

## Real Life Applications of Algebra

- Algebra is a very old branch of Mathematics dating from nearly 1900BC.
- The word algebra comes from a book written in 820AD by an Iranian mathematician called Muhammad Al-Khwarizmi. The full title of the book contains the word "al-jabr".
- Algebra will come into nearly every other topic you study in Maths so it's very important to try and get a good grasp of it at an early stage!
- Some practical uses of it are outlined below:



1) Algebra is useful in any situation where we have an "unknown" that we're trying to find. For example, imagine you have €20 left in your wallet and your petrol tank is nearly empty and you see a filling station that says petrol is €1.50 per litre. Algebra would allow you to figure out how much petrol you can get (the "unknown" would be the litres of petrol you can get). You might know then if you have enough to get home or not!



2) Algebra is used a LOT by Engineers (Mechanical, Electrical, Civil, Chemical.....). Electrical Engineers would use algebra to calculate the currents flowing in a particular circuit. This allows them to design it correctly so parts don't burn out. Civil Engineers would use algebra to calculate the span of a bridge to ensure it's long enough to cross a particular river. The Akashi-kaikyo bridge in Tokyo is the longest suspension bridge in the world. (Click on the picture while holding down "Ctrl" for more info!) A mechanical engineer would use algebra to calculate the viscosity of oil used in a hydraulic piston to ensure it works correctly.



3) Algebra is used a lot in Computer Science and in computer game design. Objects in a game have to be able to move within the game environment, and algebra is needed to do this.



4) Pharmaceutical companies would use algebra to calculate the correct amount of chemicals they need to put in to their products, so that they are cost effective and also safe to use.



5) Actuaries use algebra to try and make financial sense of the future. They would work on pensions, for example, ensuring that funds have enough money for when current workers have retired.

