AP Statistics – Geometric and Binomial Probability Models

Two types of probability models for Bernoulli Trials:

I. Geometric Probability Model:

II. Binomial Probability Model:

3 conditions must be met for either of these:

- **B**
- **I**
- **S**

The Geometric model – Geom(p)

p =

Formula(s): *[not on the formula chart!]*

X =

1. The Hungarian Problem On the "Hungarian Quiz" that we just took…

   p =

   X =

   a) How many questions do you expect to answer until you get one correct?

   b) What's the probability that the first question you answer correctly is the 4^{th} question?

   c) What is the probability that the first question you answer correctly is the 4^{th} or 5^{th} or 6^{th} question? (eek)

The Binomial model – Binom(n, p)

n = p =

X =

Formulas:

2. The "Hungarian" Problem II

On that 10 question "Hungarian Quiz"...

a) What are the mean and standard deviation of the number of correctly answered questions?

b) What is the probability that a student got exactly 4 questions correct?
(Hint: since we need to find the probability of getting ANY 4 questions correct – and since there are a number of ways for that to occur – we need to use a Binomial model here)

c) What is the probability that a student answered **no more than 5** correctly?

d) What is the probability that a student answered **at least 1 question** correctly? *(think back)*

e) What is the probability that a student answered **at least 4 questions** correctly? *(ugh...)*