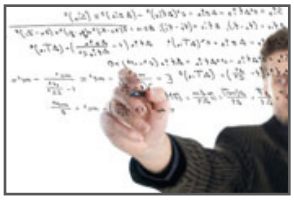
What is a Mathematician?

A mathematician is engaged in one of the oldest sciences known to man. The use of theories and today the computer make it a much easier task than it was even 20 years ago. Mathematician's studies and work are basically two categories - applied mathematics and theoretical mathematics. The studies include algorithms, computations, theories, and engineering and business. Although a mathematician may work in one field that does not mean they will not participate in the other field as well. Often these two fields are linked by certain theories.



What Do Mathematicians Do?

Theoretical mathematician jobs require the expansion of knowledge using new principles. By studying previously unexplored areas of mathematics, they seek to link them with the new methods they are using. The practical side of the theories is not considered. This method is used for scientific and engineering work. Many of these mathematicians work in a university setting, teach part time and devote the rest of their time to research.

Applied mathematicians use theories as well but they are more into the practical side of mathematics. Using their methods they look into ways to improve business problems as well as engineering, physical, life and government problems. The analysis of efficiency when it comes to practically anything - the safety of a product to the different ways of manufacturing something are all part of this method of mathematics.

The applied mathematician jobs may require working in an industrial setting or may work for the government. There are mathematicians who are called cryptanalysts. These are the people who work on encryptions. The deciphering of codes used by the military, law enforcement, and political sector are part of the work they do. They analyze the codes used for transmission by these sectors as well. Because they must be totally secure the best method for making sure they are not easily broken is using mathematics to determine the application of the codes.

The mathematician or actuarial jobs are normally in an office setting. A large part of their duties may include having deadlines to meet, special instructions on something of a particular nature to work on or traveling to go to seminars. The ones who work in academic settings are normally responsible for teaching as well as research.

The actuarial jobs holders will be science majors who are involved in the analysis of the probability of losses by using both science and math. There are many positions open for this expertise in insurance offices and other businesses.

What Are the Educational Requirements for These Jobs?

Normally a PhD in mathematics is required for the absolute minimum requirements when it comes to education for the future mathematician. If the job is going to be with the federal government, for a beginning job at least a bachelor's degree and a major in mathematics is required. If not then 24 semester hours of mathematics classes are required.

The federal government is probably the only place a bachelor's degree is sufficient. The qualifications for employment elsewhere are stiffer than this. The majority of people go after an advanced degree in either mathematics or a related field.

The vast majority of universities offer degrees in mathematics. The required courses for this degree are calculus, linear and abstract algebra, and differential equations. In addition these courses might be included:

Probability theory and statistics
Mathematical analysis
Numerical analysis
Topology
Discrete mathematics
Mathematical logic

If the high school student is considering this as a career, and is planning to be mathematics major in college they should take every mathematics course that is offered and is probable to take while they are still in high school. The colleges today require the students

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who are majoring in mathematics to sign up for courses which are going to be of benefit such as computer science, physical and life science, and economics.
The mathematician jobs today are basically the ones in laboratories where they perform part of their duties as a member of a technical team. Depending upon the specialty of the actuarial jobs that are available, the training is normally in the field in which you are interested. A series of tests must be passed for this position. The choices are very wide because there are over 300 graduate programs.

The qualifications that are most important in the field of applied mathematics for mathematician jobs would be training in the field that will be used. The fields of use would be statistics, actuarial science, engineering, and physics therefore these studies would be of particular interest to the prospective mathematician.

The use of computer science, economics and chemistry, just to name a few are also fields that are very dependent on mathematics. Communication is another important aspect of the mathematician jobs due to the discussion and solutions that will be the subject of discussion.

Job Earnings for Mathematicians

The annual earnings for mathematicians as of 2008 in the medium percentile are $43.69 per hour. The average of this range per year is $90,930. In the top range of this field the hourly wage is $64.32 per hour and $133,790 per year. Early in 2007, the annual salary on average for mathematicians was $93,539.

Advancement

Those who meet the certification that is required for the state in which they reside and have a Bachelor's degree are eligible for elementary or middle school teaching positions in mathematics. Master's degree holders in mathematics who work for the private sector usually work in fields that are related to mathematics such as computer science. These professions are usually systems engineers or analysts and computer programmers.

The Outlook

The competition for the mathematician jobs and actuarial jobs will be stiff because these are not professions that have a lot of turnover. The new jobs that will become available are not expected to be very high. The best prospects for this career are the ones with a master's degree and a PhD in mathematics and a related course such as computer science or engineering. The field of theoretical research will be one of strong rivalry and the positions available for this field due to the high number of degrees that are being earned will make this a very competitive field.