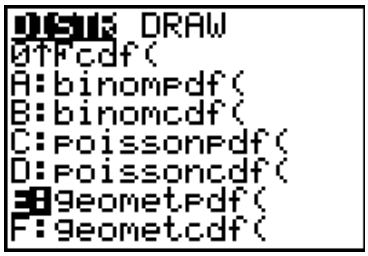
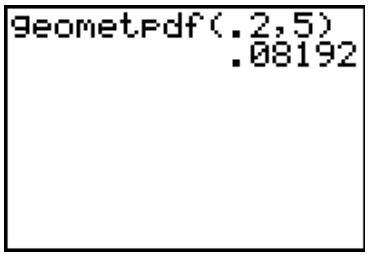
Bernoulli Trials – Geometric Probabilities



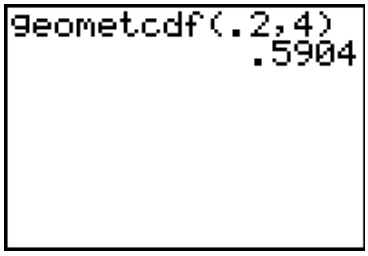
2nd DISTR



geometpdf(p,x)
"pdf" stands for "probability density function." This means you'll find the probability of success on *an individual* outcome.

p is the probability of an individual success and *x* is the number of trials until you get a success.

Suppose you want to find the probability that each individual event has a 1/5 likelihood of happening, and you have your first success on your fifth trial. There's about an 8% chance of this happening.



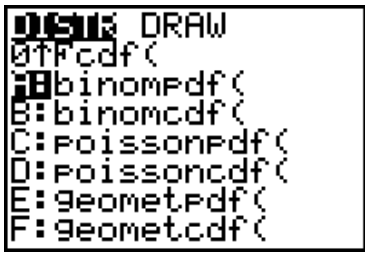
geometcdf(p,x)
"cdf" stands for "cumulative density function." This means you'll find the probability of success *on or before* a specific outcome.

p is still the probability of an individual success, and *x* is the trial number you get your first success on or before.

Your event still has a *p* value of 1/5. Now you're wanting your first success by time you get to your fourth trial…meaning success on the first trial, *or* the second, *or* the third, *or* the fourth. ("Or" means that the calculator's adding them!)

There's about a 59% chance that this will happen.

Bernoulli Trials – Binomial Probabilities



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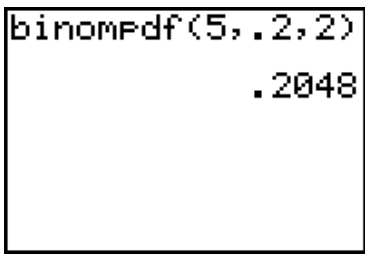
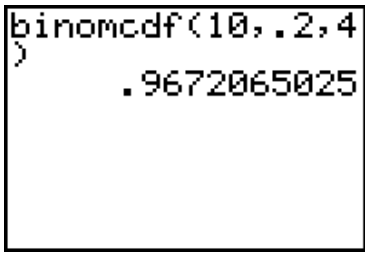


binompdf(n,p,x)
"pdf" still means you'll find the probability of success of *an individual* outcome.

n is the number of trials, *p* is the probability of an individual success and *x* is the number of successes.

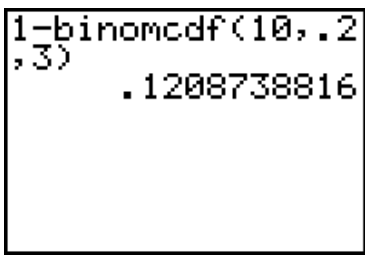
Suppose you want to find the probability that each individual event has a 1/5 likelihood of happening, and you want exactly two successes out of five events. There's about a 20% chance of this happening.



binomcdf(n,p,x)
"cdf" still means you'll find the probability of success *of or fewer than* a specific outcome.

n is the number of trials, *p* is still the probability of an individual success, and *x* is number of successes – or fewer – that you get.

Your event still has a *p* value of 1/5. Out of 10 events, you want up to four successes. Meaning 0 successes, *or* 1 success, *or* 2 successes, *or* 3 successes, *or* 4 successes. ("Or" means that the calculator's adding them!) There's about a 97% chance that this will happen.



Time for a complement! What if – out of 10 events – you want "at least four successes?" Use the complement! What you *don't* want are 0, 1, 2, or 3 successes…so find this total and subtract it from 1. There's about a 12% chance of this happening.