\boxed{P_1 P_2 \cdots P_r}\; r!$

$P_1 P_3 P_4 \cdots P_r P_{r+1} \rightarrow r!$

$^nP_r = \underbrace{r! + r! + r! + \cdots + r!}_{^nC_r \text{ times}} = {}^nC_r \; r!$

$$\boxed{{}^nC_r = \frac{{}^nP_r}{r!} = \frac{n!}{(n-r)!\,r!}}$$

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$${}^{n}C_{r} = {}^{n}C_{n-r} \rightarrow \text{Pascal's mirror formula}$$

$$\frac{n!}{(n-r)!\,(n-(n-r))!} = \frac{n!}{(n-r)!\,r!}$$

$${}^{n}C_{r} = {}^{n-1}C_{r} + {}^{n-1}C_{r-1} \rightarrow \text{Pascal's triangle formula}$$

$$r\,{}^{n}C_{r} = n\,{}^{n-1}C_{r-1}$$

$$\frac{{}^{n}C_{r}}{r+1} = \frac{{}^{n+1}C_{r+1}}{n+1}$$

n

r objects

$n-r$

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Select 'r' persons out of 'n' given persons.

$P_1\ P_2\ P_3 \ldots P_n$.

$0 \le r \le n$

$= {}^{n}C_r$

$=$ P_1 is present in the selection $+$ P_1 is not present in selection.

$= 1 \times {}^{n-1}C_{r-1} + {}^{n-1}C_r$

select P_1

select $r-1$ persons

P.T. $\quad {}^nP_r = r\,{}^{n-1}P_{r-1} + {}^{n-1}P_r$

arrange 'n' person in 'r' seats $=$ P_1 is there $+$ P_1 is not there.

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

arrange P_1

arranging remaining persons

_ _ . . $\underline{P_1}$ . . _

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$$r \, {}^{n}C_r = n \, {}^{n-1}C_{r-1}$$

select 'r' person out of 'n' persons

$$= {}^{n}C_r$$

$$= n \times {}^{n-1}C_{r-1}$$

select 1st person

selecting remaining persons

$\boxed{P_1}$ $\boxed{P_2 P_3 \cdots P_r}$

$\boxed{P_2}$ $\boxed{P_1 P_3 \cdots P_r}$

$\boxed{P_3}$ $\boxed{P_1 P_2 P_4 \cdots P_r}$

$\vdots$

$\boxed{P_r}$ $\boxed{P_1 P_2 \cdots P_{r-1}}$

1. ② ${}^{10}C_3 - {}^4C_3$ or $0 + {}^4C_2 \times {}^6C_1 + {}^4C_1\,{}^6C_2 + {}^6C_3$

6 points (no 3 are collinear)

Find no. of

③ ${}^{10}C_4 - \left({}^4C_4 + {}^4C_3\,{}^6C_1\right)$

or ${}^4C_2\,{}^6C_2 + {}^4C_1\,{}^6C_3 + {}^6C_4$

① straight lines

② triangles

③ quadrilaterals

using these points.

4 collinear points.

① ${}^{10}C_2 - {}^4C_2 + 1$

or $1 + {}^4C_1\,{}^6C_1 + {}^6C_2$

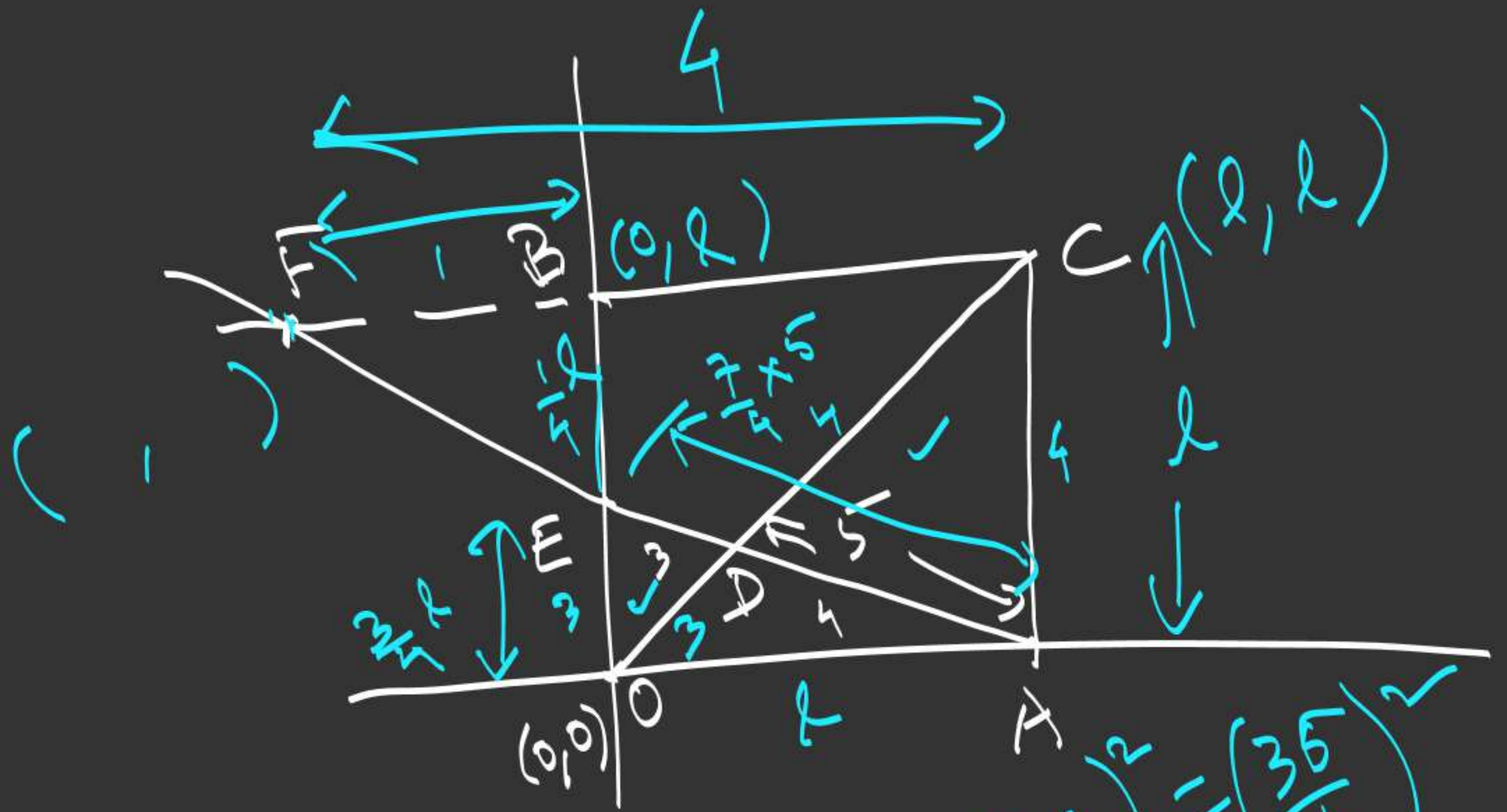
$$\frac{10!}{8!\,2!} - \frac{4!}{2!\,2!} + 1$$

$$= \frac{10\times 9}{2\times 1} - \frac{4\times 3}{2\times 1} + 1$$

$$= 45 - 6 + 1$$

$$= \boxed{40}$$

Match the Columns (St. line) T Test (1-20)



$$l^2 + \left(\frac{3}{4}l\right)^2 = \left(\frac{35}{4}\right)^2$$

$$l = 9$$