Chapter 5
Discrete Random Variables

1 Discrete Probability Distribution, $p(x)$

Properties:

1. $p(x) \geq 0$ for each value of x
2. $\sum_x p(x) = 1$

	$p(x)$	μ_x	σ_x^2	σ_x
General	Given	$\sum_x xp(x)$	$\sum_x (x-\mu)^2 p(x)$	$\sqrt{\sigma^2}$

2 The Binomial Distribution

Conditions:

- n identical trials
- each trial has two outcomes, success or failure
- same probability of success p for each trial
- trials are independent

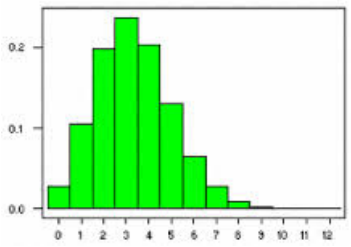

Figure 1: The binomial distribution

	$p(x)$	μ_x	σ_x^2	σ_x
Binomial	$\frac{n!}{x!(n-x)!}p^x q^{n-x}$	np	npq	$\sqrt{npq}$

where n= number of trials, x = number of successes,
p = prob. of success, q = prob. of failure $= 1 - p$