

$$\boxed{4} \times \boxed{3} \times \boxed{2} \times \boxed{1} = 4! = 24 = n!$$

1

$$(n-1)! = (4-1)! = 3! = 6$$

2

$$\frac{(n-1)!}{2} = \frac{(4-1)!}{2} = \frac{3!}{2} = 6$$

3

$$\binom{4}{2} \times 2! = \binom{4}{2} \times 2! = \frac{4 \times 3}{2!} \times 2! = 6$$

4

$$\binom{4}{3} \times (3-1)! = \binom{4}{3} \times 2! = \frac{4 \times 3}{3!} \times 2! = 4$$

5

$$\binom{4}{4} \times \frac{(4-1)!}{2} = \binom{4}{4} \times \frac{3!}{2} = \frac{4 \times 3}{4!} \times \frac{3!}{2} = 6$$

6

$$a, b, c, d, e, f \rightarrow \binom{6}{2} \times 4! = \binom{6}{2} \times 4! = \frac{6 \times 5}{2!} \times 4! = 180$$

7

$$\boxed{c|d}, a, b, e, f \rightarrow 3! = 6$$

8

$$\boxed{c|d}, a, b, e, f \rightarrow 3! \times 2! = 12$$

9

$$\frac{4!}{2!} = 12$$

10

$$\boxed{c|d|e}, a, b, f \rightarrow 4! \times 3! = 144$$

11

$$\boxed{c|d|e|f|a|b} \rightarrow \frac{6!}{3!} = 120 \quad (c) \rightarrow (d) \rightarrow (e)$$

12

$$\frac{4!}{3!} = 4 \quad (c) \rightarrow (d) \rightarrow (e)$$

13

$$\frac{9}{2! \times 2!} = 110$$

(c) (e) (a) (d)

14

$$9! \times \omega! = 720 \times 120$$

15

$$\omega! \times \omega! \times 2! = 28800$$

16

----- $\rightarrow \omega! \times \binom{9}{\omega} \times \omega! = \omega! \times \omega! \times \frac{9}{1!}$

17

مجموعه سیاه مستقیم = $9! \times \omega!$ مستقیم سیاه کنار هم برابر = $\omega! \times \omega! \times 9 = 9! \times \omega!$ کل حالت = $10!$
بعضی سیاه ها کنار هم = $10! - 9! \times \omega! - 9! \times \omega! = 10! - 2 \times 9! \times \omega!$

18

$$2! \times \omega! \times \omega! = 28800$$

19

$$4! \times \omega! = 2880$$

20