Math Matters

Apply It.

The Math behind USING DNA…

Some technical words used for DNA analysis:

forensic mathematics, topology, bioinformatics, matching algorithms, combinatorics

Uses and Applications:

Solving crimes, identifying victims, liberating those wrongly accused.

How it works:

In crime solving, forensic analysts never have two precisely identical DNA specimens to work with. You could say it's like having two different photos of the same person. In order to analyze DNA, scientists extract DNA from the nucleus of cells in tissue (flesh), blood or fluids. Next they chemically "wash" the DNA, removing unwanted cellular material. Then a computer generates a picture of the data represented as numbers. For the purposes of crime solving or victim identification, imagine two different photographs of the same person, ripped up into little pieces. Two different people shred each picture, so that the pieces are unpredictably different in size and shape. In one room one scientist tries to put together that picture, and in another room a different scientist does the same with the other picture. Processes like this are so complex that mathematical approaches such as combinatorics, pattern recognition, and matching algorithms are required. After finally putting the fragments together, a scientist observes the similar patterns in each, making it a match or a non-match.
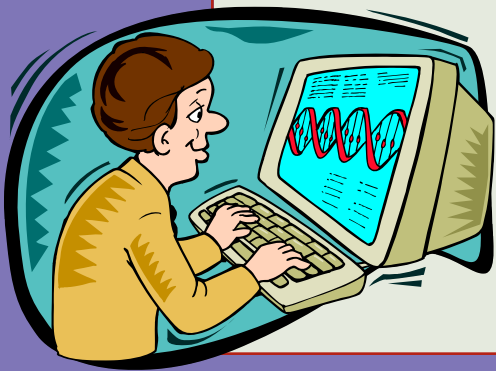
Interesting Fact:

The Innocence Project, a non-profit legal clinic that uses DNA analyses to free the wrongly accused, has exonerated over 130 people since 1998.