



SpeedLabs

MATHS

CBSE 11th

TEEVRA EDUTECH PVT. LTD.

Permutations and Combinations

Exercise- 7.2

1. Evaluate

(i) $8!$ (ii) $4! - 3!$

Ans (i) $8! = 1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 = 40320$

(ii) $4! = 1 \times 2 \times 3 \times 4 = 24$

$3! = 1 \times 2 \times 3 = 6$

$\therefore 4! - 3! = 24 - 6 = 18$

2. Is $3! + 4! = 7!$?

Ans $3! = 1 \times 2 \times 3 = 6$

$4! = 1 \times 2 \times 3 \times 4 = 24$

$\therefore 3! + 4! = 6 + 24 = 30$

$7! = 1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 = 5040$

$\therefore 3! + 4! \neq 7!$

3. Compute $\frac{8!}{6! \times 2!}$

Ans. $\frac{8!}{6! \times 2!} = \frac{8 \times 7 \times 6!}{6! \times 2 \times 1} = \frac{8 \times 7}{2} = 28$

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

Ans. $\frac{1}{6!} + \frac{1}{7!} = \frac{x}{8!}$

$\Rightarrow \frac{1}{6!} + \frac{1}{7 \times 6!} = \frac{x}{8 \times 7 \times 6!}$

$\Rightarrow \frac{1}{6!} \left(1 + \frac{1}{7} \right) = \frac{x}{8 \times 7 \times 6!}$

$\Rightarrow 1 + \frac{1}{7} = \frac{x}{8 \times 7}$

$\Rightarrow \frac{8}{7} = \frac{x}{8 \times 7}$

$\Rightarrow x = \frac{8 \times 8 \times 7}{7}$

$\therefore x = 64$

5. Evaluate $\frac{n!}{(n-r)!}$, when (i) $n = 6, r = 2$ (ii) $n = 9, r = 5$

Ans. (i) When $n = 6, r = 2$,

$$\frac{n!}{(n-r)!} = \frac{6!}{(6-2)!} = \frac{6!}{4!} = \frac{6 \times 5 \times 4!}{4!} = 30$$

(ii) When $n = 9, r = 5$, $\frac{n!}{(n-r)!} = \frac{9!}{(9-5)!} = \frac{9!}{4!} = \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4!}{4!}$

$$= 9 \times 8 \times 7 \times 6 \times 5 = 15120$$