

## 1. Events & Probability

1. *Axioms:*
2. *Complement:*
3. *Union (addition rule, Lemma 1.1):*
4. *Union bound (Lemma 1.2):*
5. *Inclusion-exclusion principle (Lemma 1.3):*
6. *Conditional probability:*
7. *Multiplication rule:*
8. *Independence:*
9. *Law of total prob (Theorem 1.6):*
10. *Bayes rule (Theorem 1.7):*
11. *Some counting rules:* useful for finding  $\Pr(A)$  in experiments with equally likely outcomes.

*Basic principle of counting:*

*Combinations:*

*Permutations:*