1. Tell how many systems of distinct representatives the given sequence of sets has
   A. \{1, 4\}, \{2\}, \{2, 3\}, \{1, 2, 3\}
   B. \{1, 2, 3, 4, 5\}, \{1, 2, 3, 4, 5\}
   C. \{1, 2, 3\}, \{4, 5\}, \{6, 7\}

2. Given \(a_1 = 4\) and \(a_n = a_{n-1} + 4n\) for \(n \geq 2\). Prove by induction that \(a_n = 4 \binom{n+1}{2}\) for \(n \geq 1\).
   
   **Hint:** If the \(\binom{n+1}{2}\) bothers you, then you can expand \(\binom{n+1}{2}\) to a polynomial before starting the induction.