

1) $1! \cdot 4!$

2) $7! \binom{7}{4} 4!$

3) $11! - 1! \cdot 4! - 7! \binom{7}{4} 4!$

4) $2! \cdot 4! \cdot 4! \cdot 4!$

5) $2! \cdot 3! \cdot 3! \cdot 4! \cdot 4!$

6) $4 \times 4 \times 4 = 100$ $4 \times 4 \times 4 = 64$

7) $4 \times 4 \times 3 = 48$ $4 \times 4 \times 1 = 16$ $4 \times 4 \times 2 = 32$ $48 + 16 + 32 = 96$

8) $4 \times 4 \times 2 = 32$ $3 \times 3 \times 2 = 18$

9) $2 \times 4 \times 3 = 24$ $1 \times 4 \times 3 = 12$ $1 \times 4 \times 2 = 8$ $24 + 12 + 8 = 44$

10) $1 \times 4 \times 2 = 8$ $1 \times 3 \times 2 = 6$

11) $1 \times 4 \times 4 = 16$ $1 \times 4 \times 4 = 16$

12) $\rightarrow \dots, \underline{0\varepsilon}, \underline{1\varepsilon}, \underline{2\varepsilon}, \underline{3\varepsilon}, \underline{4\varepsilon}, \underline{5\varepsilon}, \underline{6\varepsilon}, \underline{7\varepsilon}$

$\frac{1}{1!} = \binom{4}{0} = \boxed{1}$ $\frac{1}{2!} = \binom{4}{1} = \boxed{4}$ $\frac{1}{3!} = \binom{4}{2} = \boxed{6}$ $\frac{1}{4!} = \binom{4}{3} = \boxed{4}$ $\frac{1}{5!} = \binom{4}{4} = \boxed{1}$

13) $\rightarrow \dots, \underline{00}, \underline{10}, \underline{20}, \underline{30}, \underline{40}$

$\frac{1}{1!} = \binom{4}{0} = \boxed{1}$ $\frac{1}{2!} = \binom{4}{1} = \boxed{4}$ $\frac{1}{3!} = \binom{4}{2} = \boxed{6}$ $\frac{1}{4!} = \binom{4}{3} = \boxed{4}$ $\frac{1}{5!} = \binom{4}{4} = \boxed{1}$

14) $\frac{4!}{2!2!} = \boxed{6}$

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16) $\frac{111}{1} + \frac{112}{2} + \frac{113}{3} + \frac{123}{6} + \frac{133}{6} + \frac{233}{6} = \boxed{19}$

17) $\binom{4}{2} \binom{4}{2} = \frac{4 \times 3}{2} \times \frac{4 \times 3}{2} = \boxed{36}$

18) $\frac{1!}{1!0!} = \binom{1}{1} = \binom{1}{0}$

19) $4^4 = 4 \times 4 \times 4 \times 4 = 256$

20) $(4 \times 4) + (3 \times 4) + (2 \times 4) = 16 + 12 + 8 = \boxed{36}$