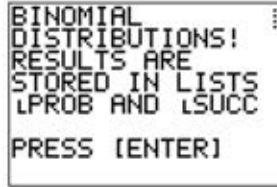


Binomial Distributions

```
PROGRAM:BINOM
:ClrHome
:Disp "BINOMIAL"
:Disp "DISTRIBUTIONS!"
:Disp "RESULTS ARE"
:Disp "STORED IN LISTS"
:Disp "LPROB AND LSUCC"
:Disp ""
:Disp "PRESS [ENTER]"
:Pause
:Lbl A
:ClrHome
:Disp "A FEW QUESTIONS"
:Disp "-----"
:Input "TRIALS?"
",N
:Disp "PROBABILITY OF"
:Input "SUCCESS?"
",P
:Input "DESIRED R?"
",R
:round(1-binomcdf(N,P,R-1),4)→Y
:ClrHome
:Output(2,1,"AT LEAST")
:Output(2,10,R)
:Output(3,12,Y)
:Output(4,1,"EXACTLY")
:Output(4,9,R)
:round(binompdf(N,P,R),4)→Y
:Output(5,12,Y)
:Output(6,1,"AT MOST")
:Output(6,9,R)
:round(binomcdf(N,P,R),4)→Y
:Output(7,12,Y)
:N→dim(LSUCC)
:N→dim(LPROB)
:For(I,0,N)
:binompdf(N,P,I)→Y
:Y→LPROB(I+1):I→LSUCC(I+1)
:End
:SetUpEditor L1,L2,L3,L4,LSUCC,LPROB
:Pause
:If (R≤6)
:Then
:ClrHome
:Disp "SUCC. PROB"
:For(I,0,R)
:Float
:Output(I+2,3,I)
:Fix 4
:Output(I+2,8,LPROB(I+1))
:End
:Float
:Pause
:End
:Menu("ANOTHER?"
,"YES",A,"NO",Z)

:Lbl Z
:ClrHome
:Disp "THANKS!"
```

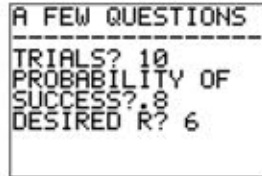
Introduction screen, looks like this:



Example

Suppose a school has students who prefer chocolate milk 80% of the time. Ten students file into the cafeteria and choose either chocolate or skim milk. What is the probability of exactly 6 students choosing chocolate? What is the probability of at most 6? What is the probability of at least 6?

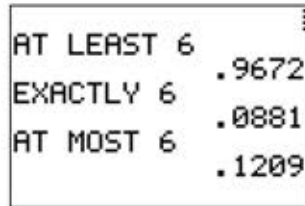
Prompts user to enter trials, N, probability of success P, and the desired number of successes for the given trials, R it looks like this:



What this program does:

This program take inputs *trials*, *probability of success*, and *desired successes* and outputs the binomial probabilities of at least, exactly, and at most. It also creates a list of the probabilities of the binomial expansion.

Main output. This section calculates the binomial distributions for "at least", "exactly" and "at most." All output is rounded to 4 decimals.



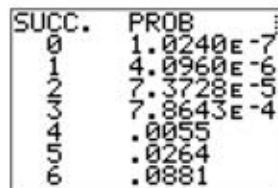
This program and PDF is available at <http://www.andyborne.com/math>



Save paper! View on your tablet device

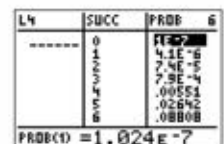
This section creates two lists, SUCC, and PROB which are available for viewing after the program has run. See below.

If R is 6 or less, then there is enough room to quickly view the probability terms individually. If there are more than 6, then this is skipped, and you may view them using the lists editor.



After the program is run: Viewing the lists SUCC and PROB

1.) From the Home Screen, you can view the lists by pressing the **[STAT]** button.



2.) Select 1: Edit...

3.) then Arrow past L4...

Want to restore your Lists L1 thru L6 back to normal? Select 5: SetUpEditor and press [ENTER]

Prompts the user to run the program again or exit to the home screen