Part IV- Chapter 17	**Probability Models**
Bernoulli trial	1. two possible outcomes ("success" & "failure") 2. probability of success is constant p $q = 1 - p$ 3. trials are independent (or sample < 10% of population)
If number, *X*, of Bernoulli trials until next success [measuring until success]	Then Geometric probability model, Geom(*p*): $P(X = x) = q^{x-1}p$ (Expected # of trials until success) $\mu = \frac{1}{p}$ $\sigma = \sqrt{\frac{q}{p^2}}$
If number of successes, *X*, in *n* Bernoulli trials [number of successes, no *when*]	Then Binomial probability model, Binom(*n*, *p*): $P(X = k) = \binom{n}{k} p^k q^{n-k}$, *where* $\binom{n}{k} = \frac{n!}{k!(n-k)!}$ (Expected # of successes) $\mu = np$ $\sigma = \sqrt{npq}$
Assumptions	Theoretical mathematical requirements (independence, large sample, etc.)
Conditions	Practical guidelines that confirm (or sometimes override) assumptions.
When using the Geometric or Binomial probability models check that you have _____	the 3 requirements of Bernoulli trials.
The Binomial probability model becomes difficult/impossible for _____. Fortunately it can be approximated by _____ as long as we meet the _____ Condition that _____	large *n.* a Normal probability model Success/Failure we expect at least 10 successes and 10 failures: $np \geq 10$ and $nq \geq 10$
On the AP Exam students are required to _____, not just _____ the conditions. This means _____	check state using the values given in the question to show your work!