

# Distr Functions: binomcdf

## Find a cumulative binomial probability.

We will compute  $P(X \leq 3)$  for the  $B(5, 0.2)$  distribution:  $P(X \leq 3) = P(X = 0) + P(X = 1) + P(X = 2) + P(X = 3)$

### Keystrokes

### Screen

**binomcdf** computes a cumulative probability up to and including  $x$  for *discrete binomial distributions*, when the probability of success,  $p$ , and number of trials,  $n$ , is known. Press **2nd** **VARs**.

```

0:51E DRAW
1:normalpdf(
2:normalcdf(
3:invNorm(
4:tPdf(
5:tcdf(
6:X²Pdf(
7:X²cdf(
    
```

Press **▼** until “**binomcdf**” appears then press **ENTER** to paste the **binomcdf** function to the main screen.

```
binomcdf(
```

*Note: you can also select option A directly by pressing **ALPHA** **[A]**.*

The format for the input of **binomcdf** is: (*number of trials, probability, x*). For this example, enter the following:

```
binomcdf(5, .2, 3)
```

5 **,** .2 **,** 3 **)**

Press **ENTER**.

```
binomcdf(5, .2, 3)
.99328
```

Thus, the cumulative binomial probability  $P(X \leq 3)$  with  $n = 5$  and  $p = .2$  is approximately 99.33%.

*Note: **binomcdf** will calculate multiple cumulative probabilities if multiple  $x$ 's are entered (see manual). The probabilities in this screen, rounded to 5 decimal places, are:*

$$\{P(X \leq 3) \ P(X \leq 4)\}$$

```
binomcdf(5, .2, {3
,4})
{.99328 .99968}
```

*Note: **binomcdf** will create a list of cumulative probabilities from 0 to n if no  $x$  is specified (see manual). The probabilities in this screen (use right arrow key to see them all), also rounded to 5 decimal places, are:*

$$\{P(X \leq 0) \ P(X \leq 1) \ P(X \leq 2) \ P(X \leq 3) \ P(X \leq 4) \ P(X \leq 5)\}$$

```
binomcdf(5, .2)
{.32768 .73728 ...
```

More questions? Contact the **Metropolitan State University Math Center** at 651-793-1460 or [math.center@metrostate.edu](mailto:math.center@metrostate.edu)