Combinations Ex 17.1 Q2

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

Hence $n = n$

$r = 12$ and 5

Applying formula

$$^nC_p = ^nC_q = n$$

Then $p + q = n$

$$\Rightarrow \quad ^nC_{12} = ^nC_5$$
$$12 + 5 = n$$

$$\Rightarrow \quad n = 17$$

Combinations Ex 17.1 Q3

If $^nC_p = ^nC_q$

Then $p + q = n$

Also $^nC_r = \dfrac{n!}{r!(n-r)!}$ ....(i)

$$\Rightarrow \quad ^nC_4 = ^nC_6$$
$$4 + 6 = n$$

$$\Rightarrow \quad n = 10$$

then $^{12}C_n = ^{12}C_{10}$

Applying (i)

$$^{12}C_{10} = \frac{12!}{10!\ 2!}$$
$$= \frac{12 \times 11 \times 10!}{10! \times 2 \times 1}$$
$$= \frac{12 \times 11}{2 \times 1} = 66$$

Combinations Ex 17.1 Q4

If ${}^nC_p = {}^nC_q$

Then $p + q = n$

$$\Rightarrow \quad {}^nC_{10} = {}^nC_{12}$$
$$10 + 12 = n$$

$$\Rightarrow \quad n = 22$$

Find ${}^{23}C_n$

$$\Rightarrow \quad {}^{23}C_{22}$$

$$= \frac{23!}{22!\,1!}$$

$$= \frac{23 \times 22!}{22!}$$
$$= 23$$

Combinations Ex 17.1 Q5

If ${}^nC_p = {}^nC_r$ then $p + r = n$

$$\therefore \quad x + 2x + 3 = 24$$
$$3x = 21$$
$$x = 7$$

*********** END **********