History

The Rubik's Cube is a mechanical puzzle invented in 1974 by Hungarian sculptor and professor of architecture Ernő Rubik. Originally called the "Magic Cube" by its inventor, this puzzle was renamed "Rubik's Cube" by Ideal Toys in 1980 and won the German Game of the Year special award for Best Puzzle that year. It is said to be the world's best-selling toy, with over 300,000,000 Rubik's Cubes and imitations sold worldwide.

Construction

In a classic Rubik's Cube, each of the six faces is covered by 9 stickers, among six solid colors (traditionally being white, yellow, orange, red, blue, and green). A pivot mechanism enables each face to turn independently, thus mixing up the colors. For the puzzle to be solved, each face must be a solid color.

A standard cube measures approximately 2¼ inches (5.7 cm) on each side. The puzzle consists of the twenty-six unique miniature cubes on the surface. However, the centre cube of each face is merely a single square façade; all are affixed to the core mechanisms. These provide structure for the other pieces to fit into and rotate around. So there are twenty-one pieces: a single core piece consisting of three intersecting axes holding the six centre squares in place but letting them rotate, and twenty smaller plastic pieces which fit into it to form the assembled puzzle. The Cube can be taken apart without much difficulty, typically by turning one side through a 45° angle and prying an edge cube away from a centre cube until it dislodges. However, as prying loose a corner cube is a good way to break off a centre cube — thus ruining the Cube — it is far safer to lever a centre cube out using a screwdriver. It is a very simple process to solve a Cube by taking it apart and reassembling it in a solved state. There are twelve edge pieces which show two colored sides each, and eight corner pieces which show three colors. Each piece shows a unique color combination, but not all combinations are
present (for example, if red and orange are on opposite sides of the solved Cube, there is no edge piece with both red and orange sides). The location of these cubes relative to one another can be altered by twisting an outer third of the Cube 90°, 180° or 270°, but the location of the colored sides relative to one another in the completed state of the puzzle cannot be altered: it is fixed by the relative positions of the centre squares and the distribution of color combinations on edge and corner pieces.

For most recent Cubes, the colors of the stickers are red opposite orange, yellow opposite white, and green opposite blue. However, Cubes with alternative color arrangements also exist; for example, they might have the yellow face opposite the green, and the blue face opposite the white (with red and orange opposite faces remaining unchanged).

**Solutions**

Many general solutions for the Rubik's Cube have been discovered independently. The most popular method was developed by David Singmaster and published in the book *Notes on Rubik's "Magic Cube"* in 1981. This solution involves solving the Cube layer by layer, in which one layer, designated the top, is solved first, followed by the middle layer, and then the final and bottom layer. After practice, solving the Cube layer by layer can be done in less than one minute. Other general solutions include "corners first" methods or combinations of several other methods. Most tutorials teach the layer by layer method, as it gives an easy-to-understand step-by-step guide on how to solve it.

Speedcubing solutions have been developed for solving the Rubik's Cube as quickly as possible. The most common speedcubing solution was developed by Jessica Fridrich. It is a very efficient layer-by-layer method that requires a large number of algorithms (see below), especially for orienting and permuting the last layer. The first-layer corners and second layer are done simultaneously, with each corner paired up with a second-layer edge piece. Another well-known method was developed by Lars Petrus. In this method, a 2×2×2 section is solved first, followed by a 2×2×3, and then the incorrect edges are solved using a three-move algorithm, which eliminates the need for a possible 32-move algorithm later. One of the advantages of this method is that it tends to give solutions in fewer moves. For this reason, the method is also popular for fewest move competitions.

**Speedcubing**

Many speedcubing competitions have been held to determine who can solve the Rubik's Cube in the shortest time. The number of contests is going up every year; there were 72 official competitions from 2003 to 2006; 33 were in 2006 alone.

The first world championship organized by the Guinness Book of World Records was held in Munich on March 13, 1981. All Cubes were moved 40 times and rubbed with petroleum jelly. The official winner, with a record of 38 seconds, was Jury Froeschl, born in Munich. The first international world championship was held in Budapest on June 5, 1982, and was won by Minh Thai, a Vietnamese student from Los Angeles, with a time of 22.95 seconds. Since 2003, competitions are decided by the best average (middle three of five attempts); but the single best time of all tries is also recorded. The World Cube Association maintains a history of world records. In 2004, the WCA made it mandatory to use a special timing device called a Stackmat timer.
The current world record for single time is set by Erik Akkersdijk in 2008; he set a best time of 7.08 at the Czech Open 2008. The world record average solve is by Yu Nakajima, when he set a world record average of 11.28 seconds on May 4, 2008.

**Links**

http://www.rubiks.com

http://www.worldcubeassociation.org

http://www.speedcubing.com

http://www.youtube.com/watch?v=VzGjbjUPVUo (2008 World Champion – 7.08 seconds)

http://www.youtube.com/watch?v=Z9Jq15NqNuQ (6 year solves in 37.89 seconds)