Assignment 1

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Problem 1.9

In an examination, 20 questions of true-false type are asked. Suppose a student tosses a fair coin to determine his answer to each question. If the coin falls heads, he answers 'true'; if it falls tails, he answers 'false'. Find the probability that he answers at least 12 questions correctly.

Here X be number of answers correct. p is prob that it is right or success and q=1-p = prob that it is wrong or fail

p = 1/2 = q

Pr[he answers at least 20 questions correctly]

$\binom{20}{12}p^{12}q^8 + \binom{20}{13}p^{13}q^7 + ... + \binom{20}{20}p^{20}q^0$

$= (\frac{1}{2})^{20}\{\binom{20}{12} + \binom{20}{13} + \binom{20}{14} + ... + \binom{20}{20}\}$