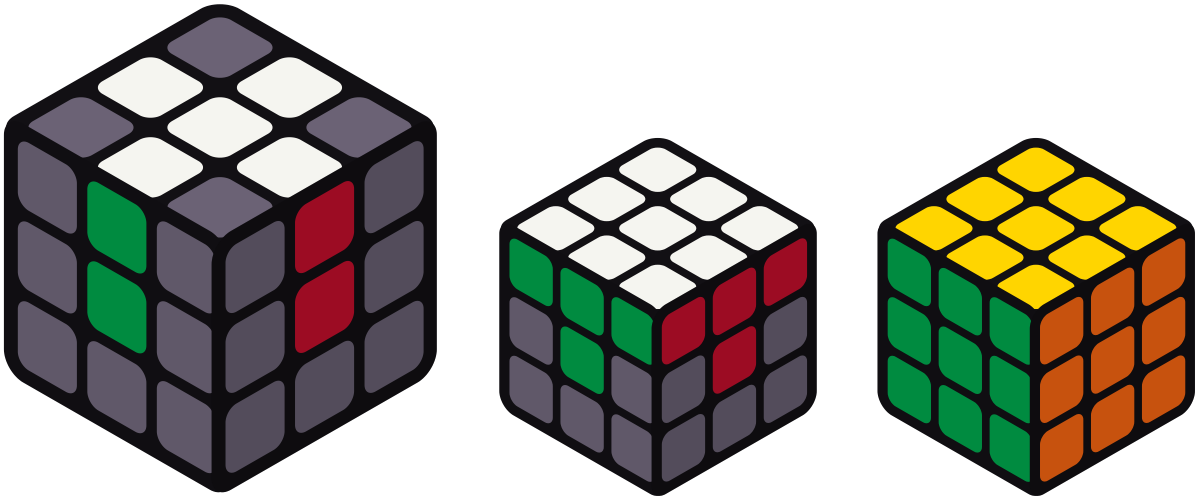
Cube Lab

PRINTABLE GUIDE

Beginner's method — 3x3

Solve the cube in seven illustrated steps, starting with white on top. No experience needed.



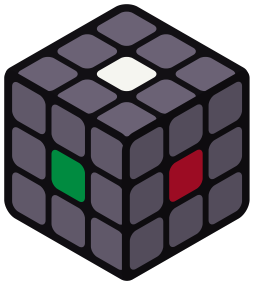
1. Meet the cube
2. Reading moves
3. The seven steps
4. Optional: the daisy
5. One-page cheat sheet

Made by Cube Lab — free, in your browser: rosestuffs.org/experiments/rubiks/ · Learn interactively at rosestuffs.org/experiments/rubiks/learn/

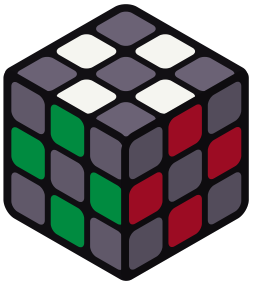
MEET THE CUBE

Three kinds of piece

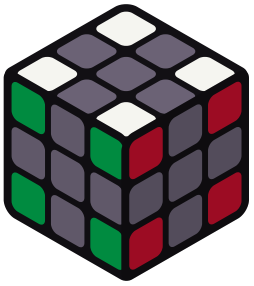
A Rubik's cube looks like 54 coloured stickers. It is really 26 small plastic pieces. Each piece has one, two or three stickers, and the stickers on a piece always stay together.



Centres — 6 pieces, 1 sticker each



Edges — 12 pieces, 2 stickers each



Corners — 8 pieces, 3 stickers each

Centres never move

The centre of each face is fixed to the core. Turning a face only spins its centre on the spot. So the centres never move relative to each other: the white centre is always opposite the yellow one, whatever you do.

That means **the centre tells you the colour of its face**. A face with a red centre will be the red face when the cube is solved.

Edges and corners

An **edge** sits between two centres and has two colours. There is exactly one white-and-red edge, one white-and-blue edge, and so on.

A **corner** has three colours. The white-red-green corner can only go in one place: the corner between the white, red and green centres.

> TIP
> An edge can never become a corner, and a corner can never become an edge. Turning only moves pieces between spots of the same kind.

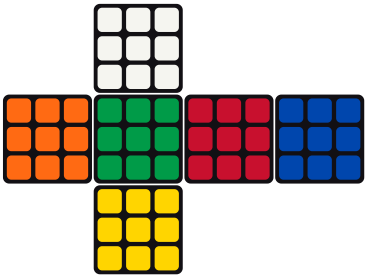
MEET THE CUBE

The colours

A standard cube has six colours in three opposite pairs:

- **White** is opposite **yellow**.
- **Red** is opposite **orange**.
- **Blue** is opposite **green**.

Here is a solved cube unfolded flat, so you can see all six faces at once.



A solved cube, unfolded. Fold the sides back and the top over to make the cube.

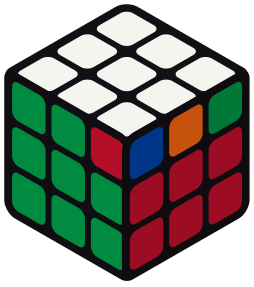
If you hold the cube with white on top and green facing you, red is on your right. Every standard cube is coloured this way, so a picture in this course will match your cube.

> **TIP**
> Some cheap cubes use a different scheme. That's fine — the method works the same. Just use your own centres to decide where each piece goes.

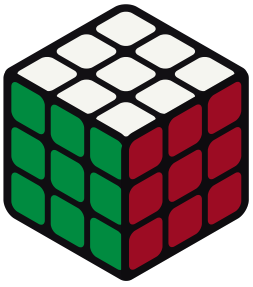
MEET THE CUBE

Solve pieces, not faces

Most people start by making one face all white. Then they get stuck. Here's why.



A white face — but the side colours don't line up. This is **not** solved.



A finished white layer: every piece matches the centres around it.

In the first picture the top is all white, but the pieces are in the wrong places. Look at the sides: the colours don't match their centres. To fix them you'd have to break the white face again.

So you don't solve stickers. You solve **pieces**: you put each piece in its own spot, the right way round, matching every centre it touches.

The beginner method solves the cube one layer at a time: the white layer first, then the middle layer, then the last layer. Each step only moves pieces you haven't solved yet — or moves solved ones away and brings them straight back.

> **TIP**
> A 3×3 cube can be mixed up in 43 quintillion different ways. You don't need to know them. With this course you'll learn a handful of short move sequences, and they solve every one.

READING MOVES

Six letters

Cube guides write moves as letters. Each letter is a face, named from where you're looking:

- **R** — the right face
- **L** — the left face
- **U** — the up face (the top)
- **D** — the down face (the bottom)
- **F** — the front face (the one looking at you)
- **B** — the back face

A letter on its own means: turn that face **a quarter turn clockwise**, as if you were looking straight at that face.

That's the tricky bit. `R` turns the right face away from you (its front edge goes up). `L` turns the left face towards you (its front edge goes down). Both are clockwise — seen from their own side.

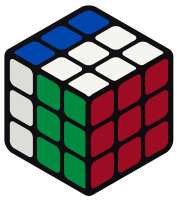
Here is what each move does to a solved cube:

R



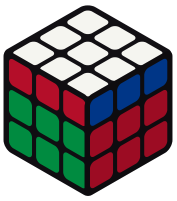
right face, clockwise

L



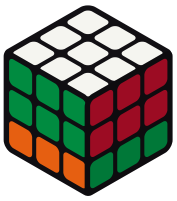
left face, clockwise

U



top face, clockwise

D



bottom face, clockwise

F



front face, clockwise

B



back face, clockwise

TIP

Keep the cube still in your hands while you follow moves. The front stays the front and the top stays the top. Only the layers turn.

READING MOVES

Prime, 2 and sequences

Two extra marks change a move:

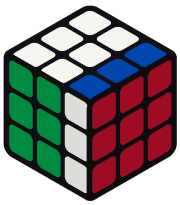
- An apostrophe, called **prime**, means anticlockwise: `R'` is “R prime”, a quarter turn the other way.
- A **2** means turn it twice (half a turn): `R2`. Direction doesn't matter for a half turn.

R



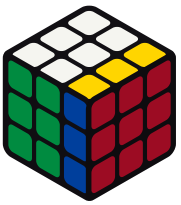
right face, clockwise

R'



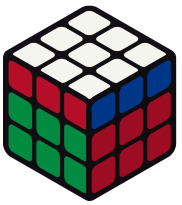
right face, anticlockwise

R2



right face, half turn

U



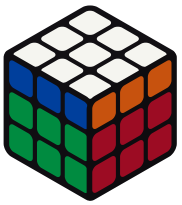
top face, clockwise

U'



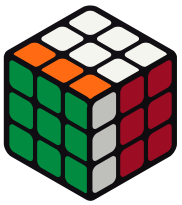
top face, anticlockwise

U2



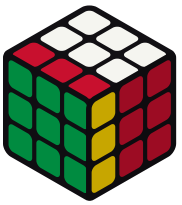
top face, half turn

F



front face, clockwise

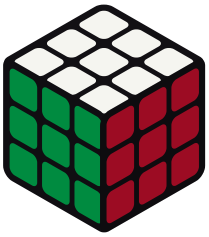
F'



front face, anticlockwise

Algorithms

A list of moves is called an **algorithm**. You read it left to right, like a sentence. `R U R' U'` means: right clockwise, up clockwise, right anticlockwise, up anticlockwise.



BEFORE

R U R' U'

Four moves, starting from a solved cube.

R U R' U'



AFTER

Brackets group moves. `(R U R' U')×3` or `(R U R' U')3` means do the four moves three times.

> **COMMON MISTAKE**
>
> Doing `R` the wrong way round. Say it out loud: “R — right side, away from me.” “R prime — right side, towards me.”

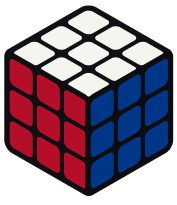
READING MOVES

Turning the whole cube

A few more symbols turn the whole cube in your hands. The beginner method uses two of them: `y` (to face another side, keeping the top on top) and `z2` (to turn the cube over once). The rest you only need for the faster methods.

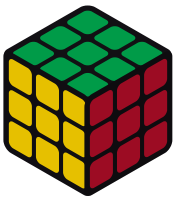
- **x**, **y**, **z** turn the **whole cube** in your hands. `y` turns it like `U` (the front goes to the left). `x` turns it like `R`. `z` turns it like `F`.
- A lowercase letter, or a **w**, means a **wide** move: two layers together. `r` (also written `Rw`) turns the right face and the middle layer with it.
- **M** is the middle layer between L and R. It turns the same way as `L`.

y



whole cube, like U, clockwise

x



whole cube, like R, clockwise

r



right two layers, clockwise

M



middle layer, like L, clockwise

Big cubes

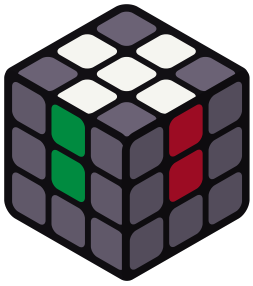
On a 4×4 and bigger there are more layers to name. A number in front picks the layer, counted from the face: `2R` is the second layer from the right on its own. `3Rw` turns the outer three right layers together. `Rw` on its own means two layers.

BEGINNER'S METHOD (3X3)

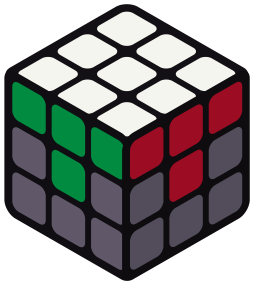
The plan

This method solves the cube one layer at a time, in seven steps. Each step is short and needs only a few moves, which you'll see on a 3-D cube.

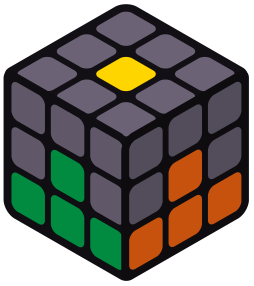
How to hold it: start with the **white centre on top**. You build the white cross and the white corners up there, where you can see them. Then you **turn the cube over**, so white is on the bottom and yellow is on top, and you finish the cube from there.



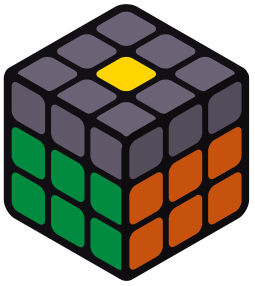
1. White cross (white on top)



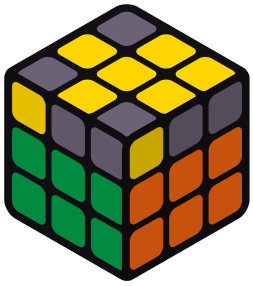
2. White corners



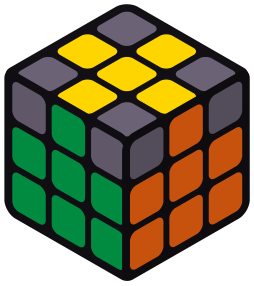
Turn it over



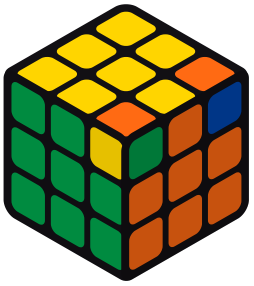
3. Middle layer



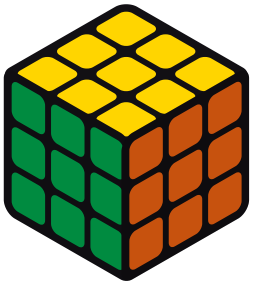
4. Yellow cross



5. Yellow edges



6. Yellow corners in place



7. Twist the corners: solved!

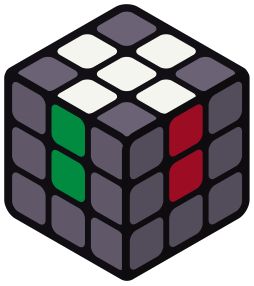
- **Step 1: White cross** — A white plus sign on top, with each edge's other colour matching the centre next to it.
- **Step 2: White corners** — The whole white layer done: white on top, and the top row of every side matching its centre.
- **Turn the cube over** — Turn the whole cube upside down, so the white layer is on the bottom and yellow is on top. Keep the same side facing you.
- **Step 3: Middle layer** — The first two layers done.
- **Step 4: Yellow cross** — A yellow plus sign on top (the side colours don't matter yet).
- **Step 5: Yellow edges** — Each yellow edge's side colour matches its centre.
- **Step 6: Yellow corners in place** — Every yellow corner in its spot, maybe twisted.
- **Step 7: Twist the yellow corners** — Every yellow corner twisted so yellow faces up. Then one last turn of the top: the whole cube solved.

Every white piece has to match **two or three centres**, not just the white one. That's what makes a white layer "right": when it's done, the top row of every side matches the centre below it.

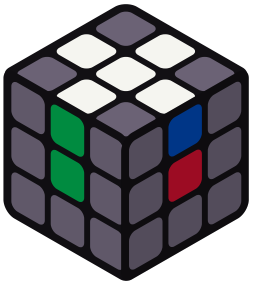
> THE DAISY
>
> Learnt the **daisy** somewhere else? It's still here, as an optional lesson: Another way in: the daisy. You don't need it for this course.

Step 1: The white cross

Goal: A white plus sign on top, with each edge's other colour matching the centre next to it.



The white cross on top. Each edge's other colour sits above the centre of the same colour.



A white plus sign, but two sides don't match: **not** a cross yet.

How it works

Put the white edges in **one at a time**. A white edge is a piece with white and one other colour — say white and green.

1. Hold the cube with **white on top**, and turn the whole cube so the **green centre faces you**. The white–green edge belongs at the **top front**, right above the green centre.
2. Find the white–green edge, and match where it is with one of the cases below.
3. Do that case's moves. The edge goes into its spot, and the edges you've already put in come back to theirs.
4. Then pick the next white edge, turn the cube so its colour faces you, and do the same.

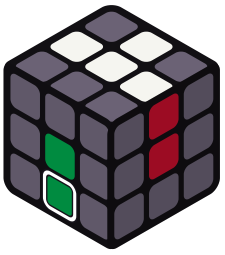
> TURNING THE WHOLE CUBE
>
> Turning the whole cube (`y`) is not a move on the cube, just a new way of holding it. Keep white on top while you do it.

Edge in the bottom layer

First **turn the bottom** (`D`) until the edge is right under the centre that faces you. Turning the bottom never touches the top, so it's always safe.

Bottom layer, white facing down

Placed pieces never move



BEFORE



FROM BELOW

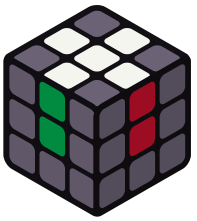
Looks like: The white edge is in the bottom layer with its white sticker facing the floor. You can see its other colour on the bottom row of one of the sides.

First: Turn the bottom (`D`) until the edge is at the bottom front: its colour right under the centre of the same colour.

F2

Why it works: Turning the front twice swings the edge from the bottom straight up into its spot, with white facing the ceiling and its colour next to its centre.

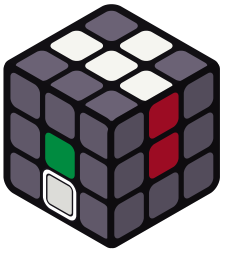
What moves along the way: Nothing you've placed. Turning the bottom never touches the top, and `F2` only moves the top-front spot, which is still empty.



AFTER

Bottom layer, white facing out

Placed pieces come straight back



BEFORE

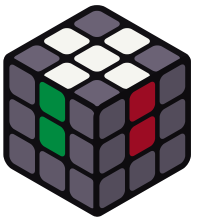
Looks like: The white edge is in the bottom layer but white faces out to the side: you see white on the bottom row of a side, and its other colour faces the floor.

First: Turn the bottom (`D`) until the edge is at the bottom front: its white sticker right under that centre, facing you.

F' U' R U

Why it works: `F'` lifts the edge into the middle layer with its colour facing right, then `U' R U` turns the empty spot to the right, lifts the edge into it white side up and turns the top back.

What moves along the way: The top turns away for a moment (`U'`) and straight back (`U`), so the edges you've placed come back exactly where they were.



AFTER

Edge in the middle layer

One rule covers every middle-layer edge: **an edge goes up on the side its colour faces.** Turn the top so the empty spot is on that side, turn that side to lift the edge into it white side up, then turn the top back.

Middle layer, colour facing you

Placed pieces never move



BEFORE

Looks like: The white edge is in the middle layer, and its other colour faces the same way as the centre of that colour. White faces left or right.

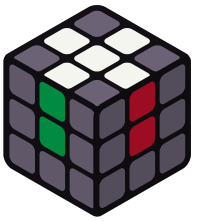
First: The edge is at the front-right or front-left of the middle layer.

F'

Front-right. Every position is in the table below.

Why it works: Its spot is right above it, so one turn of the front (`F'` on the right, `F` on the left) swings it straight up with white on top.

What moves along the way: Nothing you've placed: turning the front only moves the top-front spot, which is still empty.



AFTER

WHERE IT IS	MOVES
Front-right	**F'**
Front-left	**F**

Middle layer, colour facing the side

Placed pieces come straight back



BEFORE

Looks like: The white edge is in the middle layer and its other colour faces left or right, not towards you.

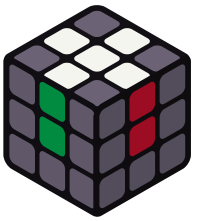
First: The edge is in the middle layer at the front-right, back-right, front-left or back-left, with its colour facing that side.

U' R U

Front-right, colour facing right. Every position is in the table below.

Why it works: An edge goes up on the side its colour faces: turn the top so the empty spot is on that side (`U'` for the right, `U` for the left), turn that side to lift the edge into it white side up (`R` at the front-right, `R'` at the back-right, `L'` at the front-left, `L` at the back-left), then turn the top back.

What moves along the way: The top turns away and straight back, so the edges you've placed return exactly where they were. The side turn only moves the empty spot.

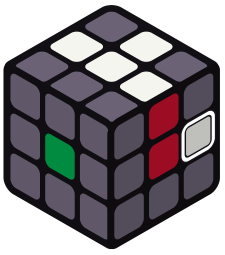


AFTER

WHERE IT IS	MOVES
Front-right, colour facing right	**U' R U**
Back-right, colour facing right	**U' R' U**
Front-left, colour facing left	**U L' U'**
Back-left, colour facing left	**U L U'**

Middle layer, colour facing away

Placed pieces come straight back



BEFORE

Looks like: The white edge is in the middle layer at the back, and its other colour faces away from you. White faces left or right.

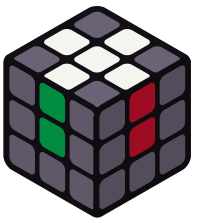
First: The edge is at the back-right or back-left of the middle layer.

`U2 B U2`

Back-right. Every position is in the table below.

Why it works: The same idea as the colour facing the side: `U2` turns the empty spot to the back, the back lifts the edge into it white side up (`B` on the right, `B'` on the left), and `U2` brings it round to the front.

What moves along the way: The top turns half way and back again, so the edges you've placed return exactly where they were.



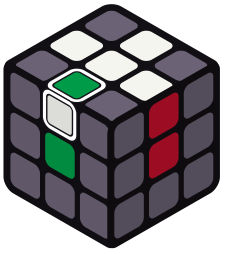
AFTER

WHERE IT IS	MOVES
Back-right	`U2 B U2`
Back-left	`U2 B' U2`

Edge in the top layer

In its spot, but flipped

Placed pieces come straight back



BEFORE

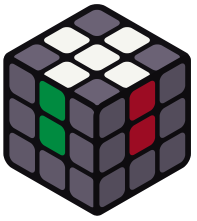
Looks like: The white edge is on top, right above its centre, but the wrong way round: white faces you and its other colour faces up.

First: The flipped edge is at the top front.

`F U' R U`

Why it works: `F` turns the edge down into the middle layer with its colour facing right, and the middle-layer move `U' R U` brings it back up the right way round.

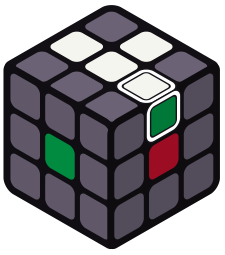
What moves along the way: The top turns away for a moment (`U'`) and straight back (`U`), so the edges you've placed come back exactly where they were.



AFTER

On top, in the wrong spot

Placed pieces never move



BEFORE

Looks like: The white edge is in the top layer but not above the centre of its other colour. White may face up or out.

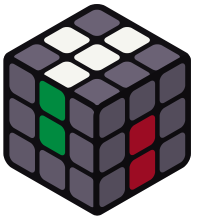
First: The edge is on top at the right, the back or the left.

R2 D' F2

Top right, white up. Every position is in the table below.

Why it works: Turning the side it's on twice (`R2`, `B2` or `L2`) drops it into the bottom layer without touching the other top edges, and from there it's a bottom-layer case.

What moves along the way: Nothing you've placed: the spot it leaves was the wrong spot, so no placed edge was there.



AFTER

WHERE IT IS	MOVES
Top right, white up	`R2 D' F2`
Top right, white facing out	`R2 D' F' U' R U`
Top back, white up	`B2 D2 F2`
Top back, white facing out	`B2 D2 F' U' R U`
Top left, white up	`L2 D F2`
Top left, white facing out	`L2 D F' U' R U`

COMMON MISTAKE

Doing the moves before the edge's colour faces you. Turn the whole cube first: the colour you face decides where the edge goes.

COMMON MISTAKE

Stopping after the `U'` or `U2` of a case. The edges you've placed only come back when you've done every move, including the last turn of the top.

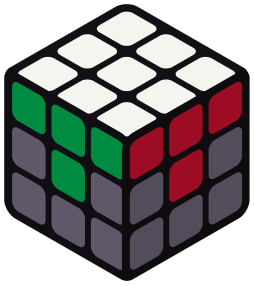
ANOTHER WAY IN

Finding this a lot to take in? Try the daisy: it takes more moves, but every edge goes in the same way.

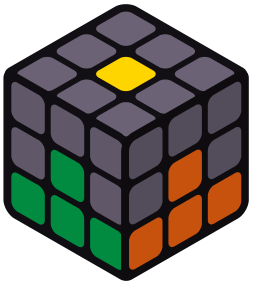
Practise this step on a 3-D cube: rosestuffs.org/experiments/rubiks/learn/#beginner-cross

Step 2: White corners

Goal: The whole white layer done: white on top, and the top row of every side matching its centre.



The white layer done, still on top. The top row of every side matches its centre.



Underneath: the rest doesn't matter yet (grey).

How it works

Put the white corners in **one at a time**, just like the edges. A white corner has white and two other colours, and its spot is on top, between the centres of those two colours.

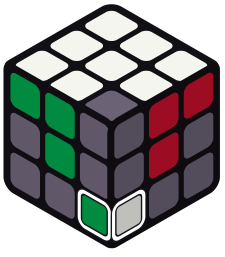
1. Keep **white on top**. Find a white corner in the **bottom layer**.
2. Turn the whole cube (keep white on top) so its spot is at the **front-right**.
3. Turn the bottom (`D`) until the corner is **right under its spot**, at the bottom front-right.
4. Look where its white sticker faces: right, towards you, or down. Each one has its own short moves, below.

Corner in the bottom layer

Turning the bottom never touches the top, so lining the corner up is always safe. Then do its case's moves. The cross and the other top corners move away for a moment, but they're **back by the last move**.

Bottom layer, white facing right

Placed pieces come straight back



BEFORE

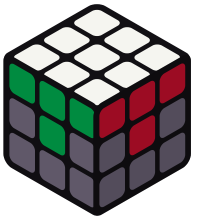
Looks like: A white corner is in the bottom layer. Its two other colours tell you where it goes: on top, between the centres of those two colours. Once it's right under its spot, its white sticker faces right.

First: Keep white on top and turn the whole cube so the corner's spot is at the front-right. Then turn the bottom (`D`) until the corner is right under it.

```
R' D' R
```

Why it works: `R'` turns the right side down, `D'` turns the bottom, and `R` turns the right side back up: the corner rides up into its spot with white on top.

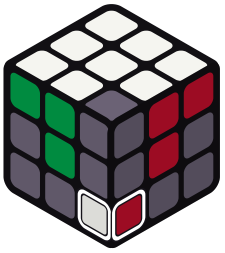
What moves along the way: The cross and the other top corners move for a moment and are back by the last move: whatever `R'` takes down, `R` brings straight back up. The bottom and middle layers get mixed up, which doesn't matter yet.



AFTER

Bottom layer, white facing you

Placed pieces come straight back



BEFORE

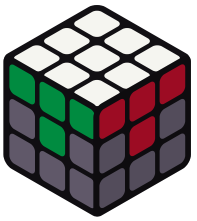
Looks like: A white corner is in the bottom layer. Its two other colours tell you where it goes: on top, between the centres of those two colours. Once it's right under its spot, its white sticker faces you.

First: Keep white on top and turn the whole cube so the corner's spot is at the front-right. Then turn the bottom (`D`) until the corner is right under it.

`F D F'`

Why it works: The same idea from the front: `F` turns the front side down, `D` turns the bottom, and `F'` turns the front back up, bringing the corner into its spot with white on top.

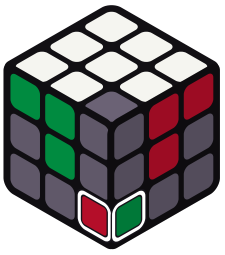
What moves along the way: The cross and the other top corners move for a moment and are back by the last move: whatever `F` takes down, `F'` brings straight back up. The bottom and middle layers get mixed up, which doesn't matter yet.



AFTER

Bottom layer, white facing down

Placed pieces come straight back



BEFORE

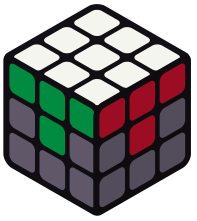
Looks like: A white corner is in the bottom layer. Its two other colours tell you where it goes: on top, between the centres of those two colours. Once it's right under its spot, its white sticker faces the floor.

First: Keep white on top and turn the whole cube so the corner's spot is at the front-right. Then turn the bottom (`D`) until the corner is right under it.

`R' D2 R D R' D' R`

Why it works: White can't come straight up from underneath. `R' D2 R D` turns the corner round so white faces right, still right under its spot. Then `R' D' R` puts it in, the same as "white facing right".

What moves along the way: The cross and the other top corners move for a moment and are back by the last move: each `R'` that takes them down is followed by an `R` that brings them back. The bottom and middle layers get mixed up, which doesn't matter yet.



AFTER

A white corner already on top

When no white corner is left in the bottom layer, look at the top. A white corner up there is either in its own spot but twisted, or in another corner's spot. Either way, **take it out first**: hold it at the front-right

and do the moves for the way its white faces (`R' D' R` for right or up, `F D F'` for towards you). It drops into the bottom layer, and then it's one of the cases above.

In its spot, but twisted

Placed pieces come straight back



BEFORE

Looks like: The white corner is on top in its own spot (it has the same colours as the three centres around it), but white faces the side instead of up.

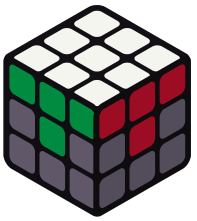
First: Keep white on top and turn the whole cube so the corner is at the front-right.

R' D' R D R' D' R

White facing right. Every position is in the table below.

Why it works: Take it out first, with the moves for the way white faces: `R' D' R` when white faces right, `F D F'` when it faces you. That drops it into the bottom layer. Turn the bottom to bring it back right under its spot, and white faces the same way as before: it's a bottom-layer case.

What moves along the way: The cross and the other top corners move for a moment and are back at the end of the three moves that take it out, and again by the last move.



AFTER

WHERE IT IS	MOVES
White facing right	**R' D' R D R' D' R**
White facing you	**F D F' D' F D F'**

On top, in the wrong spot

Placed pieces come straight back



BEFORE

Looks like: A white corner is in the top layer, but in another corner's spot: it doesn't have the same colours as the three centres around it.

First: Keep white on top and turn the whole cube so this corner is at the front-right. (This time you hold the corner there, not its spot.)

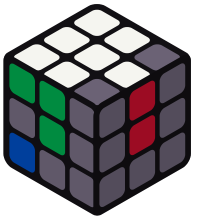
`R' D' R`

White up. Every position is in the table below.

With white facing you, do `F D F'` instead. Then it's in the bottom layer: turn the whole cube so the corner's spot is at the front-right. Then turn the bottom (`D`) until the corner is right under it. Now it's a bottom-layer case: use the moves for the way its white faces.

Why it works: Take it out with the moves for the way white faces: `R' D' R` when white faces up or right, `F D F'` when it faces you. That drops it into the bottom layer, and from there it's a bottom-layer corner: hold its own spot at the front-right, turn the bottom until it's right under it, and use its case.

What moves along the way: Nothing you've placed stays out: the spot it leaves was the wrong spot, and the cross and the other top corners are back at the end of the three moves.



AFTER

WHERE IT IS	MOVES
White up	`R' D' R`
White facing right	`R' D' R`
White facing you	`F D F'`

COMMON MISTAKE

Turning the whole cube or the bottom in the middle of a case. Keep the same spot at the front-right until the corner is in.

COMMON MISTAKE

Stopping part-way through the moves. The cross and the other corners only come back with the last move of the case.

ANOTHER WAY

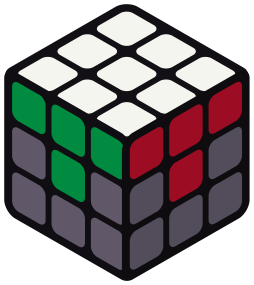
Some guides use one move for every corner: repeat `R' D' R D` until the corner comes up with white on top (1, 3 or 5 goes from the bottom; 2 or 4 when it's twisted in its spot). It's easier to remember but takes more turns. The Solve page does it that way if you choose "The first-layer corners: Repeat one move until it's in".

Practise this step on a 3-D cube: rosestuffs.org/experiments/rubiks/learn/#beginner-corners

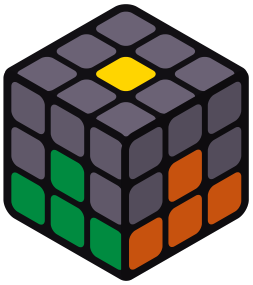
BEGINNER'S METHOD (3X3)

Turn it over

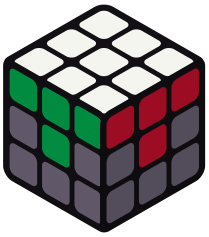
Turn the whole cube upside down, so the white layer is on the bottom and yellow is on top. Keep the same side facing you.



Before: the white layer on top.



After: white on the bottom, yellow on top.

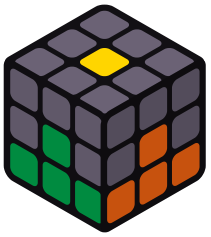


BEFORE

Turn the whole cube over

`z2` turns the whole cube half a turn, the way the front face turns. The side facing you stays the same.

z2



AFTER

Everything from here on is done on the top layer, so the finished white layer goes underneath, out of the way.

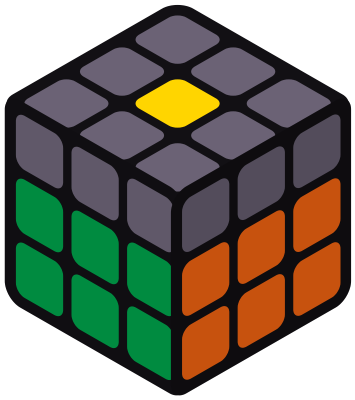
From here on, keep **yellow on top**. You'll turn the cube round to work on different sides, but yellow stays up and the white layer stays underneath.

QUICK CHECK

Check the white layer before you go on: the bottom row of every side should match the centre above it.

Step 3: The middle layer

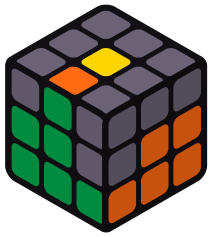
Goal: the first two layers done. The white layer is on the bottom now (you turned it over), and the middle row of each side matches its centre.



Two layers done. The top (grey) comes next.

Look for an edge in the top layer **without yellow** on it. Look at its side colour (the one not on top). Turn the top until that side colour matches the centre below it — it makes an upside-down T.

Now look at the edge's top colour. That's the side it needs to go to: left or right.

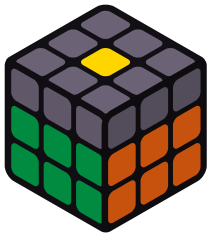


BEFORE

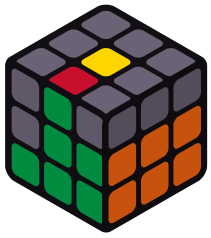
Goes right

The top colour matches the centre on the right.

`U R U' R' U' F' U F`



AFTER

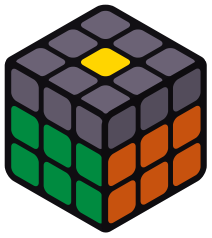


BEFORE

Goes left

The top colour matches the centre on the left. It is the mirror image.

`U' L' U L U F U' F'`



AFTER

TIP

Both algorithms start by turning the top **away** from where the edge is going, then the side goes up, and so on. If you remember “away, up, back, down”, you'll remember both.

An edge stuck in the middle layer

If a middle edge is in the wrong slot, or in the right slot but flipped, hold it at the front right and do the “goes right” algorithm once with any top edge. That pushes it up into the top layer. Then put it in properly.

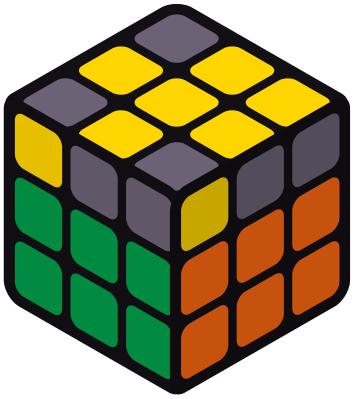
COMMON MISTAKE

Using an edge that has yellow on it. Those belong in the top layer — leave them for later.

Practise this step on a 3-D cube: rosestuffs.org/experiments/rubiks/learn/#beginner-middle

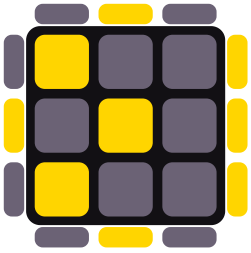
Step 4: The yellow cross

Goal: a yellow plus sign on top. Only the edges matter here — ignore the corners for now.

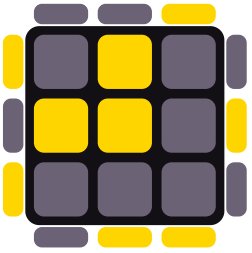


A yellow cross on top (corners don’t matter yet).

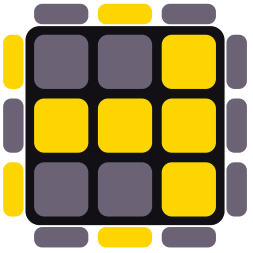
Look at the top. Ignoring the corners, you'll see one of four shapes:



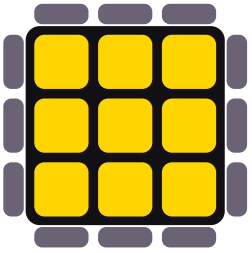
Dot: no yellow edges up



L: two edges next to each other

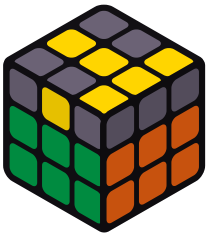


Line: two edges opposite



Cross: done

One algorithm does all of it: `F R U R' U' F'`.

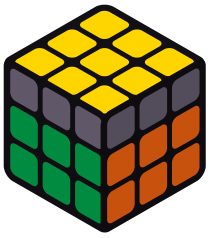


BEFORE

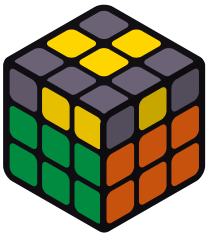
Line → cross

Hold the line left to right (horizontal), then do the algorithm once.

```
F R U R' U' F'
```



AFTER

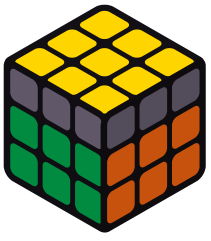


BEFORE

L → cross

Hold the L at the back left (like 9 o’clock and 12 o’clock), then do the algorithm twice.

```
(F R U R' U' F') ×2
```



AFTER

Dot: do the algorithm once. You'll get an L. Then turn the top to put the L at the back left and carry on.

TIP

You can never have just one or three yellow edges up. If you do, a piece has been twisted out of the cube by accident — pop it back in the right way.

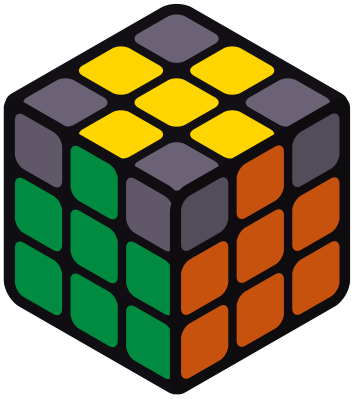
COMMON MISTAKE

Holding the L in the wrong place. The two yellow edges must point at the back and the left.

Practise this step on a 3-D cube: rosestuffs.org/experiments/rubiks/learn/#beginner-yellow-cross

Step 5: The yellow edges

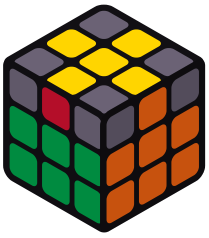
Goal: the yellow cross, with each edge's side colour matching its centre.



Each yellow edge matches the centre below it.

Turn the top `U` until **two** edges match their centres. (Sometimes all four match — then you're done.)

- If the two matching edges are **next to each other**, hold them at the **back** and the **right**.
- If they are **opposite**, do the algorithm once from any side. Now two next to each other match — start again.



BEFORE

Swap the front and left edges

Matching edges at the back and right. Do this, then you are done.

`R U R' U R U2 R' U`



AFTER

TIP

This algorithm is famous: `R U R' U R U2 R'` is called the **Sune**. You'll meet it again in faster methods.

COMMON MISTAKE

Holding the two matching edges at the front and left. They go at the back and the right.

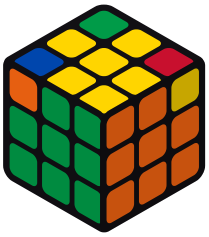
Practise this step on a 3-D cube: rosestuffs.org/experiments/rubiks/learn/#beginner-yellow-edges

Step 6: Yellow corners in place

Goal: each top corner in its own spot — between the three centres of its colours. It can still be twisted; that's the next step.

Check each top corner: does it have the same three colours as the three centres around it? It's "in place" even if yellow isn't on top.

- If **one** corner is in place, hold it at the **front right** of the top and do the algorithm. Do it again if needed.
- If **none** are in place, do the algorithm once from anywhere. Then one will be.
- If all four are in place, go to the last step.

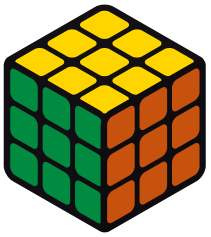


BEFORE

Cycle three corners

The front-right corner stays. The other three swap places around it.

`U R U' L' U R' U' L`



AFTER

TIP

Read it as two halves: `U R U' L'` then `U R' U' L`. The corner at the front right stays put; the other three go round.

COMMON MISTAKE

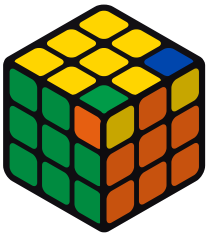
Turning the top (U) to line up a corner. That moves the yellow edges you just solved. Turn the whole cube instead.

Practise this step on a 3-D cube: rosestuffs.org/experiments/rubiks/learn/#beginner-yellow-corners

Step 7: Twist the yellow corners

Goal: a solved cube!

Hold the cube with a twisted corner (yellow not on top) at the **front right** of the top. Do `R' D' R D` until that corner's yellow faces up. It takes two or four goes. (It's the white-corner move `R' D' R` with one more turn of the bottom, `D` — now it twists a corner on top.)

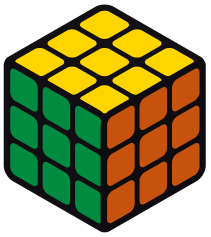


BEFORE

Two twisted corners

The first corner faces right: two goes. Turn the top, then the next corner faces front: four goes. Then turn the top back.

(R' D' R D) ×2 U (R' D' R D) ×4 U'



AFTER

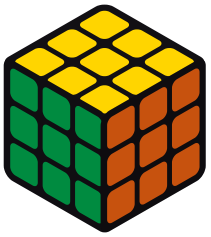


BEFORE

Three twisted corners

Two goes for each corner, turning only the top in between.

(R' D' R D) ×2 U (R' D' R D) ×2 U (R' D' R D) ×2 U2



AFTER

Now the scary part: **the bottom of the cube will look broken**. That's normal. Don't turn the cube!

1. Turn only the top `U` to bring the next twisted corner to the front right.
2. Do `R' D' R D` again until that one is yellow side up.
3. Repeat for every twisted corner. When the last one is done, the bottom fixes itself.
4. Turn the top to finish.

> COMMON MISTAKE
>
> Turning the whole cube during this step, or stopping when the bottom looks messy. Keep the same grip and trust it: the mess undoes itself at the end.

Practise this step on a 3-D cube: rosestuffs.org/experiments/rubiks/learn/#beginner-twist

> TIP
>
> That's every step! Now put them together: solve a whole mixed-up cube from the start, with the coach watching your turns.

Put it all together

You know every step now. Time to do them all in a row, on a properly mixed-up cube.

Start with **white on top**, just like Step 1. Build the white cross and the white corners up there, turn the cube over, and finish with yellow on top. Here are the steps again:

- **Step 1: White cross** — A white plus sign on top, with each edge's other colour matching the centre next to it.
- **Step 2: White corners** — The whole white layer done: white on top, and the top row of every side matching its centre.
- **Turn the cube over** — Turn the whole cube upside down, so the white layer is on the bottom and yellow is on top. Keep the same side facing you.
- **Step 3: Middle layer** — The first two layers done.
- **Step 4: Yellow cross** — A yellow plus sign on top (the side colours don't matter yet).
- **Step 5: Yellow edges** — Each yellow edge's side colour matches its centre.
- **Step 6: Yellow corners in place** — Every yellow corner in its spot, maybe twisted.
- **Step 7: Twist the yellow corners** — Every yellow corner twisted so yellow faces up. Then one last turn of the top: the whole cube solved.

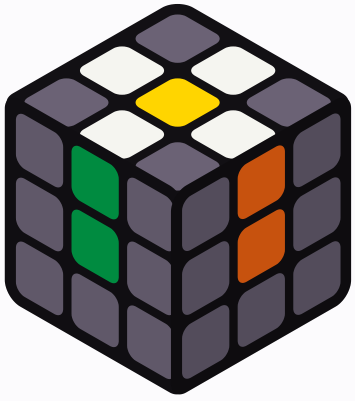
> TIP
>
> You've solved the cube! Next, try solving it with fewer moves using the 2×2 and CFOP chapters, or time yourself on the Play page.

OPTIONAL · BEGINNER'S METHOD (3X3)

Another way in: the daisy

This lesson is optional. You don't need it: Step 1 already makes the cross. The daisy is another way in that many guides and videos teach. It takes more moves, but every edge goes in the same way, so there's less to remember.

The daisy builds the cross **on the bottom**. You first gather the four white edges around the **yellow** centre (the daisy), then send them down to the white centre one by one. Hold the cube with **yellow on top** for this lesson.

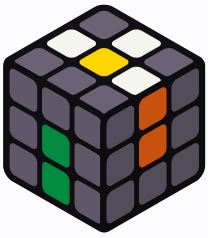


The daisy: the four white edges around the yellow centre. The other pieces don’t matter yet (grey).

The daisy

Find the white edges and bring them up to the top one at a time, white side up. The other stickers on the top don't matter.

The golden rule: before you bring an edge up, **turn the top (`U`) so the spot it's going to is free** — a spot without a white petal. Otherwise you'll knock a petal off.

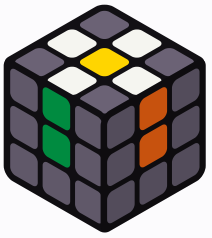


BEFORE

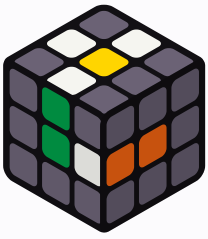
In the bottom, white facing down

Turn the top until the spot above it is free, then turn that face twice: `F2`.

F2



AFTER

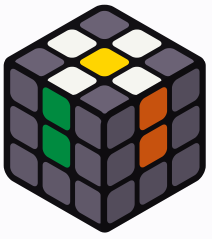


BEFORE

In the middle layer

If the white faces you on the right, turn the right face up: `R`. On the left, turn the left face up: `L'`. (Free the spot above first.)

R



AFTER

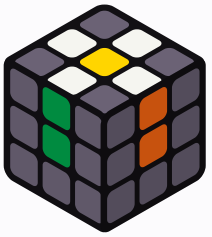


BEFORE

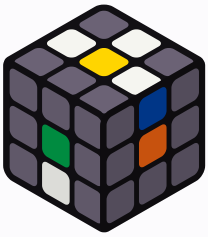
On top, white facing out

It's in the right layer, but upside down. Turn the front down `F`, turn the top so the right spot is free `U'`, then bring it up on the right `R`.

F U' R



AFTER

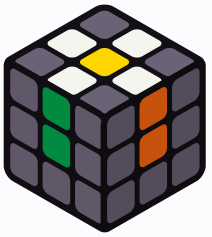


BEFORE

In the bottom, white facing out

First turn the top until the spot right above the edge (the top front) is free: the next move takes whatever is there down. Then turn the front `F'` so the edge goes to the middle layer, turn that free spot round to the right `U'`, and bring the edge up into it `R`.

F' U' R



AFTER

COMMON MISTAKE

Bringing an edge up into a spot that already has a petal. Always check the spot first and turn U to free it.

Practise this step on a 3-D cube: rosestuffs.org/experiments/rubiks/learn/#beginner-daisy

From the daisy to the cross

Pick any petal and look at its **other** colour (on the side). Turn the top `U` until that colour sits above the centre of the same colour. Now turn that face twice (`F2` if it's at the front): the petal drops down to the white centre. Do the same for the other three.

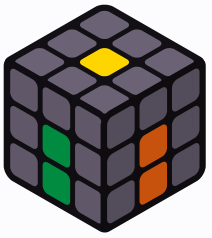


BEFORE

From daisy to cross

Each time: turn the top to match the side colour with its centre, then turn that face twice.

U F2 U2 R2 U B2 L2



AFTER

COMMON MISTAKE

Turning a face twice before the colours match. Always line up the side colour with its centre first — that's what makes the edge land in the right place.

Practise this step on a 3-D cube: rosestuffs.org/experiments/rubiks/learn/#beginner-daisy

Then carry on

Your white cross is on the **bottom** now. Turn the cube over (`z2`) so white is on top again, and carry on with Step 2: White corners.

Or keep white on the bottom

You can also leave white on the bottom and put the corners in from above. Find a white corner in the top layer and look at its two other colours: it belongs on the bottom, between the centres of those colours.

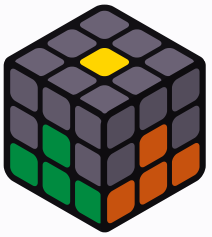
1. Turn the whole cube (keep yellow on top) so that spot is at the **front right**.
2. Turn the top `U` until the corner is **right above** its spot.
3. Look where its white sticker faces, and do the moves for that: the corner drops into place, white side down.



BEFORE

White facing right

`R U R'`



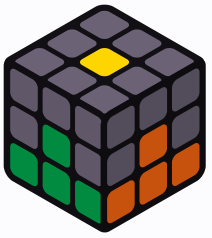
AFTER



BEFORE

White facing up

`R U2 R' U' R U R'`



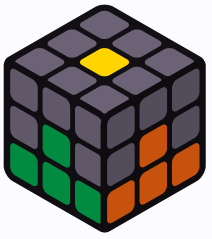
AFTER



BEFORE

White facing you

`F' U' F`



AFTER

A white corner already on the bottom but in the wrong spot or twisted: hold it at the front right and take it out with `R U R'` (or `F' U' F` when white faces you). It goes up into the top layer, and then it's one of the cases above.

ANOTHER WAY

Some guides use one move for every corner here: repeat `R U R' U'` until the corner drops in, white side down (1, 3 or 5 goes). It's easier to remember but takes more turns. The Solve page does it that way if you choose “The first-layer corners: Repeat one move until it’s in”.

Then go straight on to Step 3: the middle layer: the white layer is already underneath, so there's nothing to turn over.

ON THE SOLVE PAGE

The Solve page works this way when you choose “Daisy first (an easier way in)”: the daisy, the cross on the bottom, then the corners from above.

CHEAT SHEET

The whole method on one page

Start with white on top. After step 2, turn the cube over: yellow on top, white on the bottom.

GOAL	STEP	WHAT TO DO	MOVES
	**1. White cross**	White on top. Turn the cube so the edge's colour centre faces you, then use its case (below).	**see the cases**
	**2. White corners**	Still white on top. Its spot at the front right, the corner right under it (turn the bottom). Moves for white facing right, you or down. On top already: take it out first.	**R' D' R** **F D F'** **R' D2 R D R' D' R**
	**Turn it over**	White goes to the bottom, yellow comes to the top. Keep the same side facing you.	**z2**
	**3. Middle layer**	Edge goes right / goes left.	**U R U' R' U' F' U F** **U' L' U L U F U' F'**
	**4. Yellow cross**	Line: once (horizontal). L: twice (back-left). Dot: once, then L.	**F R U R' U' F'**
	**5. Yellow edges**	Two matching edges at the back and right.	**R U R' U R U2 R' U**
	**6. Corners in place**	Correct corner at the front right; repeat if needed.	**U R U' L' U R' U' L**
	**7. Twist corners**	Repeat until yellow is up; turn only U between corners.	**(R' D' R D) ×2 or ×4**

The white cross cases

Bottom layer, white facing down
F2

Bottom layer, white facing out
F' U' R U

Middle layer, colour facing you
F' / F

Middle layer, colour facing the side
U' R U / U' R' U / U L' U' / U L U'

Middle layer, colour facing away
U2 B U2 / U2 B' U2

In its spot, but flipped
F U' R U

On top, in the wrong spot
R2 / B2 / L2, then its bottom case

Edge in the bottom layer: first turn the bottom (D) until it's right under the centre facing you. Optional: the daisy is another way to the cross (see its page).

The white corner cases

Bottom layer
white facing right: R' D' R
white facing you: F D F'
white facing down: R' D2 R D R' D' R

In its spot, but twisted / On top, in the wrong spot
R' D' R (white up or right) / F D F' (white facing you), then its bottom case

Bottom-layer corners first; only then one from the top. Another way: repeat R' D' R D until it's in (1, 3 or 5 goes).