


200 mm pavers – how many close enough?

- Checkpoints -



Activity 1 – Calculating with normally distributed pavers.

A. Normal distribution commands

In  mode tap Calc : Distribution.

Select Normal CD from the drop down menu


Paver	Linear Reg	MedMed Line	Quadratic Reg	Cubic Reg	Quartic Reg	Logarithmic Reg	Exponential Reg	abExponential Reg	Power Reg	Sinusoidal Reg	Logistic Reg	Test	Interval	Distribution	DispStat
1	199.7	200.72	200.61												
2	199.7	198.83	200.18												
3	199.6	200.11	200.43												
4	199.7	200.59	199.72												
5	201	200.8	199.88												



B. Enter the input shown below and tap Next to see the output

C. This tells us that the proportion of pavers within 0.5 mm of 200 mm (the labeled length) is 0.789 or 78.9%.

Answers.

1. The upper bound for the right tail of a normal distribution is ∞ , which can be accessed on the mth .

The proportion of pavers greater than 201 mm is 0.00621 (0.621%), according to the model for paver length.

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2. The proportion that differ from 200 mm by more than 2 mm can be found in several ways.

One way is to find the proportion that *don't* differ from the labeled length by more than 2 mm (0.99999942) then subtract that from the total proportion (1), giving 0.00000057 or 0.000057%.

Alternatively, find the proportion less than 198 mm and double it, as the proportion that are more than 2 mm bigger than the mean will be the same as the proportion that are less than 2 mm smaller than the mean.

Activity 2 – Working with normally distributed examination marks.



- A. Select Inverse Normal CD and enter the input below to find the A cut-off.

Answers.

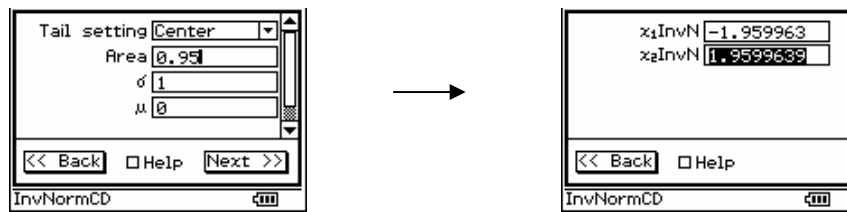
1. With the input shown the below the cut off for an E is found.

2. a. The cut-off for the top 10% can be found to be 2.69 mm, making the remaining nails shorter than this length.

- b. The 1st grade nails range from 2.32 mm up to 2.67 mm in length.

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3. The boundaries for this region are $z = -1.96$ and $z = 1.96$



The image shows two screenshots of the InvNormCD calculator interface, connected by a right-pointing arrow. The left screenshot shows the input fields: Tail setting: Center, Area: 0.95, σ : 1, μ : 0. The right screenshot shows the output fields: $x_1\text{InvN}$: -1.959963, $x_2\text{InvN}$: 1.9599639. Both screenshots have a '<< Back' button, a 'Help' checkbox, and a 'Next >>' button. The title bar of both windows is 'InvNormCD'.

This means that 95% of a normally distributed population lies within 1.96 standard deviations of the mean, a more accurate value than the 2 standard deviations suggested by the 68/95/99.7 rule of thumb.