and chemistry books and 1 math volume. Likewise \( \text{Pl} = 9! \ 9! \), \( \text{Cl} = 5! \ 8! \),
\( \text{MPL} = 3! \ 4! \ 7! \), \( \text{MOL} = 3! \ 5! \ 6! \)
\( \text{POL} = 4! \ 5! \ 5! \) and \( \text{MPLL} = 3! \ 4! \ 5! \ 3! \)
So the answer is
\[
3! \ 10! + 4! \ 9! + 5! \ 8! - 3! \ 4! \ 7! - 3! \ 5! \ 6! - 4! \ 5! \ 5! +
+ 3! \ 4! \ 5! \ 3!
\]
(7) Using the formula of Section we get
\[
8! - 4! \ 7! + 3! \ 6!
\]
(8) \( a_n = 2a_{n-1} + (3^{n-1} - a_{n-1}) = a_{n-1} + 3^{n-1} \)
(since there \( 3^{n-1} \) strings of length \( n-1 \)). Also \( a_1 = 2 \).
Hence \( a_n = 2 + 3 + \ldots + 3^{n-1} = 2 + \frac{3^n - 3}{2} = \frac{3^{n+1}}{2} \)
(9) Looking for particular solution in the form
\( a_n = (An + B)2^n \) we obtain \( 2A = 3A + 2, 2B = 3B - 3A \)
so that \( A = -2, B = -6 \). Hence the general solution is
\( a_n = C \cdot 3^n - (2n + 6)2^n \). Plugging \( n = 0 \) we get
\( a_1 = C - 6 \), so \( C = 7 \) and
\[
a_n = 7 \cdot 3^n - (2n + 6)2^n.
\]