

Statistics on the TI-85

These functions are already “built-in” to the TI-85,
except for the “extra programs”.

Extra programs are available in the TI-85 APPENDIX of this book.

TI-85 Contents	Page
Adjusting the Contrast of the Calculator	37
Entering data into the STAT editor	37
Finding the mean, median, Q_1 , Q_3 & standard deviation for	
1-variable raw data { (xStat = data) , (yStat = 1) }	37
1-variable grouped data { (xStat = data) , (yStat = 1) }	38
2-variable raw data { (xStat, yStat) = data pairs }	38
Drawing a histogram	39
Adjustments to a histogram (in GRAPH RANGE)	39
Drawing an xyLine (or a non-connected scatterplot)	40
Finding a Regression Equation or (r)	40
Graphing a Regression Equation by hand	41
Graphing a Regression Equation automatically	41
Operations on LISTS	42
Random numbers	42
Permutations (nPr)	42
Combinations (nCr)	42
How to run an “extra program”	43
Extra program: AreaChi ²	43
Extra program: AreaT	43
Extra program: BOXPLOT	43
Extra program: BELL	44
Extra program: BINOM	44
Extra program: Clzt	44
Extra program: DEFAULTS	45
Extra program: FRNDLYWN	45
Extra program: POLYDIV	45
Extra program: POLYMULT	45
TI-85 APPENDIX	46-50

To make the screen darker & easier to read, Adjust the Contrast:

- 1) Quickly alternate between $\boxed{2nd}$ UpArrow $\boxed{2nd}$ UpArrow ...
- 2) If the screen gets too dark, then use $\boxed{2nd}$ DownArrow ...
- 3) If the number flashing in the top-right corner is "9" then the battery is almost out. Change all 4 batteries at once.

Entering data into the STAT editor :

- 1) Press the \boxed{STAT} key.
- 2) Choose F2 (EDIT)
- 3) For this class, we will use "xStat" & "yStat" so press \boxed{ENTER} \boxed{ENTER}
- 4) To clear out the old data, choose F5 (CLEARxy)
- 5) Enter each datum one-at-a-time, alternating between the x's & y's.

Note: An error will occur if the number of x-values is not the same as the number of y-values. It is OK to have a "blank x" & "y=1" at the end of the list. But do not use "x=0" unless zero is a value in the data.

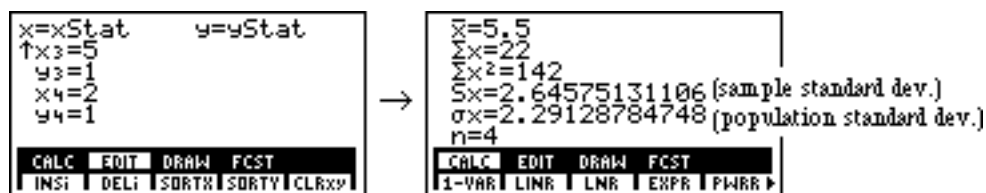
Finding the mean & standard deviations for 1-variable "raw" data

{ (xStat = data) & (yStat = 1) } :

To enter the data, press \boxed{ENTER} \boxed{ENTER} in order to skip over the y' s .
Immediately after the data have been entered into xStat (assuming you already pressed \boxed{STAT} earlier) , then

- 1) Choose $\boxed{2nd}$ F1 (CALC)
- 2) For this class, we will use "xStat" & "yStat" so press \boxed{ENTER} \boxed{ENTER}
- 3) Choose F1 (1-VAR) for "one variable statistics".
- 4) Press \boxed{EXIT} \boxed{EXIT} to return to an active home screen.

For example, use the list { 8, 7, 5, 2 } to get:



Note: the calculator uses the 'y' s for frequency,
as in: "5" occurs 1 time & "2" occurs 1 time.

Finding the mean & standard deviations for 1-variable "grouped" data

{ (xStat = data) & (yStat = 1) } :

To enter the data, it's OK for the y's to be non-1 for the "frequencies".

Immediately after the data have been entered into xStat and yStat (assuming you already pressed **STAT** earlier) , then

- 1) Choose **2nd** F1 (CALC)
- 2) For this class, we will use "xStat" & "yStat" so press **ENTER** **ENTER**
- 3) Choose F1 (1-VAR) for "one variable statistics".

Note: the sample size "n" is now the sum of the products of "xStat" & "yStat". "n" is not the same as length of the "xStat" list.

- 4) Press **EXIT** **EXIT** to return to an active home screen.

Finding the means & standard deviations for 2-variable "raw" data

{ (xStat, yStat) = data pairs } :

On a clear line of the home screen,

- 1) Press **2nd** **[-]** (LIST)
- 2) F1 (right curly bracket)
- 3) Press **1** **,** **1** **,** **1** **,** ...
as many times as the number of pairs "n"
- 4) F2 (left curly bracket)
- 5) Press **STO→**
- 6) Press **LN** (F)
- 7) Press **ENTER**

- 8) Press **STAT**
- 9) F1 (CALC)
- 10) Let "xlist Name"="xStat" & "ylist Name"="F"
- 11) F1 (1-Var) for the \bar{x} & s of the x's
- 12) Press **STAT**
- 13) F1 (CALC)
- 14) Let "xlist Name"="yStat" & "ylist Name"="F"
- 15) F1 (1-Var) for the \bar{y} & s of the y's (Note: x=y here).

Drawing a histogram:

After the data have been entered into xStat , then
(assuming you already pressed **STAT** earlier)

- 1) Choose **2nd** F3 (DRAW)
- 2) If necessary, choose F5 (Clear Draw)
- 3) Choose F1 (HIST)

Note: each “y” stands for a frequency. If “raw” data, then let each $y=1$. If “grouped” data, then let each “y” be a frequency.

Note: If you make any changes to the **RANGE** or **Y(x)=** screens, then any “Drawing” (such as a histogram) must be re-Drawn again.

Adjustments to a histogram (in **GRAPH RANGE**) :

- 1) Either de-Select or **CLEAR** any “y(x)=” functions under **GRAPH**
- 2) XMin is the starting point for the first class. Ex. let it be 0 .
- 3) XMax should be bigger than the largest datum.
For example, let XMax = 100 if the highest # in the data is 98.
- 4) XScI is the width of the classes (rectangles).
For example, if XScI = 5 , then classes will be 0-4 , 5-9 , 10-14 , ...
Or if XScI = 10 , then classes will be 0-9 , 10-19 , 20-29, ...
- 5) YMin should start at -4. Adjust as needed.
- 6) YMax should start at 10. Adjust as needed.
- 7) YScI does not affect the histogram, but YScI = 1 is recommended.
- 8) Draw the histogram again.

For example, enter these data into xStat : { 8, 7, 2, 11, 9, 16, 12 } (n=7)

The sequence of screens is as follows:

- xStat** screen: $x=xStat$, $y=yStat$, $x1=8$, $y1=1$, $x2=7$, $y2=1$. Bottom menu: CALC, EDIT, DRAW, FCST, INST, DELI, SORTX, SORTY, CLRXY.
- GRAPH** screen: Shows a curve. Bottom menu: MODE, RANGE, Z, T, GRAPH.
- Y(x)=** screen: $y1=8-x^2$. Bottom menu: MODE, RANGE, Z, T, GRAPH, x, y, I, D, SELCT.
- STAT** screen: F3 (DRAW) selected. Bottom menu: CALC, EDIT, DRAW, FCST, HIST, SCAT, LINE, DRREG, CLDRAW.
- HIST** screen: F1 (HIST) selected, showing a histogram. Bottom menu: CALC, EDIT, DRAW, FCST, HIST, SCAT, LINE, DRREG, CLDRAW.

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

After the data have been entered into xStat & yStat , then
(assuming you already pressed **STAT** earlier)

- 1) Choose **2nd** F3 (DRAW)
- 2) If necessary, choose F5 (Clear Draw)
- 3) Choose F3 (connected xyLine) or F2 (non-connected plot)
- 4) Adjust the **GRAPH RANGE** as necessary:
(XMax should be bigger than the largest x-value) ,
(YMin should be smaller than the smallest y-value) & so on.
- 5) Press **EXIT EXIT** to return to an active home screen.

Note: the points plotted are very small.

Finding a Regression Equation :

or

Finding the correlation coefficient (r) :

Immediately after the data have been entered into xStat & yStat ,
(assuming you already pressed **STAT** earlier) , then

- 1) Choose **2nd** F1 (CALC)
- 2) For this class, we will use “xStat” & “yStat” so press **ENTER ENTER**
- 3) Choose one of these:
F2 (Linear Regression) $y = a + b*x$
F3 (Natural Logarithmic Reg.) $y = a + b*\ln(x)$ for $x>0$
F4 (Exponential Regression) $y = a*b^x$ for $y>0$
F5 (Power Regression) $y = a*x^b$ for $x>0$ & $y>0$
(**MORE**)
F1 (2nd-degree Polynomial Reg.) $y = a_2x^2 + a_1x + a_0$
F2 (3rd-degree Polynomial Reg.) $y = a_3x^3 + a_2x^2 + a_1x + a_0$
F3 (4th-degree Polynomial Reg.) $y = a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0$
Note: a_0, a_1, a_2, a_3, a_4 are in the “PRegC” list.
- 4) Press **EXIT EXIT** to return to an active home screen.

Graphing a Regression Equation by hand :

After the data have been entered into xStat & yStat
and after LinR has been calculated, then

- 1) Press **GRAPH** **V(X)=** and choose a function (for example, y1).
- 2) If necessary, then de-Select or **CLEAR** out any old functions.
- 3) Enter the numbers and symbols and x-variable in the function.
- 4) Go to **GRAPH** **RANGE** and adjust as necessary.
- 5) Optionally **TRACE** on y1 moving left & right.

For example,



Graphing a Regression Equation automatically :

After the data have been entered into xStat & yStat
and immediately after calculating a regression equation, then

- 1) Press **GRAPH** **V(X)=** and choose a function (for example, y1).
- 2) If necessary, then de-Select or **CLEAR** out any old functions.
- 3) Press **STAT** **VAR**
- 4) Press **MORE** **MORE** F2 (RegEq)
- 5) Go to **GRAPH** **RANGE** and adjust as necessary.
- 6) Optionally **TRACE** on y1 moving left & right.

Operations on LISTS :

For example, $3 \times \text{xStat}$ **ENTER** on the “Home Screen” will create a new list with each value of xStat tripled.

There are 2 ways to type “xStat”:

- either 1) One-letter-at-a-time: **2nd** **ALPHA** **+** (x) **ALPHA** **6** (S)
2nd **ALPHA** **ALPHA** **-** (t) **LOG** (a) **-** (t)
- or 2) From a menu: **2nd** **-** (LIST) F3 (NAMES)
& then look for “xStat” (use the **MORE** key if necessary)

Random number between 0 & 1 :

- 1) Start on a clear line of the “home screen”.
- 2) Press **2nd** **X** (MATH)
- 3) Choose F2 for the PROB menu.
- 4) Choose F4 (rand)
- 5) Press **ENTER**

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

do the same as above, except multiply $7 \times \text{rand}$ before pressing **ENTER**
(or use some number other than 7)

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

- 1) On a clear line of the “home screen”, press the first number (n)
- 2) Press **2nd** **X** (MATH)
- 3) Choose F2 for the PROB menu.
- 4) Choose F2 (nPr)
- 5) Press the 2nd. number (r)
- 6) Press **ENTER**

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

do the same as with Permutations (nPr), except choose F3 (nCr)

How to run an "extra program" :

- 1) Start on a clear line of the "home screen".
- 2) Press the **PRGM** key.
- 3) Press F1 (NAMES)
- 4) Choose which program you want (use **MORE** if necessary).
- 5) Press **ENTER**

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

```
PROGRAM:BINOM
:1→dimL L1
:1→dimL L2
:CLCD:FnOff
:Disp "Binomial Prob.
" ""
:Menu(1,"P(R)",T,3,"S
PAGE↑PAGE↑ I/O CTL INSc ▶
```

or this

```
PROGRAM:Cizt
:Disp "1=Y,0=N"
:Disp "-----
-----"
:Disp "How many Sampl
es"
:Input A
PAGE↑PAGE↑ I/O CTL INSc ▶
```

**
** 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: AreaT

"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 "c² axis numbers". After a few seconds, the probability (area) is output.

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.

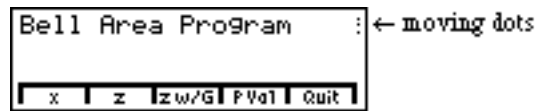
Extra program: Boxplot

First enter the data into xStat . Be sure that all of the frequencies are "1" (let all of the 'y's = 1). Then run the program to get the 5 numbers used in a box plot and also a graph of it. After it is "done", then you may optionally change the "Range" for a better graph.

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 5 choices here:



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

Choice #2 will output an area (probability) if you input the lower (z) boundary and upper (z) boundary without a graph.

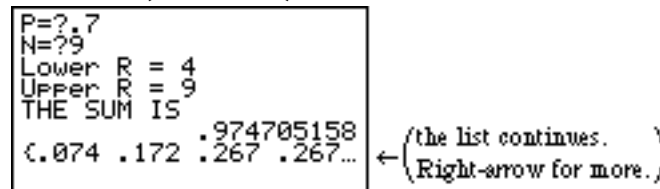
Choice #3 is just like #2, except it also includes a graph.

Choice #4 will output a z-axis boundary number if you input a tail area.

Choice #5 quits the program and returns to the home screen.

Extra program: Binom

For example, choose F3 (sum). Let $p = 0.7$ & $n = 9$ to find $P(3 < x < 10) = P(\text{more than 3 successes out of 9 trials})$



In this example, $P(\text{exactly 4 successes out of 9 trials})$ is .074
& $P(\text{exactly 5 successes out of 9 trials})$ is .172

....

& $P(\text{exactly 9 successes out of 9 trials})$ is .040
which adds up to the final answer: $P(3 < x < 10) = .9747$

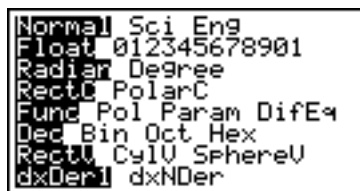
Extra program: Clzt

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.

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.

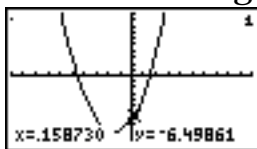
These are some of the modes that it sets:



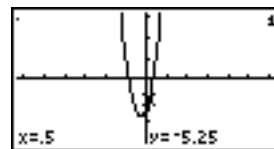
&

Extra program: FRNDLYWN

When using the TRACE feature on a $y(x)=$ function, this program makes the numbers nice and FRIENDLY in the WINDOW. For example, let $y=1x^2+3x-7$. Then ZOOM F4 (Standard) and TRACE and RightArrow once to get:



, instead of this:



which used the program (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 reduces completely to the answer: $n^2 + 4n - 2$.

Extra program: PolyMult

(Use the same instructions as with PolyDiv).

TI-85 APPENDIX

There are 4 ways to get “extra programs” onto your TI-85. From:

- another TI-85 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-85 to another TI-85 :

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-VAR** (LINK)
- 3) F2 to RECEIVE

On the sending calculator:

- 4) Press **2nd** **x-VAR** (LINK)
- 5) F1 to SEND
- 6) F2 for PRGMs
- 7) Observe that nothing has been selected yet:



- 8) DownArrow & UpArrow as necessary to each program to be sent, pressing F2 (SELECT) at each one chosen. For example:

only AreaT & Binom are selected







- 9) F1 to TRANSMIT
- 10) Press **EXIT** to return to the home screen.

Sending programs from a computer to a TI-85 :



- 1) Link the calculator the the computer with a big grey “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 (Macintosh):

- 2) Open the “TI-GRAPH LINK (85)” 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) F2 to RECEIVE

On the sending computer:

- 9) Press 

On the receiving calculator:

- 10) Press  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-85 Owner's Manual can get you started with this, if you are interested. Good luck.

AreaChi 2 • Program. 85

```
: Goto H
: BY HARBI SON
: Mar. 98
:
: Lbl H
: Cl LCD
: Input "DF= ", D
: Input "LOWER CHI 2= ", L
: Input "UPPER CHI 2= ", U
: If (L<0 or U<0):Then
: Di sp "POS. CHI 2 ONLY"
: Stop
: End
:
: If L>142: 142→L
: If U>142: 142→U
:
: D/2→K
:
: If fPart K==0: Then
: (K-1)! →G
: El se
: →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
: Outpt (6, 1, "AREA IS")
: Outpt (6, 10, W)
: Di sp " ", " ", " "
```

DEFAULTS • program. 85

```
: Normal : Fl oat
: Radi an: Func
: DrawLi ne: Seqg
: RectGC: CoordOn
: Gri dOff: AxesOn
: Label Off
: FnOff
: 4→xFact
: 4→yFact
: Cl LCD
```

AreaT • program. 85

```
: Goto H
: bY Aliaga& Harbi son, Mar. 98
:
: Lbl H
: Cl LCD
: 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
: El se
: →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, ""

```

FRNDLYWN • program. 85

```

: Cl LCD
: Lbl A: Disp "CENTER"
: Input "X=", X: Input "Y=", Y
: Input "X-FACTOR=",
: Input "Y-FACTOR=",
: X-63 →xMin: X+63 →xMax: 10
  →xScl
: Y-31 →yMin: Y+31 →yMax: 10
  →yScl
: DispG: Pause: Disp "", "RE-
SCALE?"
: Menu(1, "YES", A, 5, "NO", B)
: Lbl B
: Disp "": DispG: Stop

```

Bell • program. 85

```

: Goto A
: by Harbison Feb. 97
:
: Lbl A
: Cl LCD
: Disp "Bell Area Program", ""
: y1=(e-0.5x2)/(2)
: 0→M
: Menu(1, "x", G, 2, "z", N, 3, "z
w/G", E, 4, "P
Val", F, 5, "Quit", H)
: Lbl H
: Stop
:
: Lbl E
: 1→M
:
: Lbl N
: Cl LCD
: If M==1: Disp "z Probability
", " with Graph", ""
: If M==0: Disp "z
Probability", " w/o
Graph", ""
:
: Input "Lower z Bound= ", A
: Input "Upper z Bound= ", B
: If A<-6: -6→A
: If A>6: 6→A

```

```

: If B<-6: -6→B
: If B>6: 6→B
:
: If M==1: Then
: FnOff
: FnOn 1
: Cl Drw
: -4→xMin
: 4→xMax
: 1→xScl
: 0→yMin
: .42→yMax
: 1→yScl
: Shade(0, y1, A, B)
: Pause
: End
:
: fnInt((e-0.5x2)/(2),
x, A, B) →W
: round(W, 4) →K
: Outpt(7, 1, "P(A<z<B) =")
: Outpt(7, 11, K)
: Disp ""
: Return
:
: Lbl F
: Cl LCD
: Disp "a P-value is a", "
tiny tail area", ""
: Input "P: ", P
:
: If P .5
: Disp "0<P<.5 ONLY"
: If P .5
: Stop
: .5-P→P
: 2→Z: 0→L: 4→U
: 1E-6→E
:
: Lbl J
: Z→T
: fnInt((e-0.5x2)/(2),
x, 0, Z) →Q
: If Q>P+E: Goto K
: If Q>P-E: Goto L
: (T+U)/2→Z
: T→L: Goto J
:
: Lbl K
: (T+L)/2→Z
: T→U: Goto J
:
: Lbl L
: round(Z, 3) →Z

```

```

: Disp "", "Lower Bound =
", Z, ""
: Disp "Upper = Some BIG z"
: Return
:
: Lbl G
: Cl LCD
: Disp "x Probability", ""
: Input " mean  $\mu$  = ", G
: Input "st. dev. = ", H
: Input "Lower x Bound= ", A
: Input "Upper x Bound= ", B
: (A - G) / H  $\rightarrow$  C: (B - G) / H  $\rightarrow$  D
: If C > 6: 6  $\rightarrow$  C: If C < -6: -6  $\rightarrow$  C
: If D > 6: 6  $\rightarrow$  D: If D < -6: -6  $\rightarrow$  D
: abs fnInt((e-. 5x2) / (2 ),
x, C, D)  $\rightarrow$  K
: round(K, 4)  $\rightarrow$  W
: Outpt(8, 1, "P(A<x<B) =")
: Outpt(8, 11, W)

```

Pol yDi v • program. 85

```

: Cl LCD
: Disp " POLYNOMIAL DIVISION"
: Disp "", "TO ENTER
COEFFICIENTS"
: Disp "{A, B} PRESS 2nd
LIST", ""
: Input "L1=", L1: Input
"L2=", L2
: di mL L1  $\rightarrow$  S: di mL L2  $\rightarrow$  T: S-
T+1  $\rightarrow$  A
: A  $\rightarrow$  di mL L3: L2  $\rightarrow$  L4: S  $\rightarrow$  di mL
L4: L1  $\rightarrow$  L5
: For(I, 1, A, 1)
: L5(I) / L2(1)  $\rightarrow$  M: M  $\rightarrow$  L3(I)
: L5 - (M * L4)  $\rightarrow$  L5: Fill(0, L4)
: For(J, 1, T, 1)
: L2(J)  $\rightarrow$  L4(I+J)
: End: End: Disp
L3  $\times$  Frac, L5  $\times$  Frac

```

Pol yMul t • program. 85

```

: Cl LCD
: Disp " POLYNOMIAL MULT. "
: Disp "", "TO ENTER
COEFFICIENTS"
: Disp "{A, B} PRESS 2nd
LIST", ""
: Input "L1=", L1: Input
"L2=", L2
: di mL L1  $\rightarrow$  S: di mL L2  $\rightarrow$  T: S+T-
1  $\rightarrow$  di mL L3

```

```

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

```

Bi nom • program. 85

```

: DEFAULTS
: 1  $\rightarrow$  di mL L1: 1  $\rightarrow$  di mL L2
: Cl LCD: FnOff
: Disp "Binomial Prob.", ""
: Menu(1, "P(R)", T, 3, "SUM",
S, 5, "QUIT", R3)
:
: Lbl R3
: Stop
:
: Lbl T
: Prompt P
: If P < 0 or P > 1: Goto A
: Prompt N, R
: If fPart N 0 or fPart R 0
or N < 0 or R < 0: Goto B
:
: N nCr R * PR * (1 - P)(N - R)  $\rightarrow$  K
: Disp "", "P(R OUT OF N) =", K
: Stop
:
: Lbl A
: Disp "", " P MUST BE"
: Disp "BETWEEN 0 AND 1", ""
: Stop
:
: Lbl B
: Disp "", " N AND R MUST BE"
: Disp " INTEGERS 0": Stop
:
: Lbl C
: Disp "", "R MUST BE
0 R N", ""
: Stop
:
: Lbl S
: Prompt P
: If P < 0 or P > 1
: Goto A
: Prompt N
: If fPart N 0 or N < 0
: Goto B
: Input "Lower R = ", A

```

```

: If A<0 or A>N
: Goto C
: If fPart A 0
: Goto B
: Input "Upper R = ", B
: If fPart B 0: Goto B
: If B<0 or B>N: Goto C
:
: 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
:
: sum L1→S
: Disp "THE SUM IS ", S
: round(L1, 3) →L1
: L1

```

Boxplot • program. 85

```

: Goto B
: by Harbison aug, 97
:
: Lbl B
: DEFAULTS
: ClDrw
: If dimL xStat==0: Then
: Disp " Be sure data", "
  are in xStat", ""
: Stop
: End
:
: Fill(1, yStat)
: Sortx
: OneVar
: xStat(1) →A: max(xStat) →B
: If int (n/2)==(n/2): Then
: (xStat(n/2)+xStat(n/2+1))
  /2→M
: Goto C
: End
: xStat(int (n/2)+1→M
:

```

```

: Lbl C
: -1→yMin: 5.2→yMax: 1→yScl
: int ((B+A)/2) →G
: 1*10^(-1+iPart log B) →P
: G-63P→xMin: G+63P→xMax
:
: If fPart (n/4)==0: Goto A
: If fPart (n/4)==.25: Goto A
: xStat(iPart (n/4)+1)→L
: xStat(n-iPart (n/4)→U
: Goto D
: Stop
:
: Lbl A
: (xStat(iPart
  (n/4)+xStat(iPart
  (n/4)+1))/2→L
: (xStat(n-iPart
  (n/4)+xStat(n-iPart
  (n/4)+1))/2→U
:
: Lbl D
: Outpt(3, 1, "Min. =")
: Outpt(3, 9, A)
: Outpt(4, 1, "Q1=")
: Outpt(4, 9, L)
: Outpt(5, 1, "Median=")
: Outpt(5, 9, M)
: Outpt(6, 1, "Q3=")
: Outpt(6, 9, U)
: Outpt(7, 1, "Max. =")
: Outpt(7, 9, B)
: Outpt(8, 1, " (ENTER when
  ready)"
: Disp " (Assuming
  yStat", " Frequencies Are =
  1)"
:
: Pause
: Line(L, 2, L, 4)
: Line(U, 2, U, 4)
: Line(L, 2, U, 2)
: Line(L, 4, U, 4)
: Line(A, 3, L, 3)
: Line(U, 3, B, 3)
: Line(M, 2, M, 4)
: Pause
: Outpt(8, 1, "
  Done"

```