

## Hypergeometric & Geometric Distributions

These are similar in operation to the **Binomial** distribution, since they are also discrete distributions using only integer values. The text on each describes the interpretation of the values to be entered in the editable fields. **Tab** between them or register your newly type values with the **Enter** or **Return** keys.

The hypergeometric distribution is used to calculate the probability of selecting exactly  $x$  number of items of a specific type (of which there are  $D$  in the total population of  $N$ ), in a sample of size  $n$ . There are thus some restrictions on the actual integer numbers you can enter, so if you overflow these, you will be informed and the maximum possible values entered for you. The equation for this probability is:

$$\frac{(D \text{ over } x)((N-D) \text{ over } (n-x))}{(N \text{ over } n)}$$

The geometric distribution calculates the probability of getting exactly  $x$  trials before the first success of an event with probability each trial of  $p$ . It uses the formula

$$\Pr[X = x] = (1-p)^x * p \text{ where } ^\wedge \text{ means "to the power of"}$$

Both distributions can generate the probability tables by pressing the **Generate Table** button at right, with the numbers appearing the results window. The different probabilities calculable are:  $X = x$ ,  $X \leq x$ ,  $X \geq x$ ,  $X < x$ , and  $X > x$ .