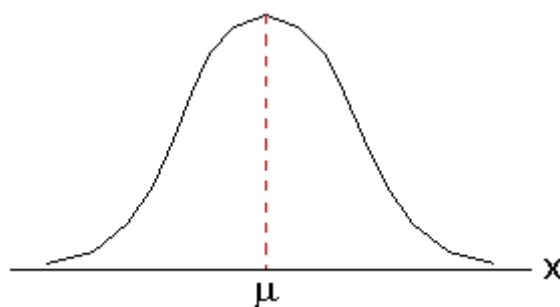## Stats: Normal Distribution Notes NEW

Most naturally occurring continuous variables can be modelled by a Normal distribution:

Most data items are near the mean. The further we move from the mean in either direction, the fewer data items there are.

We use the Normal distribution model to find probabilities. **We need the mean (μ) and standard deviation (σ) of the distribution.**

Say men's heights are Normally distributed with μ 174cm and σ 6cm. My friend is 180cm tall; what is the probability that a man chosen at random is shorter than him?

We're finding P (X < 180) for the Normal distribution with μ 174cm and σ 6cm.

Casio fx-991CW Classwiz	Casio fx-CG 50
1) Press HOME then select Distribution	1) Press MENU then 2 Statistics
2) Select Normal CD	2) Press F5 for DIST and F1 for NORM
3) Set Lower to be −999999999	3) Press F2 for Ncd and F2 for Var
4) Set Upper to be 180	4) Set Lower to be −999999999 and Upper to be 180
5) Set μ = 174 and σ = 6	5) Set σ = 6 and μ = 174
6) Select ● Execute and press EXE	6) Press EXE

The answer is 0.841 to 3sf.

My brother is 165cm tall. What is the probability that a randomly chosen man is taller than him?

This time we get _____.

My uncle is 186 cm tall. What is the probability that a man chosen at random is taller than him?

This time we get _____.

Notes

➢ Sometimes we get the variance, written σ^2. The standard deviation is the square root of this

➢ The shorthand for a Normal variable is X~N (μ, σ^2). X~N (30, 100) represents a Normal variable with mean 30 and variance of 100... so the standard deviation is 10

➢ Practise using a calculator for these questions. Select the upper and lower bounds carefully