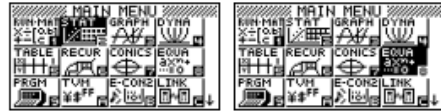


Probably it's about 'Normal' probabilities.

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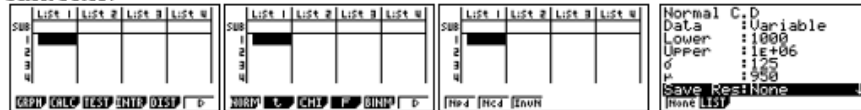
Select **STAT** and **EQUA** modes, from the **MAIN MENU**, by using the arrow keys to highlight either, the **STAT** or **EQUA** icon or by pressing **2** or **8**.



Tests show that the bone mineral density (BMD) of 25-year-old females is approximately normally distributed, with a mean of 950 mg/cm² and a standard deviation of 125 mg/cm².

1. What is the probability that a 25-year-old female has a BMD of more than 1000 mg/cm²?

Select **STAT**:

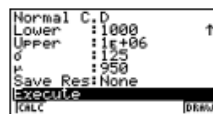


DIST [F5]

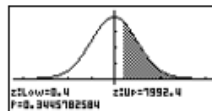
NORM [F1]

Ncd [F2]

Enter the known values.



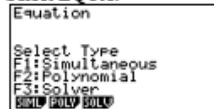
Scroll down then **DRAW [F6]**.



Graph drawn and required solution information is given.

2. Ngaio is a 25-year-old. Her BMD has a z-value of 0.49. What is Ngaio's actual BMD measurement?

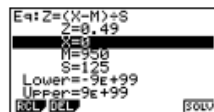
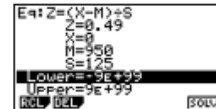
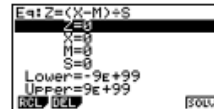
Select **EQUA**:



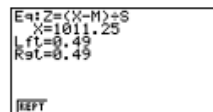
SOLV [F3]



Clear any previous work. Enter the Z-score transform.



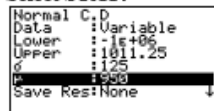
Move the cursor to 'highlight' the target variable 'X'



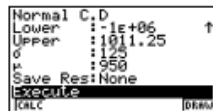
SOLV [F6] or **[EXE]**.

3. What proportion of 25-year-old females could be expected to have a BMD that is less than Ngaio's?

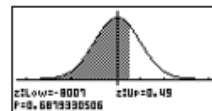
Select **STAT**:



Enter the known values.



Scroll down then **DRAW [F6]**.

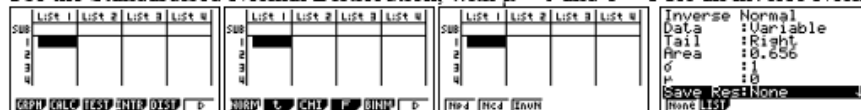


Graph drawn and required solution information is

4. Tests show that the BMD of 25-year-old males is approximately normally distributed, with a standard deviation of 150 mg/cm². If the probability that a randomly chosen 25-year-old male has a BMD above 1000 mg/cm² is 0.656, find the mean BMD of 25-year-old males.

Select **STAT**:

Use the **Standardised Normal Distribution**, with $\mu = 0$ and $\sigma = 1$ for an inverse Normal Calculation.



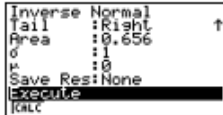
DIST [F5]

NORM [F1]

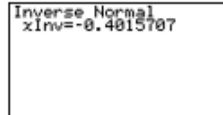
Inv-N [F3]

Enter the known values.





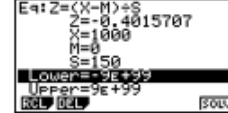
Scroll down then
CALC [F1] or
[EXE].



The required solution
information is given.

Use this information to calculate the mean.

Select EQUA:

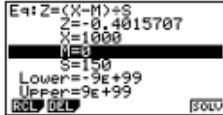


Clear any previous work.

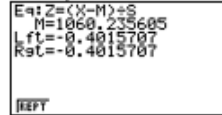
Enter the Z-score transform.

Enter the known values.

(Previously used so set all variable to 0.)



Move the cursor to
'highlight' the target
variable 'X'.



SOLV [F6]
or [EXE].

ALSO...

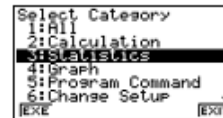
This can be done in the RUN-MAT



icon.

Using the CATALOG key [SHIFT] [4].

Then [F6] to select a category (Statistics)



Scroll down until you get to:

NormCD(to do probability calculations

and InvNormCD(to do inverse Normal calculations.

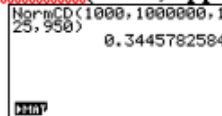
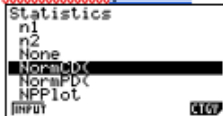


[F1] to enter this command.



[F1] to enter this command.

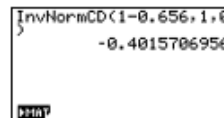
NormCD(works with inputted values: NormCD(lower, upper, std dev, mean)



Question 1:

InvNormCD(works with inputted values: InvNormCD(area, std dev, mean)

[Note: The 'Area' is the probability calculated from the LEFT tail of a Normal Distribution curve.]



Question 4(1st part):

For further tips, more helpful information and software support visit our websites:

www.casio.edu.monacocorp.co.nz or <http://graphic-technologies.co.nz>