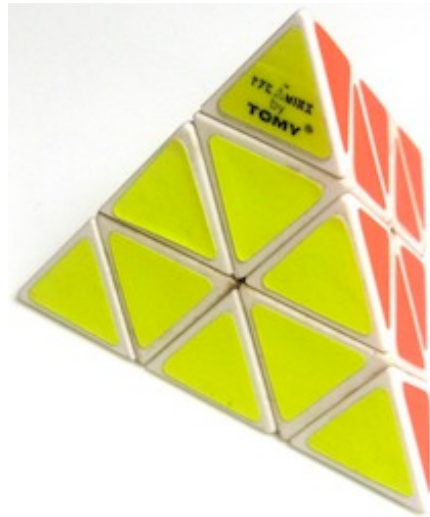


# Pyraminx



*Tomy Pyraminx, Patented by Meffert 1981 and Copyright by Tomy 1981;*  
(back blue, bottom green, 4" along an edge;  
see also Meffert's *Jing's Version* of this puzzle)

**Notation:** There are 4 *tips*, 4 *corners* that the tips are attached to, and 6 *edges*. Holding the puzzle with one of the faces towards you, clockwise and counterclockwise rotations of the top, lower left, and lower right corners are denoted by T+, T-, L+, L-, R+, and R-.

## An Edges First Solution:

1. Orient the tips (and to stay organized, keep them correct after each step).
2. Place the bottom edges (easy when you don't care about the corners).
3. Rotate the top so that at least one of the three remaining edges is correct, and position the puzzle so that this correct edge is in back.
4. The two front edges will now be in position; if they are flipped, do:

**R- T- L- T+ L+ R+**

Then do a final **T+** to correctly position the top portion.

*Note:* Memorize **---+++ with a twist**. The "twist" is that **T** is in the middle of the -'s and first of the +'s. No need to remember the final **T+**, that will be obvious.

5. Correct two corners at a time with simple *5-sequences* that rotate the two front corners, where here **x** and **y** are each either **+** or **-**, and **5** means repeat five times:

**(Lx Ry)<sup>5</sup>**

Choose **+** and **-** to be *opposite* the direction you want to go. For example, do **L- R+** five times to rotate the front left clockwise (60 degrees) and the front right counter-clockwise (to correct a single corner, make it and an adjacent corner *incorrect* and then use a second 5-sequence to correct the two).

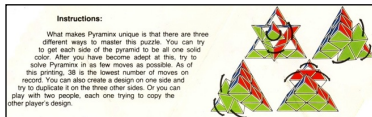
## Number of Moves Used By the Edges First Solution

If Step 1 is skipped, then after completing Step 2, Step 3 is 1 move, Step 4 is 7 moves, Step 5 is 10 moves to correct two corners or 20 moves to correct 1, 3, or 4 corners, and finally correcting the tips is 3 moves, for a total of 31 moves in addition to Step 2.

This is far more than used by an optimal algorithm (*Jaap's Page* describes a computer analysis that shows that a solution is always possible in at most 11 moves).

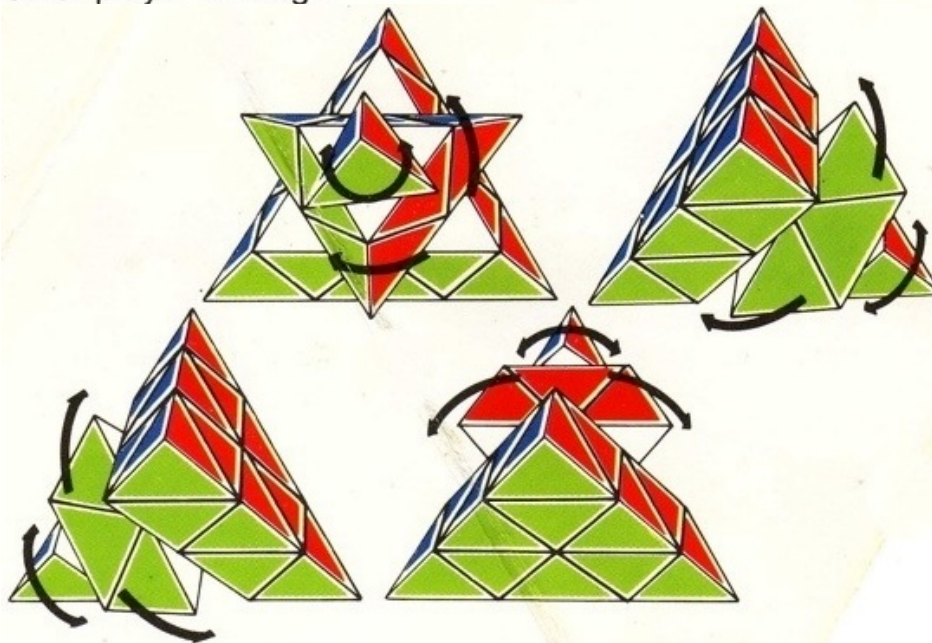
However, it is a simple method that amounts to memorizing the sequence of 6 moves for Step 4.

Also, if one is careful to choose the easiest face for the bottom and minimize the number of moves for Step 2, the solution compares well with the total of 38 moves mentioned in the directions to the original Tomy version:



### Instructions:

What makes Pyraminx unique is that there are three different ways to master this puzzle. You can try to get each side of the pyramid to be all one solid color. After you have become adept at this, try to solve Pyraminx in as few moves as possible. As of this printing, 38 is the lowest number of moves on record. You can also create a design on one side and try to duplicate it on the three other sides. Or you can play with two people, each one trying to copy the other player's design.



## A Corners First Solution

A corners first solution may use fewer moves but is harder to remember; we use the same notation as for the edges first solution:

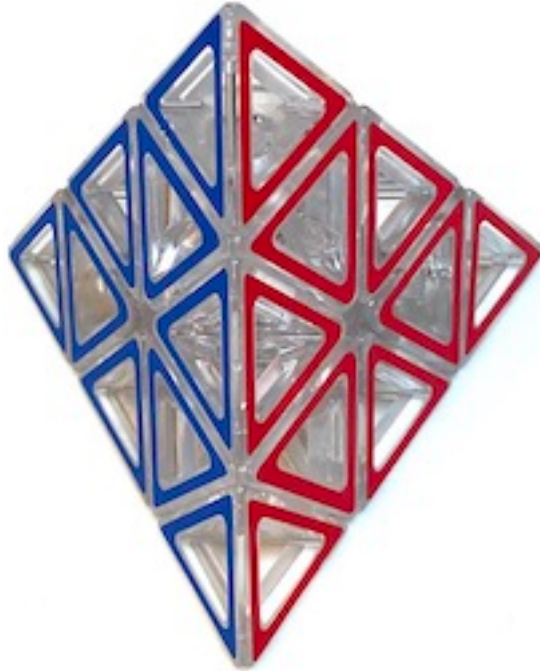
1. Orient the tips to match their corners.
2. Orient the corners to be correct.
3. Solve the top three edges using  $+++$  or  $---$  on adjacent corners. These transformations leave the corners solved, do not disturb two of the top edges, and permute the other edges. With practice it is pretty easy to get the top pyramid of the puzzle solved.
4. Turn the puzzle so that the face with the unsolved three edges faces you. Use these two transformations cycle the three edges clockwise or counter clockwise until the puzzle is solved, or all that is left is to flip the two upper front edges:

**T- R T R-**  
**T L- T- L**

5. If the two upper front edges need to be flipped, we are now in the same situation as Step 4 of the corners first solution, except use a more complicated transformation that does not disturb the corners:

**R T- R- T R- L R L-**

## Crystal Pyraminx



*a.k.a Hollow Pyraminx*

*Sold by Mefferts to celebrate its 50th Anniversary, 2019.  
(plastic, 4" along an edge)*

Has a click-stop action with a visible internal mechanism; here are the other two sides:



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## Other Versions of Pyraminx



- up-left: metalized surfaced with click stops, 4" on an edge, Mefferts 2006;  
up-right: D-FantiX Qiyi Qiming Stickerless, 4" on an edge, Amazon.com 2017;  
down-left: plastic 4" on an edge, Mefferts 2006;  
down-right: right plastic with chain, 1.75" on an edge.

The metal version looks nice (the back is green and bottom is gold) and has a nice positive click-stop feel to the movement. The stickerless version is good for speed solving (the back is red and the bottom is light blue).

### Further reading:

*Mefferts Page*, from: <http://www.mefferts.com/puzzles/pyramsol.html>

*Jaap's Page*, from: <http://www.geocities.com/jaapsch/puzzles/pyraminx.htm>

*Ruwix Page*, from: <http://ruwix.com/twisty-puzzles/pyraminx-triangle-rubiks-cube>

*McFarren's Page*, from: <http://www.geocities.com/abcmcfarren/math/PyrMin.htm>

*Dry Erase Board Page*, from: <http://www.thedryeraseboard.com/mechpuz/pyraminx/solution>

*Nerd Paradise*, from: <http://www.nerdparadise.com/puzzles/pyraminx>

*Monroe's Page*, from: <http://www.alchemistmatt.com/cube/pyramix.html>

*Meffert European Patent*, EP042695A2.