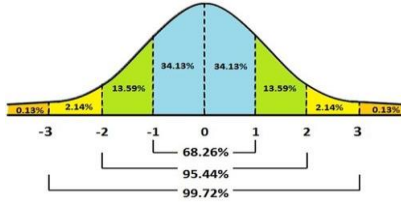


Goals



By the end of this brief, you should be able to:

- understand probability distributions for continuous random variables
- recognise situations when the normal distribution applies; learn how to solve problems involving the normal distribution
- recognise and use the formula to compute probabilities
- use the CAS to compute probabilities
- understand the assumptions on which the normal model is based
- understand the probability limits of *almost certainly* and *very probably*, that is, the three and two sigma limits

Theoretical Components

Resources:

Quest Mathematical Methods 12, Chapter 12 (see pdf on Google Drive)

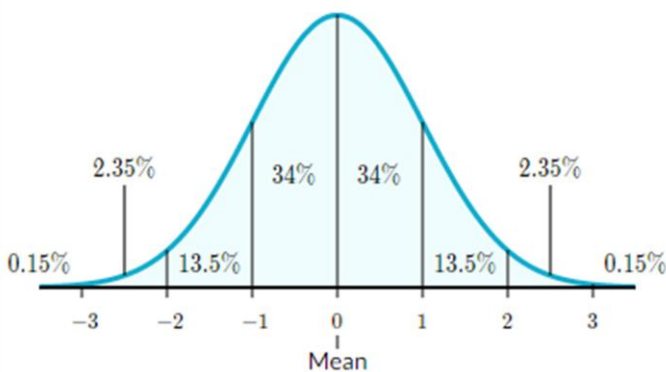
<http://www.intmath.com/counting-probability/14-normal-probability-distribution.php>

<http://stattrek.com/probability-distributions/normal.aspx?Tutorial=AP>

Videos

https://www.youtube.com/watch?v=McSFVzc8S_wk

<https://youtu.be/3E8BO7VRMEA>



Practical Components

Do the following questions from **Chapter 12 Quest**

Ex 12D Applications to problem solving (CRV)
As many as you need

EX 12E The normal distribution
Qs 3, 5, 7, 11, 14, 15, 23, and 29.

EX 12F The standard normal distribution
Qs 2, 4, 7, 9, 11, 13, 21, 22, and 28

EX 12G The inverse cumulative normal distribution
As many as you need. (You will also need to learn to use `invNormCDF` on your CAS or use stats tables – collect a copy with the brief)

Investigation

See the next page

QFO

Quiz/Forum/Other

If you don't have a CAS calculator – you will need to practise using stats tables.

<https://www.mathsisfun.com/data/standard-normal-distribution-table.html>



MM4 Week 11/12 Investigation

1. The wingspan of birds of a particular species has normal distribution with mean 50 cm and standard deviation 5 cm.

a) Find the probability that a randomly selected bird has a wingspan greater than 60 cm.

b) If the wingspan is measured to the nearest cm, find the probability that a randomly selected bird has a wingspan measured as 50 cm.

2. The time taken for grade 5 students to complete a jigsaw puzzle follows a normal distribution with a standard deviation of 45 seconds. If 60% of grade 5 students complete the puzzle in 3 minutes or less, find the mean completion time for grade 5 students correct to 2 decimal places.