

# Programmes – Normal distribution.

*This resource was written by Derek Smith with the support of CASIO New Zealand. It may be freely distributed but remains the intellectual property of the author and CASIO.*

Select PROG mode from the main menu by using the arrow keys to highlight the PROG icon or pressing B.




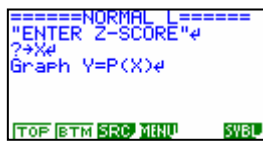
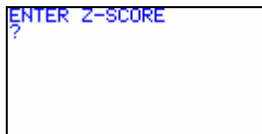
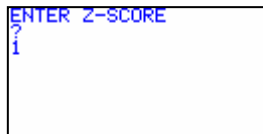
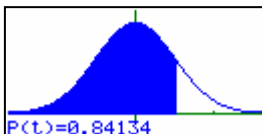
Enter the small programme into the calculator using the program keys, accessed by **PRGM** **SHIFT** **VAR**

To get the following instructions on the screen

- Speech marks “ press **ALPHA** then **F2**
- ? press **SHIFT** **VAR** then **F4**
- Letters press **ALPHA** then the letter required.
- **EXE** brings up the broken arrow.
- Graph  $Y =$  **SHIFT** **F4** **F5** **F1**
- P( or Q( or R( are the normal distribution functions **OPTN** **F6** **F3** **F6** then **F1** or **F2** or **F3**

## Example 1:


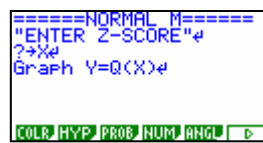
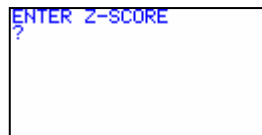
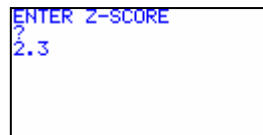
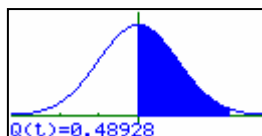
Calculate Prob(  $Z < 1$  )

Probability = 0.84134 (84.134%)

## Example 2:

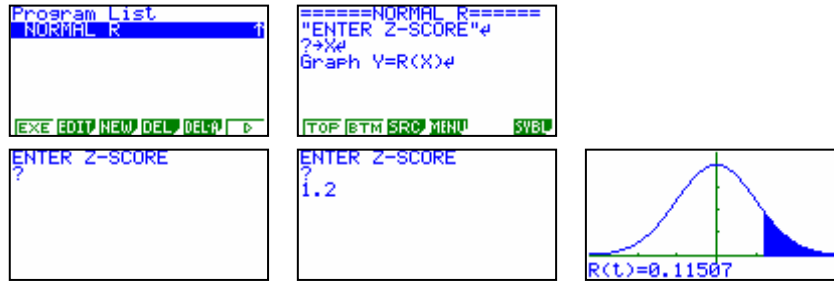
Calculate Prob(  $0 < Z < 2.3$  )

Probability = 0.48928 (48.928%)

**Example 3:**

Calculate Prob( 1.2 < Z )



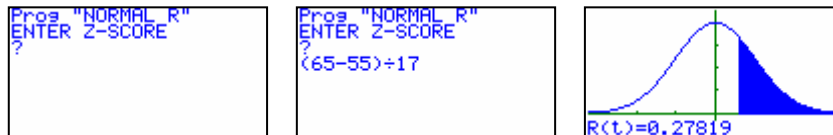
Probability = 0.11507 (11.507%)

**N.B. You can use the Z-Score transform also.**

$$Z = \frac{X - M}{\sigma} \quad \text{or} \quad Z = \frac{X - \text{mean}}{\text{Std Deviation}}$$

**Example 4:**

Calculate the probability of achieving a score of 65 or better in an examination where the mean is 55 and the standard deviation is 17. [Assume that the results are normally distributed.]



Probability = 0.27819 (27.819%)