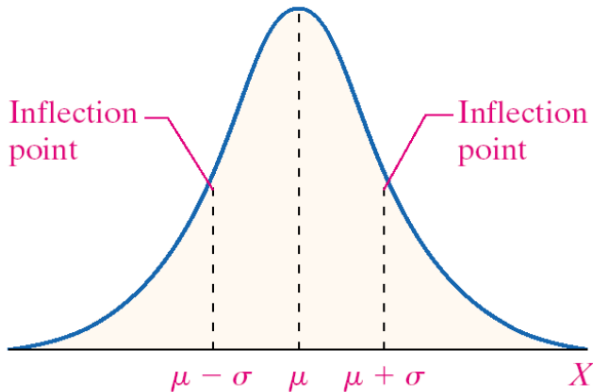
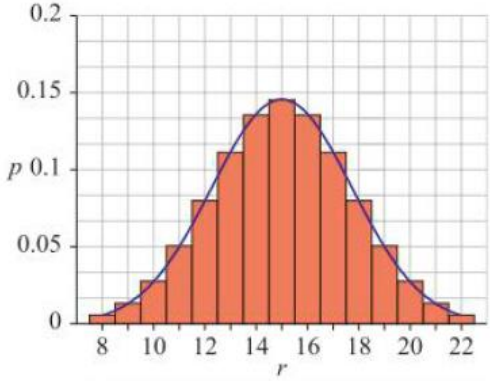


N - Statistical distributions

What 4 conditions must be satisfied for a Binomial Distribution to be valid?	<ol style="list-style-type: none"> 1. Two possible outcomes in each trial. 2. A fixed number of trials. 3. Independent trials. 4. Identical trials (same probability).
What proportion lies within 1 and 3 σ 's of the mean in a Normal Distribution?	<ul style="list-style-type: none"> • $\pm 1 \sigma$ is around 68% • $\pm 3 \sigma$ is around 99.8%
What is the z-score? How is it calculated?	<p>A measure of how many standard deviations a value is to the right of the mean which is calculated by:</p> $z = \frac{x - \mu}{\sigma}$ <p><i>This is sometimes referred to as a test statistic in context.</i></p>
Where are the points of inflection of a Normal Distribution?	
How can the usage of the Normal Distribution as an approximate for the Binomial Distribution be refined?	<ol style="list-style-type: none"> 1. Increasing number of events (n). 2. Having p closer 0.5 (more symmetrical). <div style="background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p>Key point</p> <p>For $X \sim B(n, p)$, as n increases, the distribution of X tends to that of the random variable Y where $Y \sim N(np, np(1 - p))$</p> </div>

	<p>The approximation can still be used if it's $p = 0.2$ but it won't be as good.</p>
<p>What is the continuity correction? How can it be used?</p>	 <p>Say you need to work out $P(X < 8)$ on the Binomial Distribution, You can calculate $P(Y \leq 7.5)$ on the Normal Distribution.</p>
<p>When do we divide by n or $n - 1$ for the variance?</p>	<ul style="list-style-type: none"> • Either works. • Divide by $n - 1$ when an unbiased estimator of the popular variance is required.