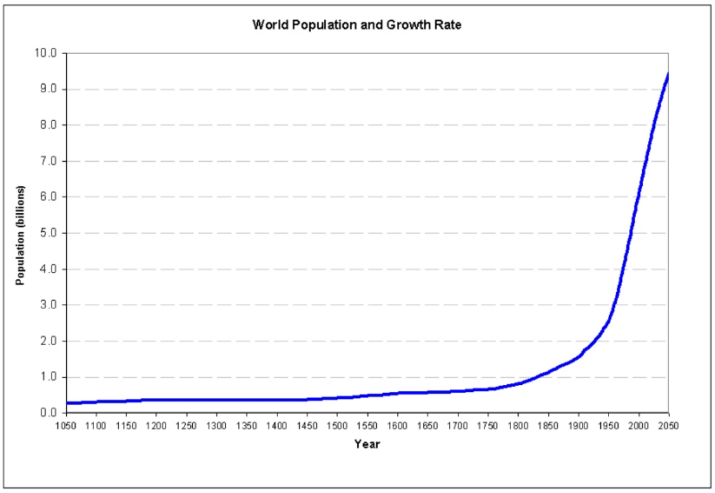
Real Life Applications of Functions

- Functions are mathematical building blocks for designing machines, predicting natural disasters, curing diseases, understanding world economies and for keeping aeroplanes in the air.
- Functions allow us to visualise relationships on a graph, which are much easier to read and interpret than lists of numbers. Often, things that appear random can fit a particular type of graph.
- Some specific examples of where functions are used are shown below:

1) One very useful function would be Money as a function of time. By understanding how your money changes over time, you can plan to spend your money more sensibly. Businesses find it very useful to plot a graph of their money spent over time so that they can clearly see when they are spending too much.

2) Exponential functions arise in any situation where things are increasing or decreasing rapidly. The study of populations is an example of this. A graph of the world population since the year 1050 is shown below. Can you see how the graph is very useful in estimating what the population of the world will be in 2050? Bacteria populations also grow exponentially.



3) Historians and archaeologists carry out Carbon Dating to get an estimate of how old a particular discovery is. Living things contain Carbon-12 but when they die, the Carbon-12 begins to decay into Carbon-14 at an exponential rate. By understanding exponential functions, they can measure the age of something e.g. a fossil