[redacted]

The following activities will guide you in discovering some useful relationships between the special distributions.

A. Binomial Approximation to the Hypergeometric Distribution

1. Suppose X is a discrete random variable having the hyper- [redacted]

[redacted]	[redacted]	[redacted]	[redacted]		[redacted]
			[redacted]		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]					
[redacted]					
[redacted]					
[redacted]					

4. What can you say about the absolute difference in the last column as f, called the *sampling fraction*, becomes smaller?

5. What can you say about the hypergeometric and binomial probabilities as the sampling fraction f becomes smaller?

B. Poisson Approximation to the Binomial Distribution

1. Suppose X is a discrete random variable having the binomial distribution such that $X \sim \text{Bin}(n = 15, p)$. Compute the [redacted]

[redacted]

[redacted]

[redacted]	[redacted]	[redacted]		[redacted]
		[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]				
[redacted]				
[redacted]				

[redacted]

[redacted]

[redacted] Normal Approximation to the Binomial Distribution

1. Suppose X is a discrete random variable having the binomial [redacted]

[redacted] √[redacted]

[redacted]

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	√[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]					
[redacted]					
[redacted]					

[redacted]

[redacted]

[redacted]

D. Normal Approximation to the Poisson Distribution

1. Suppose X is a discrete random variable having the Poisson distribution such that $X \sim \text{Poi}(\lambda)$. Compute the Poisson [redacted]

[redacted] √[redacted]

[redacted]

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]				
[redacted]				
[redacted]				

[redacted]

[redacted]

[redacted]