What can I do with a Math degree?

$$(x+a)^n = \sum_{k=0}^{n} \binom{n}{k} x^k a^{n-k}$$

Contemplating a career centered on mathematics? Mathematical research and education are at the heart of some careers, while other careers utilize mathematics and its applications to build and enhance important work in the sciences, business, finance, manufacturing, communications, and engineering. [1]

The work of mathematicians falls into two broad classes: theoretical (pure) mathematics and applied mathematics. ***Theoretical mathematicians*** advance mathematical knowledge by developing new principles and recognizing previously unknown relationships between existing principles of mathematics. Although these workers seek to increase basic knowledge without necessarily considering its practical use, such pure and abstract knowledge has been instrumental in producing or furthering many scientific and engineering achievements. ***Applied mathematicians*** use theories and techniques, such as mathematical modeling and computational methods, to formulate and solve practical problems in business, government, engineering, and the physical, life, and social sciences. Applied mathematicians start with a practical problem, envision its separate elements, and then reduce the elements to mathematical variables.

Employment of mathematicians is expected to increase by 22 percent during the 2008–18 decade, which is much faster than average for all occupations. Advancements in technology usually lead to expanding applications of mathematics, and more workers with knowledge of mathematics will be required in the future. However, jobs in industry and government often require advanced knowledge of related scientific disciplines in addition to mathematics. The most common fields in which mathematicians study and find work are computer science and software development, physics, engineering, and operations research. Many mathematicians also are involved in financial analysis and in life sciences research. [2]

These job titles are not an exhaustive list, but rather, represent the types of positions most widely recruited for: [1,3,4]

Applied/Theoretical Mathematician ● Climate Analyst ● Consultant
Cost Estimator ● Cryptographer ● Forensic Analyst
Information Scientist ● Market Researcher ● Numerical Analyst
Population Ecologist ● Product Analyst ● Professor/Teacher
Research Technician ● Statistician ● Systems Analyst

UI Mathematics Department: www.math.uiowa.edu/undergraduates/index.shtml

Information gathered from the following sources:
[1] *American Mathematical Society (www.ams.org/profession, www.ams.org/careers)*
[2] *U.S. Bureau of Labor Statistics (http://stats.bls.gov/oco/ocos043.htm)*
[3] *Pomerantz Career Center at the University of Iowa (www.careers.uiowa.edu)*
[4] *Mathematical Association of America (www.maa.org/careers)*