



**MathsNET**

A joined up approach to  
teaching and learning  
mathematics

# The binomial random variable

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- Draw a tree diagram that illustrates the outcomes that could be obtained from three bernoulli trials
- Illustrate on your tree diagrams, which outcomes correspond to the  $X = 0$ ,  $X = 1$ ,  $X = 2$  and  $X = 3$  outcomes for a Binomial random variable.
- Hence, calculate the probabilities  $P(X = 0)$ ,  $P(X = 1)$ ,  $P(X = 2)$  and  $P(X = 3)$  where  $X$  is a binomial random variable
- Write out the probability mass function for a binomial random variable with parameter  $p$  and number of trials  $N$ .



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- How many ways are there of arranging  $N$  distinguishable objects.

- How many ways are there of arranging  $N$  objects of type 1 and  $M$  objects of type 2.