



## Discrete Distributions

There are two versions for parameter entry for each of the discrete distributions:

- [1] Parameters such as n and p are entered manually. If the value of x is entered, then the probability density f(x) and cumulative probability F(x) will be found when the evaluate button is pressed. The results are illustrated graphically.
- [2] Parameters are entered by the sliders within their allowable ranges. When x is changed, or if any of the parameters are changed, new values of f(x) and F(x) will appear.

$$f(x) = P\{X = x\} \text{ where } f(x) \geq 0 \text{ for all } x \text{ and } \sum_{\text{all } x} f(x) = 1, \quad F(x) = \sum_{k=\text{low}}^{k=x} f(x)$$

The definitions and properties of these distributions are given at:

<http://www.interactive-math.org/statistics/probdist.pdf>

Interrelationships among these distributions are given at:

[http://www.interactive-math.org/statistics/dist\\_interrelations.pdf](http://www.interactive-math.org/statistics/dist_interrelations.pdf)

## Distributions:

The binomial, geometric, and Poisson distributions are shown.

## Example:

Consider the Binomial distribution.

The probability function is shown on top.

Sliders are used to select number of trials,  $n = 20$ , probability of success,  $p = 0.27$ , and the number of successes,  $x = 6$ . The probability value of  $f(x) = 0.183268$  and the cumulative probability (shown in red),  $F(x) = 0.718978$ .

The reset may be used to restore default values. A reload/refresh will also restore values to the default values and redraw the graph.

