

**CBSE Class-11 Mathematics**  
**NCERT Solutions**  
**Chapter - 7 Permutations and Combinations**  
**Exercise 7.2**

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**1. Evaluate:**

**(i)  $8!$**

**(ii)  $4! - 3!$**

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

**(ii)**  $4! - 3! = 4 \times 3 \times 2 \times 1 - 3 \times 2 \times 1 = 24 - 6 = 18$

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

**Ans.**

$$\text{LHS} = 3! + 4! = 3 \times 2 \times 1 + 4 \times 3 \times 2 \times 1$$

$$= 6 + 24 = 30$$

$$\text{RHS} = 7! = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5040$$

$$\therefore \text{LHS} \neq \text{RHS}$$

No,

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

**Ans. Given :**  $\frac{8!}{6! \times 2!} = \frac{8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{6 \times 5 \times 4 \times 3 \times 2 \times 1 \times 2 \times 1} = \frac{8 \times 7}{2} = 28.$

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

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

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

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

$$\Rightarrow \frac{8}{7} = \frac{x}{8 \times 7} \Rightarrow x = 8 \times 8 = 64.$$

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**5. Evaluate:  $\frac{n!}{(n-r)!}$  when**

**(i)  $n = 6, r = 2$**

**(ii)  $n = 9, r = 5$**

**Ans. (i)** Given:  $n = 6$  and  $r = 2$

$$\begin{aligned} \therefore \frac{n!}{(n-r)!} &= \frac{6!}{(6-2)!} = \frac{6!}{4!} \\ &= \frac{6 \times 5 \times 4 \times 3 \times 2 \times 1}{4 \times 3 \times 2 \times 1} = 6 \times 5 = 30. \end{aligned}$$

**(ii)** Given:  $n = 9$  and  $r = 5$

$$\begin{aligned} \therefore \frac{n!}{(n-r)!} &= \frac{9!}{(9-5)!} = \frac{9!}{4!} \\ &= \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{4 \times 3 \times 2 \times 1} = 9 \times 8 \times 7 \times 6 \times 5 = 15120. \end{aligned}$$