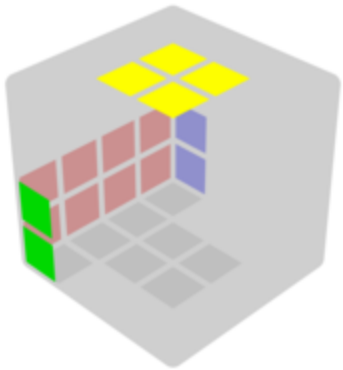
Triforce Method Steps:

1. U/D centers + 1x2x4 block (~24 moves)



- Solve any 1x2x4 block in the position shown, along with the U/D centers. One of the U/D centers must match the bottom color of the 1x2x4 block.
- There are several ways to do this step:
    - Centers then block: This approach is efficient since the centers don't restrict the 1x2x4 block very much, but requires the most planning in inspection to be good, because otherwise it requires mid-solve blockbuilding and mid-solve identification of individual wings. (This is problematic because there are two non-interchangeable wings of each color pair.)
    - Block then centers: This approach requires the least planning in inspection to be good, but is the least efficient since the 1x2x4 block often gets in the way of building the centers.
    - D center, then block, then U center: This approach is a middle ground between the two previous approaches. It requires a moderate amount of planning in inspection to be good (one center and the block), and its efficiency is in between that of the two previous approaches.
- 1x2x4 blockbuilding techniques:
    - A good way to build the 1x2x4 is to first build a half-center bar, and pair the corresponding U/D edge. Then, finish as if it was a Roux first block, using only outer turns.
    - If the centers first approach is used, only outer turns and u moves may be used.
    - If the center-block-center approach is used, r U* r' triggers can be used to move centers or pair edges in addition to outer turns and u moves.
    - If the block first approach is used, there are no restrictions on which moves can be used.
- I recommend the center-block-center approach in general, but if there is an easy starting block or starting 2 centers, one should learn how to take advantage of these lucky cases.
- Expert solvers may opt to solve the block and centers simultaneously.

2. Solve dM quads (~21 moves)

- FIrst, pair up either the DF or DB edge.
    - Edges are usually paired by setting up to a Uw move, as they are in Yau.
    - Use R, U, Uw, 3r U* 3r', 3r' U* 3r, and F R' F' R to pair the half-edges up.
        - It is often the most efficient to stock one of the half-edges in uFL or uBL.
        - One may also set the half-edges opposite each other in FR and BR.
    - 5-move conjugates may also be used to pair edges in this step: [r* (U/U'): R*] or [2L* (U/U'): R*]
        - Examples: r U R2 U' r' or 2L2 U' R U 2L2
- After pairing the edge, form a center bar using R and Uw moves. Be careful not to break the paired edge.
- Next, set up to a trigger that inserts both the paired edge and the center bar. This is usually done with R, U, and Uw moves, with the occasional 3r U* 3r' or 3r' U* 3r trigger to rotate a center.
    - Uw' R2 Uw or Uw R2 Uw' triggers may be used to flip a paired edge in the E slice.
- Finally, do the trigger. The common triggers are 3r2, r U* r', and r' U* r.
- Repeat this process for the other dM quad. (If the front quad was solved, now solve the back quad, and vice versa.)

3. Pair 5 U/D edges + Half Centers (~32 moves)

- The best approach is to first complete half centers while pairing a few edges. Then, pair the remaining U/D edges using Uw moves and R U* R' / R' U* R / F R' F' R setups. Simply setting up with R/R' will break half centers, unless the R center happens to be fully solved at that point.
- How to complete half centers while pairing edges:
    - Every Uw move used to form half centers is also an opportunity to pair some edges. Use a R U* R' / R' U* R setup right before a Uw move to pair an edge, if

possible. Usually, some R moves will cancel, so the end result is just adding 1-2 moves to pair an edge.
    - It is usually better to start forming edges towards the end of the half centers step, since less effort is required to preserve them.
- Half centers are to be completed one at a time. Make sure that one of the last two half centers is an R-face half center. Otherwise, some nasty cases can arise.
- Occasionally, y rotations are needed for edge pairing.
- At some point towards the end of this step, place an E-slice edge pair in DR using an R2. This is to set up for the next step, EOLE.

4. EOLE (~7 moves, 24 algs)

- Use one of 24 algs to place all E-slice edges in the E slice while orienting all the U/D edges.
- Recognize EO of the 5 U/D edges. Recognition is easier than OLL.
- Algs can be found on the Triforce Algsheet.
- Beginners may choose to orient U/D edges as they are paired, using u R2 u' / u' R2 u or alternative setups. This eliminates all 24 algorithms of this step but restricts the previous step, making this variation less efficient overall.
- Intermediate solvers may force E-slice edges to be in the DR and BR spots using R2 and U moves at the end of the previous step. This cuts the algcount in half, but is slightly less efficient.

5. L6W (~10 moves, 14 algs)

- Solve either the dFR or dBR wing, then use one of 14 L5W algs to solve the remaining 5 wings.
- Algs can be found on the Triforce algsheet.
- Advanced solvers may opt to learn all 47 L6W algs. This saves 1-2 moves
- Beginners may choose to always solve the dBR wing initially. This reduces the algcount to 8 and might improve recognition, but is slightly less efficient.

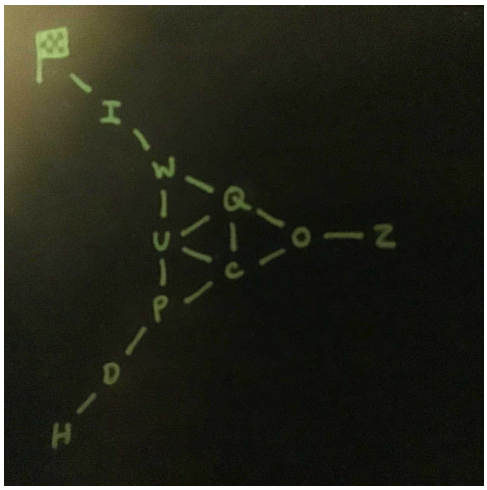
6. L6C (~22-24 moves, 42-122 algs)

- Solve the 6 remaining corners without disturbing the EO or belt. A y rotation should be done before starting the next step.
- The recommended approach is to first solve the D corners (intuitively or with 80 algs), then CxLL (42 algs).
    - Algs can be found on the Triforce Algsheet.
    - There are two main ways to solve the D corners intuitively:
        - Pseudo style: Insert one D corner while unsolving a belt edge, then solve the second D corner and the belt edge as a pseudo F2L pair.
        - CFOP style: Insert the two corners one at a time as F2L pairs, or using R2 U* R2 if the first corner is oriented.
    - One may use COLL for the CxLL step if they already know it.
    - Triforce CxLL occasionally disturbs the DR or DF edge. This is indicated on the Triforce Algsheet with [DR] or [DF] respectively.
        - For algs that end with [DR], one must rotate after CxLL.
        - For algs that end with [DF], one must rotate before CxLL.
        - For all other algs (COLLs), one may either rotate before or after CxLL.
- One may also use 6CO (71 algs), then 6CP (47 algs), but this approach is not recommended because 6CP algs are not great, especially on 4x4.
    - If this approach is used, 6CO may be done before L6W if the case is good, and one might be able to influence 6CP during L6W.

7. 5e5x (~19 moves)

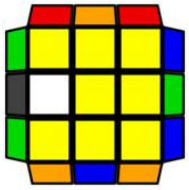
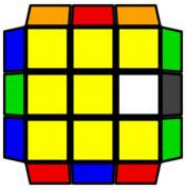
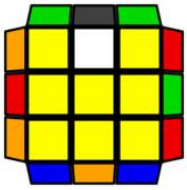
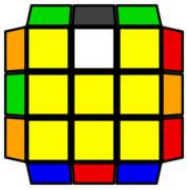
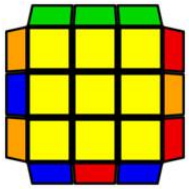
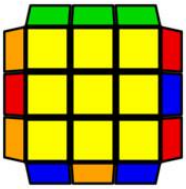
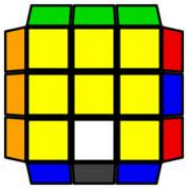
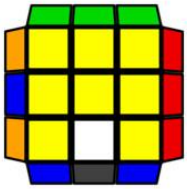
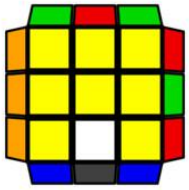
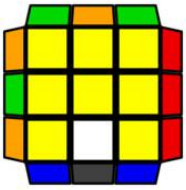
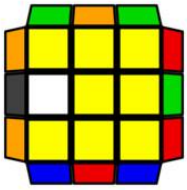
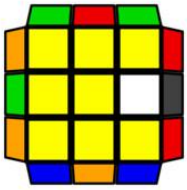
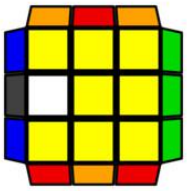
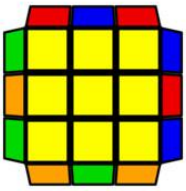
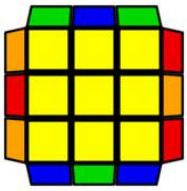
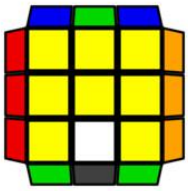
- Solve the remaining 5 edges and 5 half-centers intuitively using a combination of m' U2 m triggers along with U and u moves.
- The only strictly necessary algs are the m' U2 m trigger and R2 u2 R2 u2 R2 to fix PLL parity.
- A few advanced triggers are useful to deal with bad cases. These can be found in the Triforce Algsheet along with a description of their effects.
- A detailed solving process will be described below:

- At the start of the step, identify whether you have PLL parity by checking whether the EP case is a parity case. This identification can usually be done during the initial y rotation.
    - Fixing parity is usually best done at the start of the step.
    - The PLL parity algorithm swaps the UF and UB edges along with the uF and uB centers. Try to solve some centers and force a favorable EP case by adjusting the U and u layers before fixing parity.
        - Due to the ability to influence the edges and centers with PLL parity, 5e5x cases with PLL parity are probably only 1-2 moves worse than those without PLL parity, so it's not worth it to try to avoid it.
- The m' U2 m trigger is dual-purpose: it rotates the F centers 180 degrees and cycles 3 edges.
- Solving centers with m' U2 m triggers is relatively easy:
    - Check where the center in dF needs to go.
    - If the target location is solved, bring any unsolved center to uF using a u* move if necessary, then use m' U2 m to swap them. This is analogous to a cycle break.
    - If the target location is unsolved, bring the target location to uF using a u* move if necessary, then use m' U2 m to swap them.
        - This is possible to do even if the center in dF is solved, since in that case, the dF center has two possible solved locations.
    - Using this process, the centers can be optimally solved in at most five m' U2 m triggers.
- Solving the last 5 edges with m' U2 m triggers is more complicated. The EP solving table below indicates how to solve each case. The diagram on the right indicates which EP cases are connected by m' U2 m triggers.
    - After doing a few solves, one will gain an intuitive feel for how each EP case is solved.



EP Solving Table

For each case, align the U layer as shown, then do m' U2 m. The number in parentheses indicates how many m' u2 m triggers are required to solve that case.

Wa (2)  Leads to **I**	**Wb (2)**  Leads to **I**	**Qa (3)**  Leads to **Wa**	**Qb (3)**  Leads to **Wb**
Ua (3)  Leads to **Wa**	**Ub (3)**  Leads to **Wb**	**Pa (4)**  Leads to **Ub**	**Pb (4)**  Leads to **Ua**
Ca (4)  Leads to **Ua** U angle leads to **Qa**	**Cb (4)**  Leads to **Ub** U' angle leads to **Qb**	**Oa (4)**  Leads to **Qb**	**Ob (4)**  Leads to **Qa**
D (5)  Leads to **Pb** U2 angle leads to **Pa**	**Z (5)**  Leads to **Oa** U angle leads to **Ob**	**H (6)**  Leads to **D**	**I (1)**  Leads to **solved**

    - Edges and centers can be solved mostly independently, with the following special cases:
        - If centers are done but edges are not, simply align the centers before doing additional m' U2 m triggers.
        - If edges are an m' U2 m away from being solved, but the centers are more than one m' U2 m away from being solved, place the D edge in UB before doing m' U2 m.
          Do this for each m' U2 m trigger until the centers are only one m' U2 m trigger away from being solved.
- There is no need to stick to this strict solving process. This step allows lots of creativity in solutions.
- Ring m moves are recommended, since they allow both index fingers to be used for U and u moves, allowing for simultaneous U* and 2U* in opposite directions.

Progression:

Step	Beginner Triforce	Intermediate Triforce	Full Triforce
EOLE	**0 algs** Orient edges as they are paired	**12 algs** Force E-slice edges in DR & BR	**24 algs** Full EOLE
L6W	**2 algs** Solve both dFR and dBR first	**8 algs** Always solve dBR first	**14 algs** Full L5W
DCAL	**0 algs** Intuitive DCAL	**0-17 algs** Learn algs only for bad intuitive cases	**80 algs** Full DCAL
CxLL	**9 algs** 2-look: Orient then permute corners	**9-20 algs** 2-look, but learn some easy 1-look cases	**42 algs** Full CxLL
5e5x	**1 alg** Parity alg only	**3-11 algs** Learn from top to bottom on the algsheet	**14 algs** All listed 5e5x triggers
Total	**12 algs**	**32-68 algs**	**174 algs**

Recap:

Step	**Moves** (approx.)	**Algs** (full Triforce)
U/D centers + 1x2x4 block in dL	24	0
Extend to 3x2x4 by solving dM	21	0
Pair up 5 U/D edges + solve half centers	32	0
EOLE: Orient U/D edges and place them in U/D	7	24
L6W: Solve E slice wings	10	14
DCAL: Solve D corners	10	80
CxLL:	12	42
5e5x	19	14+ (new useful triggers could be discovered in the future)
Total	135	174+

Example solve 1 (125 moves)
Example solve 2 (118 moves)
Example solve 3 (131 moves)

More example solves coming soon!

Triforce Method Algsheet

Pros:

- No OLL parity, leading to an efficiency gain of ~10 moves over Yau
- Edge pairing is less restricted
- Good ergonomics for the majority of the solve: mostly <R, r, 3r, U, u>

Cons:

- The 1x2x4 step can be difficult
- A lot needs to be planned in inspection
- A few steps have awkward movesets
- Not that many algs will transfer from CFOP

Neutral points:

- Many algorithmic steps, which could be a pro or a con depending on the solver
- Many variants, which means that a solver can choose which variant they prefer, but also means that further developments could quickly render certain variants obsolete.

FAQs:

Q: Aren't slices bad on big cubes?
A: Slices should be avoided on 6x6 and up. However, on 4x4, one just has to place their finger somewhere on the gap between the two inner layers. Although slices aren't as good on 4x4 as they are on 3x3, they are still decent, especially M slices. It helps to have strong inner layer magnets too.

Q: What do the acronyms stand for?
A: EOLE: Edge Orientation + Last Edge.
L6W: Last 6 Wings.
DCAL: D Corners After L6W.
CxLL: Corners (ignoring some pieces) of the Last Layer.
5e5x: 5 Edges 5 Centers (X for centers since C is taken by corners)

Q: Why is this called the Triforce method?
A: The diagram at the bottom of page 5 resembles a Triforce because of its 3-fold rotational symmetry. Also, Triforce sounds cool.