

Statistics on the TI-82

These functions are already “built-in” to the TI-82,
except for the “extra programs”.

Extra programs are available in the TI-82 APPENDIX of this book.

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Operations on LISTS :

For example, $3 * L1$ **ENTER** on the "Home Screen" will create a new list with each value of L1 tripled. Or in the "List Edit" screen, move the cursor on top of a list name (ex. L2), then type $3 * L1$ **ENTER**

Entering one-variable "grouped" data into two LISTS :

- 1) See the instructions on entering data into a single LIST.
 - 2) Enter the x-values in L1 and the frequencies in L2 , for example.
- Note: An error will occur if the lengths of L1 & L2 are different.

Finding the mean, median, Q_1 , Q_3 & standard deviation

for one-variable "grouped" data in two LISTS :

After the data have been entered into two LISTS, then

- 1) Press the **STAT** key.
- 2) Right-arrow to CALC.
- 3) Either choose #1 (1-Var Stats) or **ENTER**
- 4) On the home screen, specify which LISTS are to be used.
For example, press **2nd** **1** (L1) **,** **2nd** **2** (L2)
- 5) Press **ENTER**
- 6) Then scroll with the DownArrow to see everything.

step 2)

```
EDIT STAT
1:1-Var Stats
2:2-Var Stats
3:SetUp...
4:Med-Med
5:LinReg(ax+b)
6:QuadReg
7↓CubicReg
```

step 4)

```
1-Var Stats L1,L
2
```

step 6) results (for example)

```
1-Var Stats
 $\bar{x}$ =6.25
 $\Sigma x$ =25
 $\Sigma x^2$ =191
 $S_x$ =3.403429643
 $\sigma_x$ =2.947456531
↓n=4
```

Entering two-variable raw data into two LISTS :

- 1) See the instructions on entering data into a single LIST.
 - 2) Enter the x-values in L1 and the y-values in L2 , for example.
- Note: An error will occur if the lengths of L1 & L2 are different.

**Finding the means, sums & standard deviations
for two-variable raw data in 2 LISTS:**

After the data have been entered into two LISTS, then

- 1) Press the **STAT** key.
- 2) Right-arrow to CALC.
- 3) Choose #2 (2-var stats).
- 4) On the home screen, specify which LISTS are to be used.
For example, press **2nd** **1** (L1) **,** **2nd** **2** (L2)
- 5) Press **ENTER**
- 6) Then scroll with the DownArrow to see everything.

step 4) home screen:

```
2-Var Stats L1,L2
```

step 5)
press

ENTER

step 6) result
(for example):

```
2-Var Stats
x=4.8
Σx=24
Σx²=138
Sx=2.387467277
σx=2.13541565
↓n=5
```

Finding the median, Q₁, & Q₃

for two-variable raw data in 2 LISTS:

After the data have been entered into two LISTS, then

- 1) See the instructions on finding the median, Q₁ & Q₃ for a “single” list.
- 2) Repeat step #1 for the second list.

Finding a Regression Equation or the correlation coefficient (r) :

After the data have been entered into two LISTS, then

- 1) Press the **STAT** key.
- 2) Right-arrow to CALC.
- 3) Choose one of the following: (never choose #5 for this class)

#9 Linear Regression	$y = a + bx$
#6 Quadratic Regression	$y = ax^2 + bx + c$
#7 Cubic Regression	$y = ax^3 + bx^2 + cx + d$
#8 Quartic Regression	$y = ax^4 + bx^3 + cx^2 + dx + e$
#0 Natural Logarithmic Regression	$y = a + b \cdot \ln x$
#A Exponential Regression	$y = a \cdot b^x$
#B Power Regression	$y = a \cdot x^b$

...continued...

Finding a Regression Equation or the correlation coefficient (r) :

...continued...

- 4) Then on the home screen, specify which LISTs are to be used.

For example, press $\boxed{2nd} \boxed{1}$ (L1) $\boxed{,} \boxed{2nd} \boxed{2}$ (L2)

- 5) Press \boxed{ENTER}

step 4) home screen:

```
LinReg(a+bx) L1,  
L2
```

step 5)

press

\boxed{ENTER}

resulting home screen
(for example):

```
LinReg  
y=a+bx  
a=5.157894737  
b=.1754385965  
r=.1436657053
```

Graphing a Regression Equation by hand :

- 1) Press $\boxed{Y=}$ and choose a function (for example, Y1).
- 2) If necessary, then \boxed{CLEAR} out any old functions.
- 3) Enter the numbers and symbols and x-variable in the function.
- 4) Either set the \boxed{WINDOW} by hand or \boxed{ZOOM} automatically.
- 5) Optionally \boxed{TRACE} on Y1 moving left & right.

step 3) (for example)

```
Y1=5.158+.1754X  
Y2=  
Y3=
```

Graphing a Regression Equation automatically :

Immediately after calculating a regression equation, then

- 1) Press $\boxed{Y=}$ and choose a function (for example, Y1).
- 2) If necessary, then \boxed{CLEAR} out any old functions.
- 3) Press \boxed{VARS}
- 4) Right-arrow twice to (EQ)
- 5) Choose #7 (REGEQ). Whichever regression equation was found most recently will be automatically copied into the $\boxed{Y=}$ editor.
- 6) Either set the \boxed{WINDOW} by hand or \boxed{ZOOM} automatically.
- 7) Optionally \boxed{TRACE} on Y1 moving left & right.

Note: remember to turn “Off” a “Stat Plot” for regular $\boxed{Y=}$ graphing.

Note: remember to turn “Off” regular $\boxed{Y=}$ functions for “Stat Plots”.

Drawing a histogram :

After the data have been entered into a LIST, then

- 1) Press **2nd** **Y=** (Stat Plot).
- 2) We will not need all 3 of them, but just Stat Plot #1 (**ENTER**).
- 3) Be sure that "On" is selected (& stays highlighted) (**ENTER**).
- 4) Move to the icon that looks like a histogram (**ENTER**).
- 5) Choose the LIST you want. For example, use L1 (**ENTER**).
- 6) The "Frequency" is always "1". (To use each and every datum).
- 7) Press **WINDOW** and make some Adjustments.

Adjustments to a histogram (in **WINDOW**) :

- 1) XMin is the starting point for the first class. Ex. let it be 0 .
- 2) XMax should be bigger than the largest datum.
For example, let XMax = 100 if the highest # in the data is 98.
- 3) XSc1 is the width of the classes (rectangles).
For example, if XSc1 = 5 , then classes will be 0-4 , 5-9 , 10-14 , ...
Or if XSc1 = 10 , then classes will be 0-9 , 10-19 , 20-29 , ...
- 4) YMin should start at -3. Adjust as needed.
- 5) YMax should start at 10. Adjust as needed.
- 6) YSc1 does not affect the histogram.
- 7) Now **TRACE**

Note: Do Not **ZOOM** on a histogram , since that will change the **WINDOW**

(for example)
using these data

L1	L2	L3
FF	-----	-----

L1(1)=18		

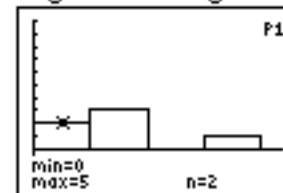
and this "Stat Plot"

```
Plot1
Off
Type: L1
Xlist: L1 L2 L3 L4 L5 L6
Frcq: 1 L1 L2 L3 L4 L5 L6
```

and this "window"

```
WINDOW FORMAT
Xmin=0
Xmax=22
Xsc1=5
Ymin=-3
Ymax=10
Ysc1=1
```

to get this histogram



Note: remember to turn "Off" regular **Y=** functions for "Stat Plots".

Note: remember to turn "Off" a "Stat Plot" for regular **Y=** graphing.

Drawing a box-plot :

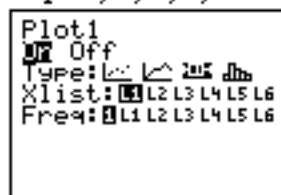
After the data have been entered into a LIST, then

- 1) Press **2nd** **Y=** (Stat Plot).
- 2) We will not need all 3 of them, but just Stat Plot #1 (**ENTER**).
- 3) Be sure that "On" is selected (& stays highlighted) (**ENTER**).
- 4) Move to the icon that looks like a box-and-whisker plot (**ENTER**).
- 5) Choose the LIST you want. For example, use L1 (**ENTER**).
- 6) The "Frequency" is always "1". (To use each and every datum).
- 7) If the **WINDOW** is not yet set, then **ZOOM** #9 (ZOOMSTAT).
- 8) Press **TRACE**

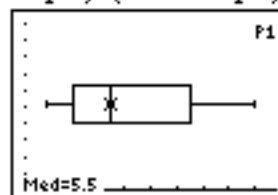
step 1) (for example)



steps 3, 4, 5, 6)



step 8) (for example)



Drawing a connected scatterplot (or a non-connected scatterplot) :

After the data have been entered into two LISTS, then

- 1) Press **2nd** **Y=** (Stat Plot).
- 2) We will not need all 3 of them, but just Stat Plot #1 (**ENTER**).
- 3) Be sure that "On" is selected (& stays highlighted) (**ENTER**).
- 4) Move to the icon that looks like a scatterplot (**ENTER**).
- 5) Choose the LISTS you want. For example, use L1 & L2 (**ENTER**).
- 6) Choose the "Mark" that you like. Little squares look nice (**ENTER**).
- 7) If the **WINDOW** is not yet set, then **ZOOM** #9 (ZOOMSTAT).
- 8) Press **TRACE**

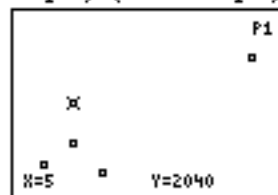
step 1) (for example)



steps 3, 4, 5, 6)



step 8) (for example)



Note: remember to turn "Off" regular **Y=** functions for "Stat Plots".

Note: remember to turn "Off" a "Stat Plot" for regular **Y=** graphing.

Random number between 0 & 1 :

- 1) On a clear line of the “home screen”, press **MATH**
- 2) LeftArrow (or RightArrow) to the PRB menu.
- 3) Either choose #1 or **ENTER** (rand)
- 4) Once on the “home screen” again, then press **ENTER**

Random number between 0 & 7 (or for some number other than 7) :

- 1) On a clear line of the “home screen”, press **7** (or some other #) .
- 2) Press ***** to multiply.
- 3) Press **MATH**
- 4) LeftArrow (or RightArrow) to the PRB menu.
- 5) Either choose #1 or **ENTER** (rand)
- 6) Once on the “home screen” again, then press **ENTER**

Sequence of 99 random 0s & 1s (as if flipping a coin 99 times) :

- 1) On a clear line of the “home screen”, press **2nd** **STAT** (LIST)
- 2) Choose #5 [seq(]
- 3) Press **MATH**
- 4) RightArrow to the NUM menu.
- 5) Choose #2 (iPart)
- 6) Press **(** **2** ***** **MATH**
- 7) LeftArrow (or RightArrow) to the PRB menu.
- 8) Either choose #1 or **ENTER** (rand)
- 9) Press **)** **,** **XTN** **,** **1** **,** **99** **,** **1** **)** **ENTER**
- 10) Wait a few seconds and then scroll with the RightArrow key.

Permutations (nPr or $P_{n,r}$) :

- 1) On a clear line of the “home screen”, press the first number (n)
- 2) Press **MATH**
- 3) LeftArrow (or RightArrow) to the PRB menu.
- 4) Choose #2 (nPr)
- 5) Once on the “home screen” again, then press the 2nd. number (r)
- 6) Press **ENTER**

Combinations (nCr or $C_{n,r}$) :

do the same as with Permutations (nPr), except choose #3 (nCr)

How to run an "extra program" :

- 1) If necessary, then enter the program into the calculator (see the Appendix of this book for details).
- 2) On a clear line of the "home screen", press the **PRGM** key.
- 3) Choose which program you want.
- 4) Once on the "home screen" again, then press **ENTER**

** Note: if at anytime you see a screen like this **

```
PROGRAM:BIN
:ClrHome:ClrList
L1,L2,L3,L4
:FnOff :PlotsOff
```

or this

```
PROGRAM:BELLS
:ClrHome
:Menu("BELL 5 ",
"X W/ X + S",1,
"X W/ L1 DATA",
6,"Z (x=0 S=1)",
```

** then you want to get back to the "home screen" right away before **
 ** your program is destroyed. The safest way to get out of the **
 ** "program editor" and on to the "home screen" is to press **2nd QUIT** **

Extra program: AREA4T

"DF" stands for "Degrees of Freedom", which is defined to be "n-1" for this class. Input both the lower & upper bound "t axis numbers". After a few seconds, the probability (area) is output.

Extra program: AREACHI²

"DF" stands for "Degrees of Freedom", which is defined to be "n-1" for this class. Input both the lower & upper bound " ² axis numbers". After a few seconds, the probability (area) is output.

Extra program: CIZT

This will calculate Confidence Intervals based on Z and T. The appropriate formula is automatically chosen, depending on whether there are 1 or 2 samples & whether there are means or proportions. It will also output the "test value" (axis number) of a hypothesis test.

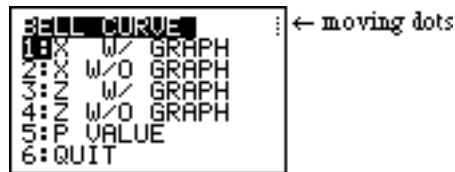
Note about Upper Bounds & Lower Bounds:

If only given one bound, then you need to create another (arbitrary) bound. Do this twice in order to verify that your bound is "big" enough.

Extra program: BELL

When you see the moving dots in the upper-right corner, then the calculator is waiting for you to press a menu choice.

There are 6 choices here:



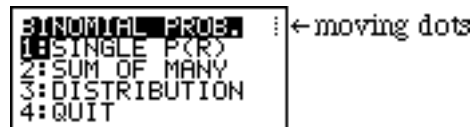
Choices #1 & #2 will output an area (probability) if you input the mean, standard deviation, lower (x) bound and upper (x) bound.

Choices #3 & #4 will output an area (probability) if you input the lower (z) boundary and upper (z) boundary.

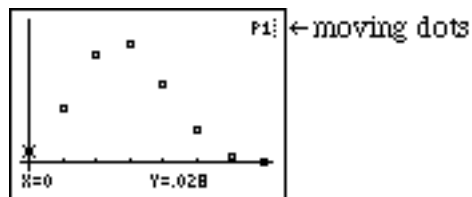
Choice #5 will output a z-axis boundary number if you input a tail area. (This is 'backwards' from the usual probability problem).

Extra program: BIN

When you see the moving dots in the upper-right corner, then the calculator is waiting for you to press a menu choice (for example #3):



For example, choose #3. Let $p = 0.4$ & $n = 7$. Then the result is:



{ In this example, $P(0 \text{ successes out of } 7 \text{ trials})$ is $.028$ }.

The cursor can also be moved to the left to show more probabilities.

Now, the calculator is waiting for you to press the **ENTER** key.

Extra program: DEFAULTS

* Every calculator owner should put this program on their calculator! *
 This is used as a “sub-program” at the beginning of some “regular” programs, such as prgmBELL . So if prgmDEFAULTS is missing from your calculator, then prgmBELL (for example) will not work. These are some of the default modes that prgmDEFAULTS sets:

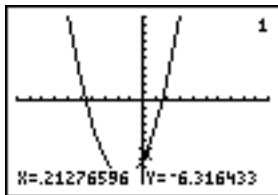


Extra program: FRNDLYWN

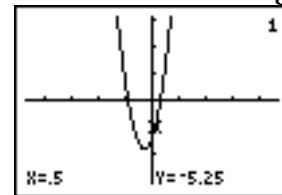
When using the TRACE feature on a Y= function, this program makes the numbers nice and FRIENDLY in the WINDOW.

For example, let $Y_1 = X^2 + 3X - 7$.

Then ZOOM #6 (Standard) and TRACE and RightArrow once to get:



, instead of this friendly window:



(center x = 0 center y = 0 x-factor = .5 y-factor = .5)

Extra program: POLYDIV

We will not use this in Statistics class. But if you ever need to DIVIDE a POLYNOMIAL again in a math class, then try this.

For example, if you are given $\frac{2n^3 + 9n^2 - 2}{2n + 1}$, then input {2, 9, 0, -2} and {2,1} to get these 2 outputs:

- {1, 4, -2} (quotient)
- {0, 0, 0, 0} (remainder)

In this example, the fraction reduces to the answer: $n^2 + 4n - 2$.

Extra program: POYLMULT

(Use the same instructions as with PolyDiv).

TI-82 APPENDIX

There are 4 ways to get “extra programs” onto your TI-82. From:

- another TI-82 that already has the programs.
- a math department computer that has them on disk.
- either email or the internet to your personal computer.
- manually entering each line of the program from this Appendix.

Sending programs from a TI-82 to another TI-82 :

1) Link the 2 calculators with a black cable provided with purchase.

Note: push the cable in FAR , not just in a little bit.

On the receiving calculator:

- 2) Press **2nd** **X.T.O** (LINK)
- 3) RightArrow to RECEIVE
- 4) Press **ENTER**

On the sending calculator:

- 5) Press **2nd** **X.T.O** (LINK)
- 6) Any option #1 or #2 or #3 is OK. Most popular is option #2
- 7) If using option #2, then nothing is selected yet:

SELECT	TRANSMIT
▶A	PRGM
AREA4T	PRGM
AREACHI2	PRGM
BELL	PRGM
BIN	PRGM
CIZT	PRGM
CONIC	PRGM

8) DownArrow & UpArrow as necessary to each program to be sent, pressing **ENTER** at each one to be selected. For example:

only AREA4T & BIN are selected

SELECT	TRANSMIT
A	PRGM
▪ AREA4T	PRGM
AREACHI2	PRGM
BELL	PRGM
♦ BIN	PRGM
CIZT	PRGM
CONIC	PRGM

- 9) RightArrow to TRANSMIT & **ENTER**
- 10) Press **2nd** **MODE** (QUIT) to return to the home screen.

Sending programs from a computer to a TI-82 :

- 1) Link the calculator to the computer with a big gray “LINK” cable, sold separately from the calculator. Call for details: 1-800-TI-CARES (It’s different than the small black calc-to-calc cable).

Note: push the cable in FAR , not just in a little bit.

On the sending computer:

- 2) Open the “TI-GRAPH LINK (82)” software.
 - 3) Move the mouse pointer to: Send
 - 4) Click-&-Drag the mouse pointer to: Program...
 - 5) Choose the program files to be sent by using
 - 6) When ready to send, then press
- (The computer now gives the option to either or)

On the receiving calculator:

- 7) Press (LINK)
- 8) RightArrow to RECEIVE
- 9) Press

On the sending computer:

- 10) Press

On the receiving calculator:

- 11) Press (QUIT) to return to the home screen.

Obtaining programs from email or the internet :

- 1) Write the author (Mark Harbison): mhfractal@aol.com
(Please allow up to 2 weeks for a response. Thank you.)
OR point a web browser to: <http://www.ti.com/calc>
and go to the “program archive”.
- 2) If necessary, use “File” “Utilities...” “UUDecode File...”
to translate the file from email-friendly code into calculator code.
- 3) Follow the above instructions for getting programs
from the computer into the calculator.

Manually entering each line of the program from this Appendix.

This should be a last-resort method only. Any of the 3 previous methods is preferable to this. Editing programs is not recommended, except for experienced programmers.

However, the "Programming" chapter of the TI-82 Owner's Manual can get you started with this, if you are interested. Good luck.

```

AREACHI 2          • Program. 82
: Goto H
: BY HARBISON
:   Mar. 98
:
: Lbl H
: ClrHome
: Input "DF= ", D
: Input "LOWER CHI² = ", L
: Input "UPPER CHI² = ", U
: If (L<0 or U<0): Then
: Disp "POS. CHI² ONLY"
: Stop
: End
: If L>142: 142→L
: If U>142: 142→U
:
: D/2→K
: If fPart K=0: Then
: (K-1)! →G
: Else
:   →G
: .5→X
: While X<K-.5
: X*G→G
: X+1→X
: End
: End
:
: fnInt (X^(K-1)*e^(-X/2), X, L, U)
: Ans/(G*2^K) →W
: round(W, 4) →W
: Output(6, 1, "AREA IS")
: Output(6, 10, W)
: Disp "", "", ""
:
: Input "DF= ", D
: Input "LOWER T= ", L
: Input "UPPER T= ", U
: If L>8: 8→L
: If L<-8: -8→L
: If U>8: 8→U
: If U<-8: -8→U
: 0→M
: D/2→A
:
: Lbl E
: If fPart A=0: Then
: (A-1)! →G
: Else
:   →G: .5→X
: While X<A-.5
: X*G→G: X+1→X
: End
: End
: If 0=M: Then
: G→C: (D+1)/2→A
: End
: M+1→M
: If 1=M: Goto E
: fnInt((1+X²/D)^-A, X, L, U)
: Ans*G/(C(D)) →W
: round(W, 4) →W
: Disp "AREA IS ", W, ""

```

```

AREA4T          • Program. 82
: Goto H
: BY ALIAGA +
:   HARBISON :   Mar. 98
:
: Lbl H
: ClrHome
:
: BELL          • Program. 82
: Goto 0
: M. HARBISON: OCT. 1997
: Lbl 0
: ClrHome
: StoreGDB GDB4
: prgmDEFAULTS
: 1→C
: Menu("BELL CURVE ", "X W/O
  GRAPH", 3, "X W/ GRAPH", 2, "Z W/O
  GRAPH", 5, "Z W/ GRAPH", 4, "P
  VALUE", P, "QUIT", Q)
:
: Lbl Q

```

```

:ClrHome
:Stop
:
:Lbl 3
:0→C
:
:Lbl 2
:"(S (2))-1*e(-.5((X-M)/S)2)→Y1
:Di sp "X WITH  $\bar{x}$  AND S"
:If C 0:Di sp " (W/ GRAPH) "
:Di sp ""
:Input " MEAN= ", M
:Di sp "", "STANDARD "
:Input " DEV. = ", S
:If S 0:Then
:Di sp "", " S MUST BE > 0", ""
:Pause
:Goto 1
:End
:ClrHome
:Di sp "TO FIND THE"
:Di sp "PERCENT AREA"
:Di sp "UNDER BELL CURVE"
:Di sp "BETWEEN 2 SCORES", ""
:Input "LOWER X= ", L
:Input "UPPER X= ", U
:If (L-M)/S>6:6*S+M→L
:If (L-M)/S<-6:-6*S+M→L
:If (U-M)/S>6:6*S+M→U
:If (U-M)/S<-6:-6*S+M→U
:
:fnInt(Y1, X, L, U) →A
:round(A, 5) →A
:If C=0:Then
:Di sp "Area= ", A
:FnOff
:Stop
:End
:
:ClrDraw
:M-4S→Xmi n
:M+4S→Xmax
:1→Xscl
:-(S (2))-1/3→Ymi n
:(S (2))-1 →Ymax
:0→Yscl
:Text(2, 1, "AREA =")
:Text(8, 1, A)
:Shade(0, Y1, 1, L, U)
:Pause
:Recal l GDB GDB4
:ClrHome
:FnOff
:Stop
:Lbl 5
:0→C
:
:Lbl 4
:FnOff :ClrHome:PlotsOff
:"(e(-X2/2))/( (2) )" →Y5
:Di sp "Z ( $\bar{x}$ =0 , S=1 )"
:If C 0:Di sp " (W/ GRAPH) "
:Di sp ""
:Di sp "USE 5 OR -5 FOR", "+ OR -
INFINITY", ""
:Input "LOW BOUND ", A
:Input "UPPER BOUND ", B
:fnInt(Y5, X, A, B)
:round(Ans, 5) →V
:If C=0:Then
:Di sp "", "Area= ", V
:FnOff
:Stop
:End
:
:ClrDraw
:-3.2→Xmi n:3.2→Xmax:1→Xscl
:0→Ymi n:.5→Ymax:1→Yscl
:Shade(0, Y5, 1, A, B)
:Text(1, 1, "P=", V)
:Pause
:Di sp ""
:FnOff
:Stop
:
:Lbl P
:ClrHome
:Di sp "0<P<.5000", "", " {TAIL
AREA}", ""
:Input "P: ", P
:.5-P→P
:If P .5 or P<0:Then
:Di sp " TRY AGAIN", " 0<P<.5
ONLY"
:Pause
:Goto P
:End
:"e(-X2/2)/ 2 " →Y5
:2→Z:0→L:4→U:1E-6→E
:
:Lbl F
:Z→T
:fnInt(Y5, X, 0, Z) →Q
:If Q>P+E

```

```

: Goto G
: If Q>P- E
: Goto H
: (T+U) /2→Z
: T→L: Goto F
:
: Lbl G
: (T+L) /2→Z
: T→U: Goto F
:
: Lbl H
: round(Z, 3) →Z
: Di sp "", "LOWER BOUND = ", Z, ""
: Di sp "UPPER = BIG Z"
: FnOff
: Stop

```

```

BIN • Program. 82
: Cl rHome: Cl rLi st L1, L2, L3, L4
: FnOff : Pl otsOff
: Menu("BINOMIAL PROB.", "SINGLE
P(R)", 1, "SUM OF
MANY", 2, "DI STRI BUTI ON", 3, "QUI T", 4
)
: Lbl 4
: Stop
:
: Lbl 1
: Prompt P
: If P<0 or P>1: Goto 7
: Prompt N, R
: If fPart N 0 or fPart R 0 or N<0
or R<0
: Goto 8
: N nCr R *P^R * (1- P) ^ (N- R) →K
: round(K, 5) →K: Di sp "", "P(R OUT OF
N)=", K
: Return
:
: Lbl 3
: Prompt P
: If P<0 or P>1: Goto 7
: Prompt N
: If fPart N 0 or N<0: Goto 8
: For(R, 0, N)
: N nCr R *P^R * (1- P) ^ (N- R) →L3(R+1)
: End
: For(H, 1, N+1)
: H- 1→L4(H)
: End
: round(L3, 3) →L3: Pl ot 1(Scatter,
L4, L3, □)

```

```

: -3*N/91→Xmi n: 94*N/91→Xmax:
1→Xscl : 1→Yscl
: -. 2*max(L3) →Ymi n: 1. 2*max(L3)
→Ymax
: Di spGraph: Trace
: Text (55, 45, "(PRESS CLEAR) "
: Stop
:
: Lbl 7
: Di sp "", " P MUST BE"
: Di sp "BETWEEN 0 AND 1", "": Stop
: Lbl 8
: Di sp "", " N AND R MUST BE"
: Di sp " INTEGERS 0": Stop
: Lbl 9
: Di sp "", "R MUST BE 0 R N", "": Stop
:
: Lbl 2
: Prompt P
: If P<0 or P>1: Goto 7
: Prompt N
: If fPart N 0 or N<0: Goto 8
: Input "LOWER R = ", A
: If A<0 or A>N: Goto 9
: If fPart A 0: Goto 8
: Input "UPPER R = ", B
: If fPart B 0: Goto 8
: If B<0 or B>N: Goto 9
: For(I, 1, N+1)
: 0→L2(I)
: End
: For(R, A, B)
: N nCr R *P^R * (1- P) ^ (N- R) →L2(R+1)
: End
: For(J, A, B)
: L2(J+1) →L1(J- A+1)
: End
: round(L1, 3) →L1: sum L1→S
: Di sp "THE SUM IS ", S, "L1: "
: L1

```

```

DEFAULTS • Program. 82
: Normal : Fl oat: Radi an: Connect ed
: Full Screen: RectGC: CoordOn
: Gri dOff: AxesOn: Label Off: Func
: Pl otsOff : FnOff : Cl rDraw
: 4→XFact: 4→YFact: 1→ Tbl
: 0→Tbl Mi n: Cl rHome: Sequenti al

```

POLYDIV • Program. 82

```

:ClrHome
:Disp " TO DIVIDE, ", "INPUT
  COEFFICNTS", " AS {A, B, ...}"
:Prompt L1, L2
:dim L1→S
:dim L2→T
:S-T+1→A
:A→dim L3
:L2→L4
:S→dim L4
:L1→L5
:For(I, 1, A, 1)
:L5(I)/L2(1)→M
:M→L3(I)
:L5-(M*L4)→L5
:Fill(0, L4)
:For(J, 1, T, 1)
:L2(J)→L4(I+J)
:End
:End
:Disp L3<Frac, L5<Frac

```

POLYMULT • Program. 82

```

:ClrHome
:Disp " TO MULTIPLY, ", "INPUT
  COEFFICNTS", " AS {A, B, ...}"
:Prompt L1, L2

```

```

:dim L1→S
:dim L2→T
:S+T-1→dim L3
:Fill(0, L3)
:L3→L4
:For(I, 1, T, 1)
:Fill(0, L3)
:For(J, 1, S, 1)
:L1(J)→L3(J+I-1)
:End
:L2(I)*L3+L4→L4
:End
:L4

```

FRNDLYWN • Program. 82

```

:Lbl A
:Disp "CENTER"
:Input "X=", X:Input "Y=", Y
:Input "X-FACTOR=", F
:Input "Y-FACTOR=", G
:X-4.7F→Xmin: X+4.7F→Xmax: F→Xscl
:Y-3.1G→Ymin: Y+3.1G→Ymax: G→Yscl
:DispGraph: Pause
:Menu("RESCL?", "YES", A, "NO", B)
:Lbl B
:DispGraph: Stop

```