Chapter 13 / **Example 11**

Using the inverse normal function

The inverse normal function uses either a left, right-tail or central areas. Care should be taken when calculating with this function to ensure the correct tail is being used.

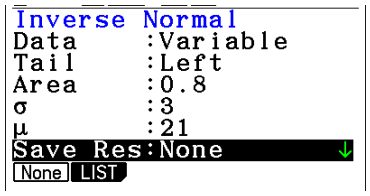
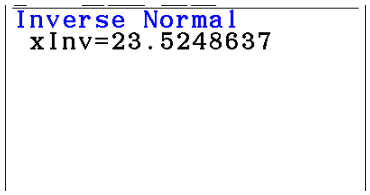
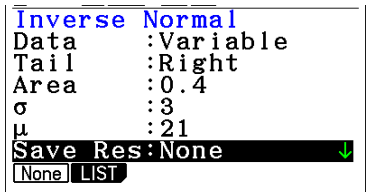
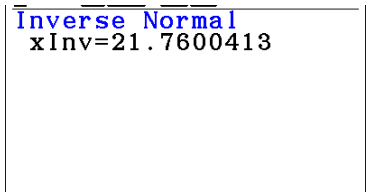
For $X \sim N(21,9)$

1 Find x given that:

a $P(X < x) = 0.8$ **b** $P(X > x) = 0.4$

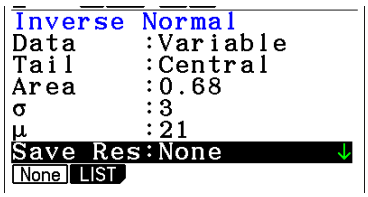
2 **a** Find a and b given that $P(a < X < b) = 0.68$ and a and b are an equal distance either side of the mean.

b Verify that this supports the statement that approximately 68% of all data for a normally distributed population is likely to lie within one standard deviation of the mean.

Press MENU 2 to display the List Editor screen. Press F5 DIST F1 NORM F3 InvN. Select Data F2 Var and Select Tail F1 LEFT. Enter the Area 0.8, 3 as the value of σ, 21 as the value of μ and leave the other items unchanged. Use ▼ to navigate down to Execute and press EXE.	
x = 23.5.	
Press EXIT to display the Inverse Normal template. Select Tail F2 RIGHT. Enter the Area 0.4, leave 3 as the value of σ, 21 as the value of μ and the other items unchanged. Use ▼ to navigate down to Execute and press EXE.	
x = 21.8.	

Chapter 13 / **Example 11**

Using the inverse normal function

Press EXIT to display the Inverse Normal template. Select Tail F3 CENTRAL. Enter the Area 0.68, leave 3 as the value of σ, 21 as the value of μ and the other items unchanged. Use ▼ to navigate down to Execute and press EXE.	
a = 18.0 and b = 24.0. $18.0 = \mu - \sigma$, $24.0 = \mu + \sigma$.