

Contents








1	Patterns	2
2	2x2	3
2.1	OLL	3
2.2	PBL	3
3	Cuboids	4
4	3x3	5
4.1	3x3 BLD	5
4.1.1	M2 Edges	5
4.2	1L PLL	5
4.2.1	Permutations Edges Only	5
4.2.2	Permutations Corners Only	6
4.2.3	Swap Adjacent Corners	6
4.2.4	Swap Diagonal Corners	7
4.2.5	Double Cycles	7
5	4x4	9
6	Megaminx	10
6.1	Beginner's Method	10

1 Patterns

- **Checkerboard:** $M^2 y M^2 z M^2$
- **God's Eye:** $M (z M)^3$
- **Superflip:** $((M U)^4 y x)^3$
- **Cube Within a Cube:** $F L F U' R U F^2 L^2 U' L' B D' B' L^2 U$
- **Cube Within a Cube Within a Cube:** $U' L' U' F' R^2 B' R F U B^2 U B' L U' F U R F'$

2 2x2

2.1 OLL

- **Cross Symmetric:**  $R^2 U^2 R U^2 R^2$
- **Cross Not Symmetric:**  $F (R U R' U')^2 F'$
- **Sune:**  $(R U R' U) R U^2 R'$
- **Anti-Sune:**  $(R' U' R U') R' U^2 R$
- **Headlights:**  $F (R U R' U') F'$
- **Chameleon:**  $(R U R' U') (R' F R F')$
- **Cross:**  $F (R U') (R' U' R U) (R F)$

2.2 PBL

On the top and bottom face when at this step, 2 corners will be solved (with some AUF) or all 4 will be. "Edges" is when the 2 that are solved are adjacent to each other. "Corners" is when the 2 that are solved are not next to each other and so are on opposite corners.

- **Corners Up, Solved Down:** Y-perm (see 3x3 1L PLL)
- **Edges Up, Solved Down:** T-perm (see 3x3 1L PLL)
- **Edges Up, Edges Down:** $R^2 U' B^2 U^2 R^2 U' R^2$
Edges in front
- **Corners Up, Corners Down:** $R^2 B^2 R^2$
- **Corners Up, Edges Down:** $(R^2 U' R^2 U)^2 R^2$
Edges on left or right

3 Cuboids

- **Top Layer Corner Swap:** $R\ U\ (R\ U')^2\ D\ (R\ U')\ (R\ U\ R)$
Swaps the FRU and BRU corners
- **Opposite Center Swap:** $(R\ U^2)^2\ R$
Swaps FU and BU centers
- **Adjacent Center Swap:** $(R\ U)^2\ (R\ U^2)^2\ R\ U\ R\ U'\ R$
Swaps FU and RU centers
- **3x3x4 Parity:** $Uu^2\ R^2\ F^2\ u^2\ F^2\ R^2\ F^2$

4 3x3

4.1 3x3 BLD

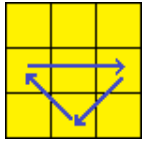
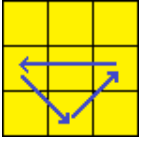
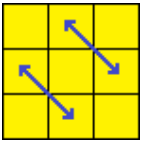
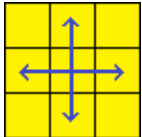
4.1.1 M2 Edges

- **UB (A):** M2
- **BU (Q):** (B' R B U R2 U') M2 (U R2 U' B' R' B)
- **UF (C):** (U2 M')x2
- **FU (I):** D (M' [U R2 U'] M [U R2 U']) D' M2
- **DB (W):** (M U2)x2
- **BD (S):** M2 D ([U R2 U'] M' [U R2 U'] M) D'
- **Parity Fix:** (D' L2 D) M2 (D' L2 D)

4.2 1L PLL

The initial position of the top layer is as the picture dictates unless otherwise specified.

4.2.1 Permutations Edges Only

- **Ub:**  **R2 U R U R' U' R' U' R' U R'**
OH: R2 U R U R' U' R' U' R' U R'
 Same alg as TH
- **Ua:**  **R U' R U R U R U' R' U' R2**
OH: R U' R U R U R U' R' U' R2
 Same alg as TH
- **Z:**  **(M2 U')x2 M' U2 M2 U2 M'**
U2 AUF
OH: R' U' R U' R U R U' R' U R U R2 U' R'
U2 AUF
- **H:**  **M2 U' M2 U2' M2 U' M2**
OH: R2 U2 R U2 R2 U2 R2 U2 R U2 R2

4.2.2 Permutations Corners Only

– **Aa:** $x R' U R' D^2 R U' R' D^2 R^2$
OH: $x R' U R' z' R^2 U z U' R' z' R^2 U^2$
 Same alg as TH but with rotations

– **Ab:** $x' R U' R D^2 R' U R D^2 R^2$
OH: $x' R U' R z' R^2 U' z U R z' R^2 U^2$
 Same alg as TH but with rotations

– **E:** $l U' R' D R U R' D' R U R' D R U' R' D'$
OH: $U' R^2 U R' U' y R U R' U' R U R' U' R U R' y' R U' R^2$
 U AUF

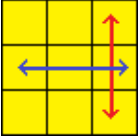
4.2.3 Swap Adjacent Corners

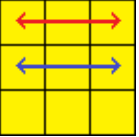
– **Ra:** **OH:**

– **Rb:** **OH:**

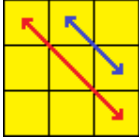
– **Ja:** **OH:**

– **Jb:** **OH:**


– **T:**  $R\ U\ R'\ U'\ I'\ U\ R^2\ x'\ U'\ R'\ U'\ R\ U\ R'\ F'$
OH: $R\ U\ R'\ U'\ R'\ F\ R^2\ U'\ R'\ U'\ R\ U\ R'\ F'$
 Same alg but without rotations as TH

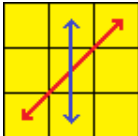
– **F:**  $U^2\ R'\ U^2\ R'\ U'\ y'\ I'\ U'\ I\ R\ U'\ R'\ U'\ I'\ U\ I\ U'\ F$
OH: $U\ R'\ U'\ F'\ R\ U\ R'\ U'\ R'\ F\ R^2\ U'\ R'\ U'\ R\ U\ R'\ U\ R$

4.2.4 Swap Diagonal Corners

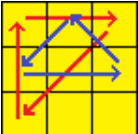
– **V:**  $R'\ U\ R'\ U'\ y'\ I'\ U'\ R^2\ x'\ U'\ R'\ U'\ I'\ U\ R\ U$
OH: $U\ z\ U'\ R\ D\ z'\ U'\ z\ U\ R\ U'\ R\ z'\ R'\ U'\ z\ U\ R^2\ z'\ R\ U^2\ R'$
 $U'\ AUF$

– **Y:**  $F\ R\ U'\ R'\ U'\ R\ U'\ I'\ U'\ I\ U\ R'\ U'\ R'\ F\ R\ F'$
OH: $R^2\ U'\ R'\ U\ R\ U'\ x'\ U'\ z'\ U'\ R\ U'\ R'\ U'\ z\ U\ R$

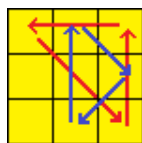
– **Na:**  **OH:**

– **Nb:**  **OH:**

4.2.5 Double Cycles

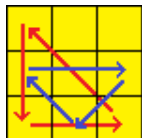
– **Ga:**  **OH:**

– Gb:



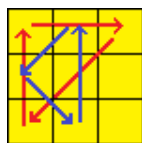
OH:

– Gc:



OH:

– Gd:



OH:

5 4x4

- **OLL Parity:** $Rw2\ B2\ Rw'\ U2\ Rw'\ U2'\ x'\ U2\ Rw'\ U2'\ Rw\ U2\ Rw'\ U2'\ Rw2\ U2'\ y$
- **PLL Parity:** $r2\ U2\ r2\ Uw2\ r2\ u2$

6 Megaminx

6.1 Beginner's Method

This method requires no algorithms until the last layer where it closely resembles the 3x3 beginner's method due to it being just simple commutators for the most part.

- **Orient Edges:** $F R U R' U' F'$
- **Permutate Edge:** $R U R' U R U2' R'$
Is the 3x3 Sune equivalent. Counterclockwise rotates BL, BR and FR edge pieces
- **Orient Corners:** $R' D R' R D R$
Repeat commutator until corner is solve then AUF to next unsolved corner
- **Permutate Corners:** $R' D R' R$ and $R' D R R$
Remove corner with the first algorithm, AUF to its correct slot and insert corner with the second algorithm