CLASS-10+1 CH-7 PERMUTATIONS & COMBINATIONS
EX-7.2 BOOK-NCERT TOPIC- PERMUTATION & Factorial notation

Factorial (! or $\lfloor$)

$n!$ or $\lfloor n = n(n-1)(n-2) \cdots 3.2.1$

$\lfloor 1 = 1 \quad \lfloor 2 = 2 \times 1 = 2 \quad \lfloor 3 = 3 \times 2 \times 1 = 6$

$\lfloor 4 = 4 \times 3 \times 2 \times 1 = 24 \quad \lfloor 5 = 5 \times 4 \times 3 \times 2 \times 1 = 120$

$= 5 \times 4! =$

$= 5 \times 24 = 120$

$\lfloor 6 = 6 \times 5! = 6 \times 120 = 720$

$\lfloor 7 = 7 \times 6! = 7 \times 720 = 5040$

$\lfloor 8 = 8 \times 7! = 8 \times 5040 = 40320$

$\lfloor 0 = 1$

EXERCISE 7.2

1. Evaluate
(i) 8 ! (ii) 4 ! – 3 !

(1) (i) $8! = 8\times7\times6\times5\times4\times3\times2\times1$
$= 40320$

(ii) $4! - 3!$
$= 24 - 6 = 18$

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

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

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

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

HW

Q-2 Is $3! + 4! = 7!$?

LHS $= 6 + 24 = 30$
RHS $= 7! = 5040$

LHS $\neq$ RHS
$\therefore$ No

Q-3 $\frac{8!}{6!\times 2!}$

$= \frac{8\times7\times6!}{6!\times2}$

$= 28$

Q-4 $\frac{1}{6!}+\frac{1}{7!}=\frac{x}{8!}$ find x

$1 \quad 1 \quad x$

Q-5 $\frac{n!}{(n-r)!}$

(i) $n=6 \quad r=2$

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

$$\frac{1}{6!}\left[\frac{1}{1} + \frac{1}{7}\right] = \frac{x}{56\times 6!}$$

$$\frac{7+1}{7} = \frac{x}{56}$$

$$\frac{8}{7} = \frac{x}{56}$$

$$x = \frac{8}{7}\times 56 = 64$$

(i) $n=6 \quad r=2$

$$= \frac{6!}{(6-2)!} = \frac{6!}{4!}$$

$$= \frac{6\times 5\times 4!}{4!}$$

$$= 30$$