

CSI 30 LECTURE NOTES (Ojakian)

Topic 16: Permutations and Combinations

OUTLINE

(References: 6.3)

1. Permutations
 2. Combinations
-

1. Permutation

- (a) Question: Have there ever been 2 decks of cards with the cards in the same order?
- (b) DEF: Permutation and r -permutation of set.
- (c) Notation. $P(n, r)$
- (d) Example: Do on [4].
- (e) Theorem: Number of r -permutations is ...

2. Combination

- (a) Example. Consider 4 students in this class. How many committees of 3 students? Of 2 students?
- (b) DEF: r -combination or size r subset ...
- (c) Notation. Examples.
- (d) Theorem 2 (Section 6.3, p. 431)
- (e) Example 14. Bit strings.
- (f) Example 15. Choosing committee.
- (g) Theorem: Corollary 2 (p. 433). $C(n, r) = C(n, n - r)$

3. Exercises

- (a) Section 6.3: 1 - 41
- (b) Probability. Section 7.1: 8 - 20 (Poker)
- (c) Section 7.1: 24 - 27, 38 (Lottery)
- (d) Section 7.1: 31 - 34