

## **Section 4.4: Bernoulli Trials**

**Example 1:** The probability that a team will win a game is 60%. Find the probability that:

- a) the team wins a game out of 2
  
- b) the team wins the first 2 games out of 3
  
- c) the team wins 2 game out of 3
  
- d) the team wins 2 games out of 4

**Bernoulli trial:** (repeated events) is applied when:

- 1) each event has two outcomes only, (win, loose); (pass, fail)...
- 2) the sum of the two probabilities for the two outcomes is = 1
- 3) the events are independent
- 4) the probability in the repeated events is the same

$$P = C(n, r) \cdot p^r \cdot q^{n-r} \quad (q = 1 - p)$$

$p$  : probability of success (*what we are looking for*)

$n$  : total number of trials

$r$  : number of successes (*number of events of what we are looking for*)

**Example 2:** the probability of winning a game is 60%. If the team plays 8 games, find the probability that the team wins:

a) 5 games

b) at least 6 games

c) at least 2 games

**Example 3:** By taking a test of 10 questions, each question has 4 choices for an answer and only one answer is correct. If a student is answering the questions by guessing, find the probability that he gets at least 2 correct questions