

Que 8! - How much way one can arrange,  $n$  letter and  $n$  -envelop so that no letter's envelop will go to right envelop.  
 find ans taking  $n=6$ .

Solution: -

so by the theorem / result proved in above we know that

$$\Rightarrow d_n = n! \left( 1 - 1 + \frac{1}{2} - \frac{1}{3!} + \dots + \frac{1}{n!} \right)$$

so

$$d_6 = 6! \left( \frac{1}{2} - \frac{1}{3!} + \frac{1}{4!} - \frac{1}{5!} + \frac{1}{6!} \right)$$

$$= 6! \left( \frac{1}{2} - \frac{1}{3!} + \frac{30}{8!} - \frac{6}{6!} + \frac{1}{6!} \right)$$

$$= 6! \left( \frac{3 \times 4 \times 5 \times 6}{6!} - \frac{4 \times 5 \times 6}{6!} + \frac{5 \times 6}{6!} - \frac{6}{6!} + \frac{1}{6!} \right)$$

$$= (360 - 120 + 30 - 6 + 1)$$

$$= 265$$