

z-scores and percentiles on the TI-84+

Using the TI-84 Plus / TI-84 Silver Edition Color/ TI-83 Plus

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PROGRAM:ZSCORE
:Lbl A0
:ClrHome
:Menu("Z -SCORE MENU","FIND
Z -SCORES",A1,"Z'S FROM LI
ST",A2,"Z'S FROM P'TILE",A
3,"QUIT",Q)
:Lbl A1
:Disp "CALCS Z -SCORE"
:Disp "AND MORE"
:Disp "-----"
:Input "VALUE: ",X
:Input "MEAN: ",M
:Input "SD: ",S
:(X-M)/S→Z
:ClrHome
:Disp "Z -SCORE:"
:Disp round(Z,4)
:normalcdf(-99,Z,0,1)→P
:Disp "PERCENTILE:"
:Disp round(P,4)
:Disp "PERCENTILE ABOVE:"
:Disp round(1-P,4)
:Pause
:Goto A0
:Lbl A2
:Disp "USES DATA IN L1 TO"

:Disp "CALC Z -SCORES IN L2
"
:Disp "-----"

:If dim(L1)≤0
:Then
:Disp "L1 IS EMPTY."
:Pause
:Goto A0
:Else
:1-Var Stats L1
:(L1- $\bar{x}$ )/ $\sigma_x$ →L2
:Disp "COMPLETE. Z'S ARE"
:Disp "READY IN L2."
:Disp L2
:Goto A0
:Lbl A3
:Disp "FIND Z -SCORE"
:Disp "FROM PERCENTILE"
:Disp "-----"
:Disp "ENTER"
:Input "PERCENTILE: ",L
:L/100→L
:invNorm(L,0,1)→K
:Disp round(K,4)
:Pause
:Goto A0
:Lbl Q
:

```

Example 1: Finding a z-score.

A certain university will give a partial scholarship to students if they are "exceptional" meaning they score at or above the 90th percentile on an entrance exam. Lisa scored a 70 on a test where the mean is 62, and standard deviation is 5.3. What was her z-score and did she earn a scholarship?

Example 2: generating a list of z-scores for an entire list

You would like to see the z-scores for these numbers, in list L1:

$$L_1 = \{28, 26, 34, 18, 29, 34, 24, 20, 17, 27, 29\}$$

Run option "2"

L1	L2
28	.36187
26	0
34	1.4475
18	-1.447
29	.54281
34	1.4475
24	-.3619
20	-1.086
17	-1.628
27	.18094
29	.54281

Example 3: z-score from a percentile

What is the corresponding z-score to the 20th percentile? The 95th? (this assumes $\mu=0$ and $\sigma=1$)