

- Examples:
- In how many ways can 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place titles be awarded to eight swimmers in a 500-meter freestyle event?
  - In how many ways can we break those 8 swimmers into two groups with four swimmers in each group?
  - An IRS examiner has 30 returns to examine. Unknown to him, 5 of the returns have errors. Suppose he randomly selects returns...
    - What is the probability that the first return has an error and the second one doesn't?
    - What is the probability that the second return has an error?
    - If he selects 3 returns, what is the probability that all three will have errors?
    - If he selects 10 returns, what is the probability that 3 will have errors and 7 will have no errors?
  - You are given the following information:
    - 40% of students in statistics classes are NOT engineering majors
    - 30% of students in those classes are freshmen
    - 20% of students in those classes are freshmen AND engineering majors
 If you randomly select one student, what is the probability that the student is an engineering major but not a freshman?
  - The following table displays the results of a poll to determine if citizens supported a tax increase:

	Support	Against	Total
City	100	300	400
Suburb	250	150	400
Country	50	150	200
Total	400	600	1000

What is the probability of selecting a person who is NOT from the country and who supports the tax increase?

- Two plants, A & B, ship appliances to a warehouse. Plant A produces 63% of the total warehouse inventory with a 4% defect rate. Plant B produces 37% with a defect rate of 8%.
  - What is the probability that a randomly selected item from the warehouse has a defect?
  - What is the probability that a randomly selected item from the warehouse is a nondefective item from Plant B?
  - Suppose you select a defect. What's the probability that the defect came from Plant A?
- Calculate the expected value and variance of X:
 

	X = 2	X = 5	X = 9
P(X=x)	0.2	0.5	0.3
- Suppose we multiply each value of X by 3 and add 7 onto each value. What will happen to the expected value and variance?
- Several years ago, Pepsi stated you had a 1 in 3 chance of winning a free song on iTunes.
  - If you bought 10 bottles of Pepsi, what is the probability that you would have no winners?
  - What is the probability you would have 3 winners?
  - What is the probability you would have fewer than 5 winners?
  - What is the probability you would have more than 6 winners?