

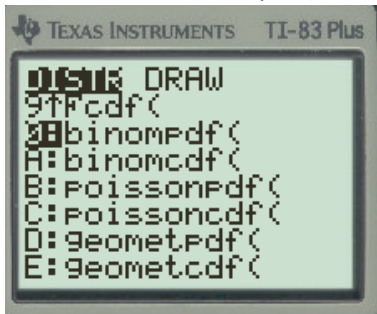
- Calculate probability of the random variable being exactly equal to a value:
 Example: A multiple choice test has 10 questions. Each question has four answer choices. What is the probability that a student, choosing answers at random gets 7 question correct (exactly 7).

Formula:

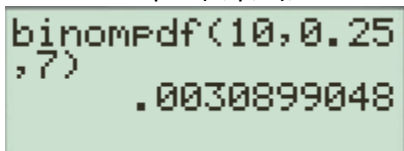
$$P(x) = nCx \cdot p^x \cdot q^{n-x} = 120 \cdot 0.25^7 \cdot 0.75^3 = 0.00309$$

TI 83:

2nd distr, select binompdf (



Enter binompdf (n, p, x), in that order. P, probability, enter ¼ or 0.25:

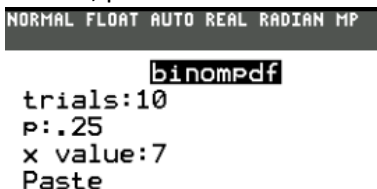


TI 84:

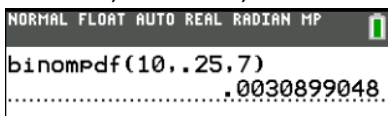
2nd distr, select binompdf (



Enter n, p and x:

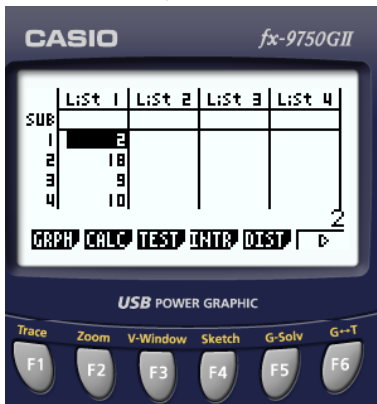


Hit enter, and enter, and enter again. This is the answer:

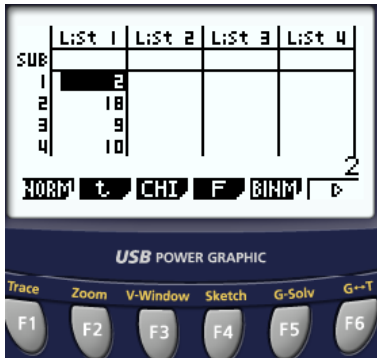


Casio fx- 9750

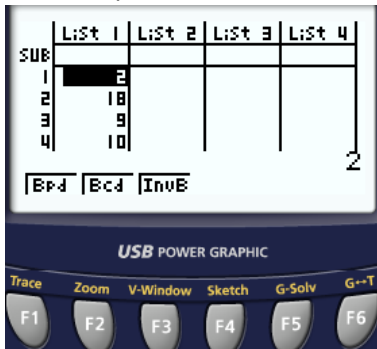
In Stat MENU, hit F5: DIST



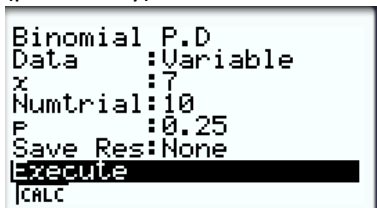
Then, F5 again: BINM



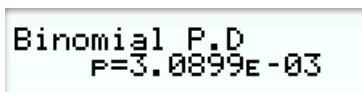
now F1 Bpd:



It displays the binomial dist screen. Enter: x (number of successes sought), n (trials), p (probability):



Hit EXE or F1:



Binomial cumulative probability distribution, --in TI calculators binomcdf, for Casio calculators BNM and then Bcd, calculates the probability for each specific value of the random variable from zero to x and add them up. It answers the question probability of at most x or probability of less than x number of successes.

Therefore, binom cdf function when $x=3$, the result is the sum of the binom pdf of 0, 1, 2 and 3. This is the same as "at most 3 successes" or "less than 4 successes".

Binom cdf is used to answer questions like: : A multiple choice test has 10 questions. Each question has four answer choices. What is the probability that a student, choosing answers at random has at most 4 questions correct?

Here $n = 10, p = 1/4$ or $0.25, x = 4$.

CDF simplifies calculation for the "at least x" type of question:

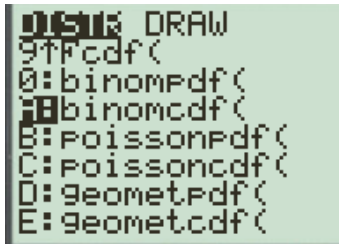
$$P(\text{at least 3 successes}) = 1 - P(\text{at most 2})$$

$$P(\text{at least one}) = 1 - P(\text{no successes or zero})$$

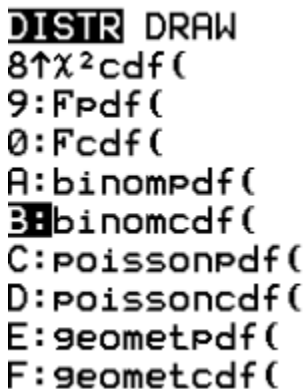
In general:

$$P(\text{at least } x \text{ successes}) = 1 - P(\text{at most } x \text{ minus } 1 \text{ successes})$$

TI 83 binom cdf:



TI 84:



Casio fx 9750: select F2, for Bcd

