

All homeworks for 3.3 and 3.4 are due on FRIDAY!!!

Lecture 4.2A Binomial Distributions

Assignment for Monday: p211 - 24 1-12 all ; 18 - 26 evens

Binomial Experiment must meet the following requirements:

1. Fixed number of trials.
2. Trials must be independent.
3. Each trial must have only two outcomes.

$P(S)$  = probability of success     $P(F)$  = probability of failure

$P(S) + P(F) = 1$     sometimes written  $P + Q = 1$

They are compliments of each other. The word 'success' does not necessarily describe a desired result. Either of the two possible categories may be called the success.

4. Probabilities must remain constant.

Binomial Experiments: tossing a coin

left handed or right handed

rolling a die with a result of 5

Binomial Probability Formula:  $P(x) = {}_n C_x \cdot P^x \cdot Q^{n-x}$

Ex #1. You guess the answers for the last 3 questions on a multiple choice test. There were 4 choices for each question. What is the P of getting exactly 2 correct?

Ex #2. Same as above but there are 10 questions and you want 7 correct.

Ex #3. USA Today reported that 70% of the people question said that they watched less TV than they did a year ago, 22% said they watched the same amount, an 8% said they watch more.

A) Find the P that in a group of 5 people between exactly 3 will say they watch less TV this year than last year.

B) Find the P that between 2 and 4 people will say that they watched less TV this year than last year.

C) Find the P that at least one watched less TV this year than last year.

Since at 'least one' =  $1 - P(0)$  = answer

Use chart on page A8. .000 means it is insignificant.

Ex #4. 60% of households have a game system, ask 12 households

A) What is P that 5 have a game system?

B) P that at least 5 have a game system?