



Permutations Ex 16.1 Q1

(i)

We have,

$$\frac{30!}{28!} = \frac{30 \times 29 \times 28!}{28!}$$

$$= 30 \times 29$$

$$= 870$$

$$\text{Hence, } \frac{30!}{28!} = 870$$

(ii)

We have,

$$\frac{11! - 10!}{9!} = \frac{11 \times 10 \times 9! - 10 \times 9!}{9!}$$

$$= \frac{9! \times 10 [11 - 1]}{9!}$$

$$= 10 \times 10$$

$$= 100$$

$$\text{Hence, } \frac{11! - 10!}{9!} = 100$$

(iii)

We have,

$$8! = 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$$

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

$$\text{and } 6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1$$

$$\therefore \text{L.C.M.} \{6!, 7!, 8!\} = 8!$$

Permutations Ex 16.1 Q2

L.H.S:

$$\frac{1}{9!} + \frac{1}{10!} + \frac{1}{11!}$$

$$\frac{1}{9!} + \frac{1}{10 \times 9!} + \frac{1}{11 \times 10 \times 9!}$$

$$= \frac{11 \times 10 + 11 + 1}{11 \times 10 \times 9!}$$

$$= \frac{110 + 11 + 1}{11!}$$

$$= \frac{122}{11!}$$

$$= \text{RHS}$$

$$\text{Hence, } \frac{1}{9!} + \frac{1}{10!} + \frac{1}{11!} = \frac{122}{11!}$$

Permutations Ex 16.1 Q3(i)

We have,

$$\frac{1}{4!} + \frac{1}{5!} = \frac{x}{6!}$$

$$\Rightarrow \frac{1}{4!} + \frac{1}{5 \times 4!} = \frac{x}{6 \times 5 \times 4!}$$

$$\Rightarrow 4! \times \left[\frac{1}{4!} + \frac{1}{5 \times 4!} \right] = \frac{x}{30}$$

$$\Rightarrow 1 + \frac{1}{5} = \frac{x}{30}$$

$$\Rightarrow \frac{6}{5} = \frac{x}{30}$$

$$\Rightarrow \frac{x}{30} = \frac{6}{5}$$

$$\Rightarrow x = \frac{6 \times 30}{5}$$

$$\Rightarrow x = 6 \times 6$$

$$\Rightarrow x = 36$$

Hence, $x = 36$.

***** END *****