Counting Strings

1. Find the number of possible string of length three with characters A,C,G,T.
2. Find the total number of strings of length 100 with characters A,C,G,T.
3. Find the total number of strings of length 100 over the amino acid alphabet.
4. Find the number of strings of length 100 with characters A,C,G,T with exactly 2 A’s.
5. Find the number of strings of length 100 with characters A,C,G,T with no A’s.
6. Find the number of strings of length 100 with characters A,C,G,T with exactly 2 A’s and exactly 10 C’s.
7. Find the number of strings of length 100 with characters A,C,G,T with exactly 2 A’s, exactly 10 C’s, and exactly 50 T’s.
8. Find the values of $\binom{5}{3}$, $\binom{5}{2}$, $\binom{5}{0}$, $\frac{7}{5}$.
9. Find the number of strings of length 7 with characters A,C,G,T without three consecutive A’s.
10. Find the number of strings of length 7 with characters A,C,G,T with two consecutive A’s.
11. Find the number of strings of length 7 with characters A,C,G,T with three consecutive A’s.