Tentative Assignments - Chapter 1 and Appendix C

**Section**  **Exercises*  
1 1, 4, 5, 8, 9  
2 1adg, 3, 5, 8, 11, 13, 15adg, 16, 18, 20, 33  
3 1ab, 2, 6, 7a, 8, 12a 15, 17, 20  
C 8, 9, 17  

1. For \( n, r \in \mathbb{N} \cup \{0\}, \) let \( \binom{n}{r} = \frac{n!}{r!(n-r)!} \), \( 0 \leq r \leq n \).

   (a) Show that \( \binom{n}{r} + \binom{n}{r+1} = \binom{n+1}{r+1} \).

   (b) Use induction to show that \( \sum_{r=0}^{n} \binom{n}{r} = 2^n \).

* - Graded homework exercises will be selected from assigned problems and additional handouts to be distributed throughout the semester.