

Probably it's about 'Normal' probabilities.

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



by icon

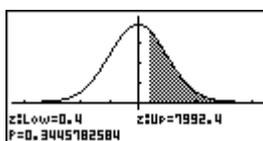
Tests show that the bone mineral density (BMD) of 25-year-old females is approximately normally distributed, with a mean of 950 mg/cm² and a standard deviation of 125 mg/cm².

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. Enter the known values.

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 given.

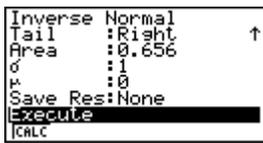
4. Tests show that the BMD of 25-year-old males is approximately normally distributed, with a standard deviation of 150 mg/cm². If the probability that a randomly chosen 25-year-old male has a BMD above 1000 mg/cm² is 0.656, find the mean BMD of 25-year-old males.

Select **STAT**:

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

DIST [F5] NORM [F1] InvN [F3]

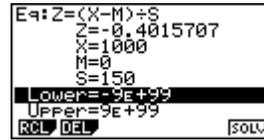
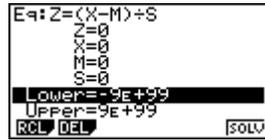
Enter the known values.



Scroll down then CALC [F1] or [EXE]. The required solution information is given.

Use this information to calculate the mean.

Select EQUA:

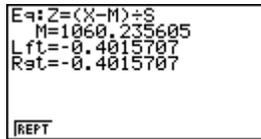
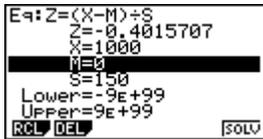


Clear any previous work.

Enter the Z-score transform.

Enter the known values.

(Previously used so set all variable to 0.)

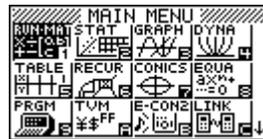


Move the cursor to 'highlight' the target variable 'X'.

SOLV [F6] or [EXE].

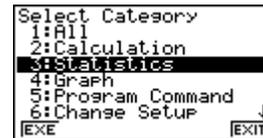
ALSO...

This can be done in the RUN-MAT icon.



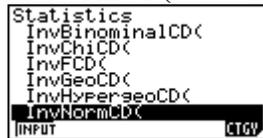
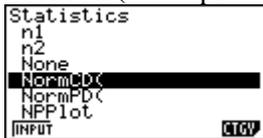
Using the CATALOG key [SHIFT] [4].

Then [F6] to select a category (Statistics)



Scroll down until you get to:

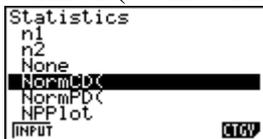
NormCD(to do probability calculations and InvNormCD(to do inverse Normal calculations.



[F1] to enter this command.

[F1] to enter this command.

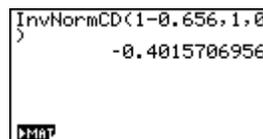
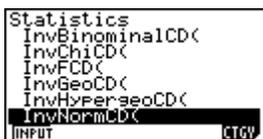
NormCD(works with inputted values: NormCD(lower, upper, std dev, mean)



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):