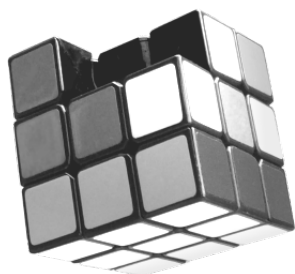


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Rubik's Cube World Record:
SeungBeom Cho 4.59
(<https://ruwix.com/seungbeom-cho-rubiks-cube-record-459/>)

Rubik's Cube World Record - Patrick Ponce 4.69 (<https://ruwix.com/rubiks->)

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Perform these moves on a 3D Rubik's Cube

Advanced Rubik's Cube notation

On the

[cube-world-record-patrick-ponce-4-69/](#)

Rubik's Cube World Championships
2017 Paris (<https://ruwix.com/rubiks-cube-world-championships-2017-paris/>)

Feliks Zemdegs world record average:
5.97 seconds (<https://ruwix.com/feliks-zemdegs-world-record-average-5-97-seconds/>)

Non-Cubers say the Darndest Things
(<https://ruwix.com/non-cubers-say-darndest-things/>)

Cube 3x3 Competition - Write and Win!
(<https://ruwix.com/cube-3x3-competition/>)

Feliks Zemdegs World Record: 4.73s
(<https://ruwix.com/feliks-zemdegs-rubiks-world-record-2016-4-73/>)

Mats Valk World Record: 4.74s
(<https://ruwix.com/mats-valk-rubiks-cube-world-record-4-74/>)

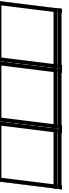
Why Speedcubers Dislike Rubik's
Branded Products
(<https://ruwix.com/why-rubiks-brand-cube-disliked-hated/>)



F R' U2 M E S d f x y

0/10

*Demonstrating face, slice,
double and whole cube
rotations. With a mark on the
FRU corner.
Press Play to start.*



Clockwise face rotation:

U L F

Counterclockwise face rotation:

U' L' F'

Slice turns:

M M' E

Double layer turns:

u l f

Inverse double layer turns:

u' l' f'

Whole cube rotations:

X X' Y

View angle (change):

XU XU' YU

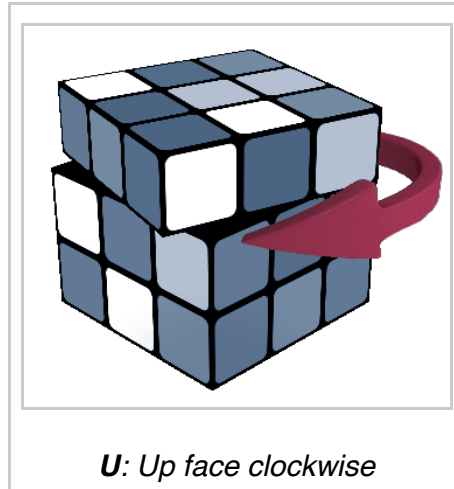
Rubik's Cube Notation (/the-rubiks-cube/notation/) page I have presented how we mark the basic face, middle layer (slice) and cube rotations. Let's go further and discuss the advanced notation what you often meet while reading Rubik's Cube algorithms (/https://ruwix.com/the-rubiks-cube/algorithm/).

Contents

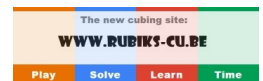
[hide]

1. [Face rotations](#)
2. [Slice turns](#)
3. [Double layer](#)
4. [Whole cube rotation](#)
5. [Big cubes](#)
6. [Pieace notation](#)
7. [Finger trick notation](#)

Face rotations



We mark the 6 faces of [the Rubik's Cube](https://ruwix.com/the-rubiks-cube/) (<https://ruwix.com/the-rubiks-cube/>) with a letter according to our perspective as we hold the puzzle with one side facing us and an one parallel to the ground:



(<http://rubiks-cu.be/>)

Google



A holiday deal
Hands-free help
Home M

F (Front), **U** (Up), **R** (Right), **B** (Back), **L** (Left), **D** (Down).

F R U L B

D

U - a 90-degree clockwise rotation of the upper face

U

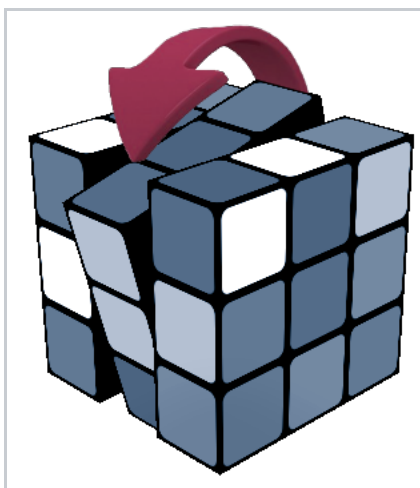
U' - a 90-degree counterclockwise rotation of the U face

U'

U2 - a half turn of the upper face

U2

Slice turns

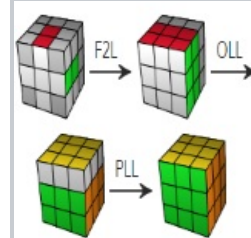


M: Middle layer like left face clockwise



Puzzle Mosaics

(/the-rubiks-cube/popular-culture/rubikubism-pixel-art-mosaic/)



Advanced Method

(/the-rubiks-cube/advanced-cfop-fridrich/)



4x4x4

(/twisty-puzzles/4x4x4-rubiks-cube-rubiks-revenge/)

Middle layer rotations or slice turns are not simply the rotations of two opposite layers because these moves reposition the centre cubelets too.

M - Middle layer turn - in the same direction as an L turn between R and L.

E - Equatorial layer - direction as a D turn between U and D.

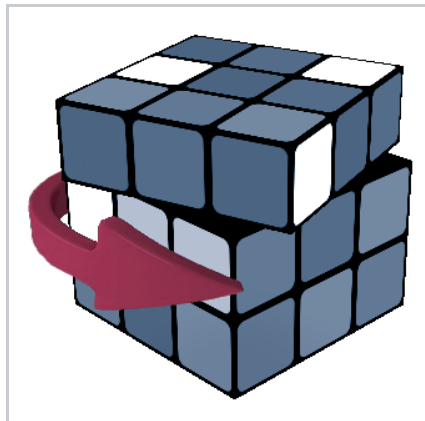
S - Standing layer - direction as an F turn between F and B.

Note the following correlation:

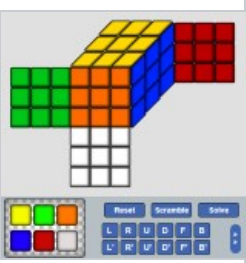
$$M = L' R X'$$

M E S

Two layers at the same time



***d or Dw:** the two bottom layers clockwise*



Online Cube Solver
(/online-rubiks-cube-solver-program/)

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(http://geekprank.com)
for the
best
online pranks!**

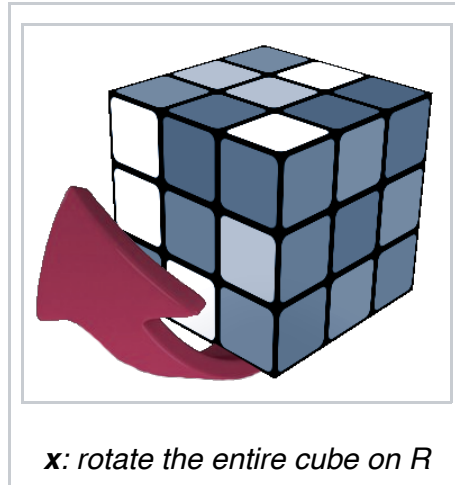
Double turns are marked with the lowercase letter of the corresponding face: f, u, r, b, l, d. For example **d** means the clockwise rotation of the two bottom layers. **Dw** means the same move but this notation is mainly used by Japanese cubers. Rarely they mark these turns with **2D** (the number comes ahead because D2 means a double D). Multiple-layer turns are necessary to solve higher order puzzles like the 4x4x4 Rubik's Revenge (<https://ruwix.com/twisty-puzzles/4x4x4-rubiks-cube-rubiks-revenge/>).

In some cases you might find Rubik's Cube algorithms with lowercase letters meaning the counterclockwise rotation of a face but this is rare.

d = D E



Whole cube reorientation



The entire cube rotations are not necessary to solve the cube (<https://ruwix.com/the-rubiks-cube/how-to-solve-the-rubiks-cube-beginners-method/>) but we still use them in algorithms to reorient the puzzle. These moves can also be executed in the two directions and double turns are also possible.

x - rotate the entire cube on R (do an R move without holding the two other layers)

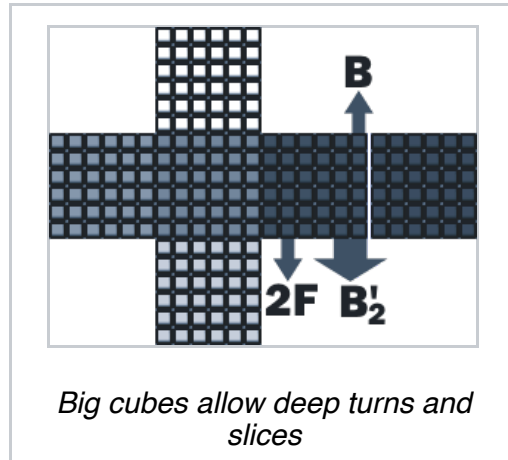
y - rotate the entire cube on U

z - rotate the entire cube on F

Whole cube rotations can be marked with either lower or uppercase letters.

Big cube notation

The notation of the Rubik's Cube applies to the big cubes too but the deep turns and inner slice turns



also come in.

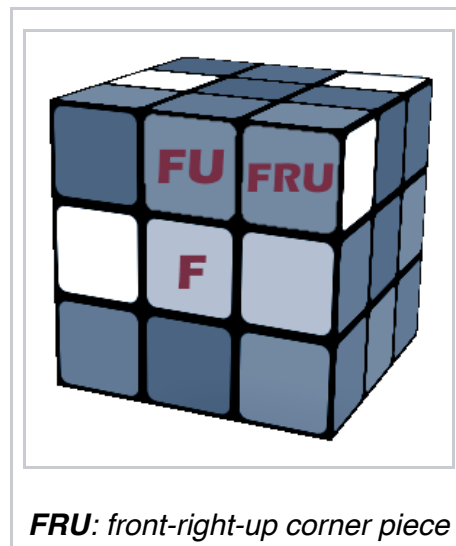
2F - second inner front layer (inner slice)

F₂ - the two outer front layers together (deep turn)

3Fw - The three front layers together on a big cube (min 7x7x7)

3Fw₂ - 108 degree turn of the three front layers on a big cube
(in the case of the 4x4x4 cube we marked this with **f** and **Fw**)

Piece notation



There are three types of pieces on the Rubik's Cube: centre, edge and corner pieces.

There's only one *centre* piece belonging to every face so we mark these with the uppercase letter of the face it belongs to: **F** marks the front centre piece.

An *edge* piece is determined by the two faces it belongs to: **FU** - the front-up edge.

A *corner* piece is described by the three faces next to it: **FRU** front-right-up corner.

Finger trick notations

You can find brackets in the Rubik's algorithms because we group together fragments (triggers) that are easy to execute.

There's no officially adopted finger trick (</the-rubiks-cube/fingertricks/>) notation but the **DeeDubb (DW)** notation for 3x3x3 cubes is widely used. This has been presented in the speedsolving.com forum.

Finger tricks are used in speedcubing (</the-rubiks-cube/speedcubing-speedsolving/>) to reduce the solution time. The goal is to describe a Rubik's' Cube algorithm in the most comfortable

and efficient way to execute with the human hand. Taking down the hand off a side and repositioning always takes time so we're trying to execute more operations at the same time. The more overlapped moves and the less regrips, the faster you execute the operation. For this we use triggers which are short sequences of face turns which are easy and fast to execute. Usually you can see these fragments in brackets in the algorithms.

For example instead of doing R U F' we can simply do a R d R' avoiding the regrip.

This notation is based on describing three things: the finger, the puzzle piece and the grip of the fingers on the cube.

The fingers are marked with: **T** (thumb), **I**(index), **M** (middle), **R**(ring), **P** (pinkie), **W** (wrist move).

The piece notation is the same as described above on this page.

Grip notation describes how to hold the cube.

Ex. **TF** - right thumb on F, other fingers on the opposite side. **TU** - right thumb on up, the rest of the

fingers on down.

The left thumb is marked with lowercase **t**.

An example: {M-R4, T-R3} R2 U
S'(I2) U2' S(I1) U R2

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Pearl Lee

with badmephistos pll guide,
im having trouble with the x'
and x moves. pls help..

[Like](#) · [Reply](#) · Jun 18, 2016 10:52am



Jonathan Caballero ·

San Jose del Monte, Bulacan

(Using Orange in
Front, Yellow on Top,
Blue at Right)

X Move - White(F),
Orange(T), Blue(R)
Y Move - Green(F),
Yellow(T), Orange(R)
Z Move - Orange(F),
Green(T), Yellow(R)

[Like](#) · [Reply](#) · 4 · Jul 11,
2016 1:40am · Edited



Bjørn-Erlend Meistad

Bakketun Folkehøgskole

Jonathan Caballero

Your Y move is

your Y move is incorrect. You described a Y'. After a Y turn the cube would look like this: Blue(F), Yellow(T), Red(R)

[Like](#) · [Reply](#) · 1 · Oct 27, 2016 8:41am



Carlyle Jerald ·

Works at SJK (c) St. Philip ,
Tamparuli

Jonathan Caballero
thanks dude.this is
really helpful

[Like](#) · [Reply](#) · Sep 2, 2017
5:15pm

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Harrison Getches ·

Head Chef at The Krusty Krab

what does][mean? I found it
on some two look olls

[Like](#) · [Reply](#) · 1 · Jun 29, 2016
9:48am



Reynell Eisen Mateo

Nothing

[Like](#) · [Reply](#) · 1 · Jul 5,
2016 10:15pm



Harrison Getches ·

Head Chef at The Krusty Krab

please help

[Like](#) · [Reply](#) · Jun 29, 2016 9:48am



Gabriel Hudson Mello ·

I.T.I - Instituto Tecnológico de
Informatica

Amazing, i was getting really
confused with this notations
and this is just a miracle

[Like](#) · [Reply](#) · 1 · Jun 30, 2016
11:27pm



Adiseptic eye ·

Like at Facebook

Ty for teach us how to solve
vube ty sir and web ...love u all

[Like](#) · [Reply](#) · Jul 19, 2016 10:53am



Adiseptic eye ·

Like at Facebook

Sorry...cube

[Like](#) · [Reply](#) · Jul 19, 2016 10:55am



Paul King ·

Works at Edi sa puso mo :>

What is fw

[Like](#) · [Reply](#) · Aug 23, 2016 7:10am



Bjørn-Erlend Meistad ·

Bakketun Folkehøgskole

"For example d means
the clockwise rotation
of the two bottom
layers. Dw means the
same move but this
notation is mainly used
by Japanese cubers"

Using that logic a fw is
the same as a f or a F
S or a Y l or a Y L M or
a Y' r or a Y' R M' and
so on... i could go on
with the X and Z
rotations too, but the
point is that a fw is
most likely a "bad" way
of saying f 😊

[Like](#) · [Reply](#) · Oct 27, 2016
8:57am



Mika Tacquet



Hello I'm new to rubiks. Could it be that the widget rotations M & M' must be interpreted from a left view angle and the E & E' from a down view angle? I have no problems with clock & counterclock rotations of S & S'. Thanks

[Like](#) · [Reply](#) · Oct 11, 2016 10:42am



Gabriel Fuertes ·

I.E.S.L.C

Yes. Feels odd to me too. It's like this, don't ask me why:

M ~ x'

E ~ y'

S ~ z

[Like](#) · [Reply](#) · Feb 10, 2017 6:58pm



Nico Ibabao ·

Bayugan National Comprehensive High School (BNCHS)

Sir I'm having problem in y2 pass help me.

[Like](#) · [Reply](#) · 1 · Oct 15, 2016 7:09pm



Vincent Lantang ·

SMP Terpadu Widya Duta

turn ur upsite layer twice with the midle layer and bottom layer

[Like](#) · [Reply](#) · Jan 4, 2017 9:32am



Brandon J. Mlejnek

What does (Ff)2 mean?

[Like](#) · [Reply](#) · Oct 17, 2016 6:18am



Bruno Curfs ·

Universiteit Utrecht

From the above, F means a quarter turn

of the front face. And f means the double turn $F S$ carried out together. Also, for any formula/algorithm X of more than one letter, $(X)^2 = X X$. Combining this, we get $(F f)^2 = F f F f = (F F S)^2 = (F^2 S)^2 = F^4 S^2$ (because F and S are independent) = S^2 .

Note. The equality sign does not mean the same actions, but the same results.

Apparently, the author of $(F f)^2$ found this procedure quicker or easier than S^2 , as S^2 does not describe what you need to DO, only what the result is of your turns. For instance $S^2 = y^2 F^2 B^2$, but it's awkward. So, perhaps $(F f)^2$ is an easier way of doing S^2 . S^2 can be done in many ways. Here is another $S^2 = (F^2 f^2) = (f^2 F^2)$, but the single turns F and f are easier and perhaps quicker.

--

These are my five cents.

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