

Mini Guia de Speedcubing – Andy Klise

F2L – Duas Primeiras Camadas

Tem que resolver a cruz primeiro. Pode ser resolvido em 6 ou menos movimentos ~82% das vezes e ≤7 moves em 99.95%
Estes são apenas exemplos otimizados; Tentar resolver de forma intuitiva.

Casos Fáceis (1-4)



U (R U' R')
Use (R' F R F') se não houver meios orientados no último par

y' U' (R' U R)
Use (F R' F' R) se não houver meios orientados no último par



y' (R' U' R)
(F' U' F)

(R U R')



Reposicionar Meio (5-8)



(U' R U R') U² (R U' R')

y' (U R' U' R) U² (R' U R)
d (R' U' R) U²ⁱ (R' U R)
Nota – (y' U) e (d) são equivalentes



U' (R U²ⁱ R') U² (R U' R')

y' U (R' U² R) U² (R' U R)
d (R' U² R) U²ⁱ (R' U R)



Reposicionar Meio e Canto Virado (9-14)



U' (R U' R') d (R' U' R)
y' U (R' U' R U')(R' U' R)

U' (R U R' U)(R U R')



U' (R U²ⁱ R') y' U (R' U' R)
U' (R U²ⁱ R') d (R' U' R)

(R U' R' U)(R U' R') U²(R U' R')
R' U² R² U R² U R



y' U (R' U R U')(R' U' R)
d (R' U R U')(R' U' R)

U' (R U' R' U)(R U R')



Separar o Par Passando Por Cima (15-18)



(R U R') U²(R U' R' U)(R U' R')
y' (R' U R U') y U' (R U R')
y (L' U L) U² y (R U R')

(R U' R' U) y' U (R' U' R)
(R U' R') U² (F' U' F)



(R U² R') U' (R U R')

y' (R' U² R) U (R' U' R)
(R' F R F')(R U' R')(U R U' R')



Par Feito de Lado (19-22)



U (R U² R') U (R U' R')

y' U' (R' U² R) U' (R' U R)



U² (R U R' U)(R U' R')

y' U² (R' U' R U')(R' U R)



Estranhos (23-24)



(R U R' U') U' (R U R' U')(R U R')
U² R² U² (R' U' R U') R²
U (R U' R') U' (R U' R')(U R U' R')

y' (R' U' R U) U (R' U' R U)(R' U' R)
y' U² R² U² (R U R' U) R²
F U (R U' R' F')(R U' R')
U' (R U R')(R' F R F')(R U' R')



Canto no Sítio, Meio na Face U (25-30)



y U' (L' U L) d (R U' R')
(R U' R' U')(R U' R' U)(R U R')
R' F' R U (R U' R') F
U' (F' U F) U (R U' R')

U (R U' R') y U' (L' U L)
U (R U' R') U' (F' U F)
Nota – (y U') e (d') são equivalentes



(R U' R' U)(R U' R')

y' (R' U R U')(R' U R)
(R U' R') U² (F' U F)



y' (R' U' R U)(R' U' R)

(R U R' U')(R U R')



Meio na Posição, Canto na Face U (31-36)



(R U' R') y' U (R' U R)
(R U' R' U)(F' U F)
U' (R' F R F')(R U' R')

(R U R' U')(R U R' U')(R U R')



(U' R U' R') U² (R U' R')
y U' (L' U' L') U² (L' U' L')

U' (R U²ⁱ R') U (R U R')
U (R U R') U² (R U R')
d (R' U R) U² (R' U R)



(U' R U R') y' (U R' U' R)
U² (R U' R') U' (F' U' F)

y' (U R' U' R) y (U' R U R')
y U² (L' U L) U (F U F')



Meio e Canto em Posição (37-42)



Par Resolvido

(R' F R F')(R U' R' U)(R U' R') U²(R U' R')
(R U R') U² (R U² R') d (R' U' R)



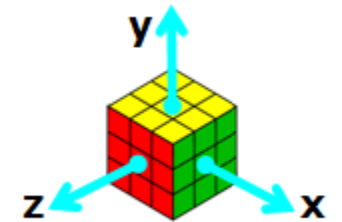
(R U' R') U' (R U R') U² (R U' R')
y (L' U' L) U² (L' U L U')(L' U' L)

(R U' R' U)(R U²ⁱ R') U (R U' R')
(R U R') U² (R U' R' U)(R U R')



(R U' R' U) y' (R' U' R U')(R' U' R)
y (L' U' L U)(L' U L) U² (F U F')

(R U' R' U) d (R' U' R U')(R' U R)
(R U R' U')(R U' R') U² (F' U' F)



Créditos

Dan Harris - <http://www.cubestation.co.uk/>
Erik Akkersdijk - <http://www.erikku.110mb.com>
Nathan Christie - <http://my.fit.edu/~dchristi/cube/>
Joël van Noort - <http://solvehecube.110mb.com/>
Conrad Rider - <http://cube.crider.co.uk/>
And everyone else

Outros guias
<http://www.kungfoomanchu.com/>

Orientação da Última Camada (Duas Etapas)

Etapa 1

$$\mathbf{F U (R U' R') F'}$$
$$\mathbf{F (R U R' U') (R U R' U') F'}$$

Probabilidade = 1/2

Bonus

$$\mathbf{F (R U R' U') F'}$$

Probabilidade = 1/4

$$\mathbf{F (R U R' U') F' f (R U R' U') f'}$$
$$\mathbf{(R' F R F') U^2 (R' F R F') U^2 F}$$

Probabilidade = 1/8

Ir para a Segunda Etapa

Probabilidade = 1/8

Orientação da Última Camada (Duas Etapas)

Etapa 2

Todos os Meios Orientados Corretamente

$$\mathbf{(R U R' U R U^2 R')}$$
$$\mathbf{y' (R' U^2 R U R' U R)}$$

Probabilidade = 4/27

$$\mathbf{(R' U' R U' R' U^2 R)}$$
$$\mathbf{y (R U^2 R' U' R U' R')}$$

Probabilidade = 4/27

$$\mathbf{R U^2 R^2 U' R^2 U' R^2 U^2 R}$$

Probabilidade = 4/27

$$\mathbf{(R U R' U) (R U' R' U) (R U^2 R')}$$
$$\mathbf{y R U^2 R' (U' R U R') (U' R U' R')}$$

Probabilidade = 2/27

$$\mathbf{(Rw U R' U') (Rw' F R' F')}$$

Probabilidade = 4/27

$$\mathbf{F' (Rw U R' U') (Rw' F R)}$$

Probabilidade = 4/27

$$\mathbf{(R^2 D) (R' U^2) (R D') (R' U^2 R')}$$
$$\mathbf{y^2 (R^2 D') (R U^2) (R' D) (R U^2 R)}$$

Probabilidade = 4/27

Tudo Orientado

Probabilidade = 1/27

Notação

R

R'

R²

r/Rw

r'/Rw'

x

y

U

U'

U²

u/Uw

u'/Uw'

z

M

F

F'

L

L'

B

B'

D

D'

Permutação da Última Camada

Permutações de Meios ou de Cantos Apenas

$$\mathbf{(R^2 U) (R U R' U') (R' U') (R' U R')}$$
$$\mathbf{(M^{2'} U' M) U^2 (M' U' M^{2'})}$$

Ub - Probabilidade = 1/18

$$\mathbf{R' U' R^2 U (R U R' U') (R U R U') (R U' R')}$$
$$\mathbf{(M^{2'} U' M') U^{2'} M^{2'} U^{2'} (M' U' M^{2'})}$$

Z - Probabilidade = 1/36

$$\mathbf{(Lw' U R') D^2 (R U' R') (D^2 R^2)}$$

Aa - Probabilidade = 1/18

$$\mathbf{x' (R U' R') D (R U R') D' (R U R') D (R U' R') D'}$$
$$\mathbf{R^2 U R' y (R U' R' U) * 3 y' R U' R^2 *}$$
$$\mathbf{x' (R U' R') D (R U R') U^2 (R' U R) D (R' U' R)}$$

E - Probabilidade = 1/36

$$\mathbf{(R U' R U) (R U R U') (R' U' R')^2}$$
$$\mathbf{(M^{2'} U' M) U^2 (M' U' M^{2'})}$$

Ua - Probabilidade = 1/18

$$\mathbf{(M^{2'} U' M^{2'}) U^2 (M^{2'} U' M^{2'})}$$
$$\mathbf{(R' M^{2'} R) U' (R' M^{2'} R) U^2 (R' M^{2'} R) U' (R' M^{2'} R)}$$

H - Probabilidade = 1/72

$$\mathbf{(Lw' R' D^2) (R U R') D^2 (R U' R)}$$

Ab - Probabilidade = 1/18

Resolvido

Probabilidade = 1/72

Trocar Um Par de Cantos Adjacentes

$$\mathbf{(R U R' F') (R U^2 R' U^2) R' F R U R U^2 R'}$$
$$\mathbf{(R U' R' U') (R U R) D (R' U' R) D' (R' U^2 R')}$$

Ra - Probabilidade = 1/18

$$\mathbf{(R' U L') U^2 (R U' R') U^2 R L}$$
$$\mathbf{y x U^2 r' U' r U^2 l' U' R' U' R^2}$$

Ja - Probabilidade = 1/18

$$\mathbf{(R U R' U') (R' F) (R^2 U') (R' U' R U) R' F'}$$

T - Probabilidade = 1/18

$$\mathbf{(R' U^2) (R U^2') (R' F) (R U R' U') (R' F' R^2 U')}$$

Rb - Probabilidade = 1/18

$$\mathbf{(R U R' F') (R U R' U') (R' F) (R^2 U') (R' U')}$$

Jb - Probabilidade = 1/18

$$\mathbf{(R' U' F') (R U R' U') (R' F) (R^2 U') (R' U' R U) R' U R}$$

F - Probabilidade = 1/18

Troca um Par de Cantos na Diagonal

$$\mathbf{(R' U R' U') y (R' F') (R^2 U') (R' U R' F) (R F)}$$
$$\mathbf{(R' U R' U') x^2 y' (R' U R' U') l (R U' R' U) R U}$$

V - Probabilidade = 1/18

$$\mathbf{[(L U') R U^{2'} (L' U) R'] * 2 U'}$$
$$\mathbf{z (R' U R') D (R^{2'} U' R) (U D') (R' D R^2 U' R D')}$$

Na - Probabilidade = 1/72

$$\mathbf{F (R U') (R' U' R U) (R' F') (R U R' U') (R' F R F')}$$
$$\mathbf{F R U (R U^2 R') (L' U R U') (L U^2) (R^2 F')}$$

Y - Probabilidade = 1/18

$$\mathbf{[(R' U) L' U^2 (R U') L] * 2 U}$$
$$\mathbf{(R' U R U') (R' F' U') (F R U) (R' F R' F') (R U' R)}$$

Nb - Probabilidade = 1/72

Permutações de Meios e Cantos

$$\mathbf{(R^{2'} u) (R' U R' U') (R u') R^2 y' (R' U R)}$$

Ga - Probabilidade = 1/18

$$\mathbf{(R U R') y' (R^2 u) (R U' R' U) (R' u) R^2}$$

Gd - Probabilidade = 1/18

$$\mathbf{(R^2 u') (R U' R U) (R' u) R^2 y' (R U' R')}$$
$$\mathbf{y^2 R^{2'} F^2 R U^2 R U^{2'} R' F R U R' U' R' F R^2}$$

Gc - Probabilidade = 1/18

$$\mathbf{(R' U' R) y' (R^2 u) (R' U R U') (R u') R^2}$$
$$\mathbf{(R' U' R) (U D') (R^2 U) (R' U R U') (R U') R^2 D U'}$$

Gb - Probabilidade = 1/18