

Chapter 1 HW

Here is a list of recommended exercises. This list is based on the 8th edition of "A first Course in Probability" by Sheldon Ross.

Problems

7-17, 19, 21-23, 27-28, 31-33

Theoretical Exercises

3, 5-14, 18, 21, 23 (You don't need to do algebraic or analytical verifications. Just provide combinatorial arguments for the identities you're asked to derive)

(a) Derive the identity $1 + 2 + 3 + \cdots + n = \binom{n+1}{2}$ by a combinatorial argument. (Hint: a man is at most $n + 1$ year old and has a younger brother. How many "age assignments" are possible for the man and his brother?)

(b) Can you use a similar idea to derive a combinatorial formula for $1^2 + 2^2 + 3^2 + \cdots + n^2$?