

Binomial Expansion:

$$(a + b)^n = \sum_{k=0}^n \binom{n}{k} a^{n-k} b^k$$
$$= \binom{n}{0} a^n b^0 + \binom{n}{1} a^{n-1} b^1 + \binom{n}{2} a^{n-2} b^2 + \dots + \binom{n}{n-1} a^1 b^{n-1} + \binom{n}{n} a^0 b^n$$

Binomial Distribution:

For a two-result experiment where p is the probability of one choice occurring and q is the probability of the other choice occurring, the probability that an event will occur k times in n trials, $P(n = k)$, is given by:

$$P(n = k) = \binom{n}{k} p^k q^{n-k} = \frac{n!}{k!(n-k)!} p^k q^{n-k}$$

The distribution of these probabilities is called the **Binomial Distribution**.

Properties of the Binomial Distribution	
Mean	np
Variance	npq
Standard Deviation	\sqrt{npq}



Want to know more?

If you have any further questions about this topic you can make an appointment to see a **Learning Enhancement Tutor** in the **Student Support Service**, as well as speaking to your lecturer or adviser.

- 📞 Call: 01603 592761
- 💻 Ask: ask.let@uea.ac.uk
- 🔗 Click: <https://portal.uea.ac.uk/student-support-service/learning-enhancement>

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For this topic there is a [webcast](#).

Your comments or suggestions about our resources are very welcome.

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