

French Calendar Cube Design

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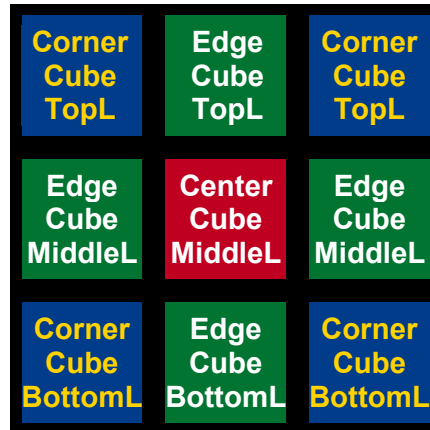
Introduction

A **French Calendar Cube** is a 3x3x3 **Rubik's Cube** used as a **French Calendar**. In addition, the cube can also be used to display time, temperature or year. The time of the day and temperature can be displayed from 00:00 to 23:59 in :01 (1 minute) steps and from 00 °C to 59 °C in 1 °C steps, respectively. The year can be displayed from '00 (Year 2000) to '59 (Year 2059) in '01 (1 year) steps. There are **Virtual Cubes** that can be *virtually* rotated and twisted on a computer screen and **Real Cubes** that can only be *physically* rotated and twisted by hand. A **Texture** is laid down on a Virtual Cube whereas real **Stickers** are stuck down on a Real Cube. A French Calendar Cube is designed by placing letters, numerals and words on a texture which is then laid down on a Virtual Cube (see <http://www.randelshofer.ch/> for more details). The date of the day can be displayed on a *selected* Cube Face by rotating and twisting some parts of the Cube. When this has been achieved, we say that the Cube has been *solved*. The following example shows the *initial* state of the Cube (Monday, January 01).

Virtual French Calendar Cube	
<p>French Calendar Cube Texture</p>	<p>Virtual French Calendar Cube</p>
<p>Download CubeTwister from: http://www.randelshofer.ch/</p>	

Terminology

In a 3x3x3 **Rubik's Cube**, there are 8 *Corner Cubes*, 12 *Edge Cubes*, 6 *Center Cubes* and 6 *Cube Faces*. There are also 4 Corner Cube faces, 4 Edge Cube faces and 1 Center Cube face *per Cube Face*, as shown below.



There are 1 face per Center Cube, 2 faces per Edge Cube and 3 faces per Corner Cube.

There are also 3 horizontal *Layers* called *Top*, *Middle* and *Bottom Layers*.

Cube Lexicon		
English	Français	Deutsch
Cube	Cube	Würfel
cube, cube	cube, petit cube	Würfeteil, Teil des Würfels
face	face	Seite, Seitenfläche
front face	face avant	vordere Seite, vorne
back face	face arrière	hintere Seite, hinten
left face	face gauche	linke Seite, links
right face	face droite	rechte Seite, rechts
top face	face supérieure	obere Seite, oben
bottom face	face inférieure	untere Seite, unten
sticker	étiquette (autocollante), plaquette	Kleber, Farbkleber
tile	tuile, plaquette	Plättchen, Farbplättchen
center cube, center	cube central, centre	Mittelwürfel, Mittelstein, Mitte
edge cube, edge	cube-arête, arête	Kantenwürfel, Kantenstein, Kante
corner cube, corner	cube de coin, coin	Eckwürfel, Eckstein, Ecke
layer	couronne	Schicht, Scheibe
top layer	couronne supérieure	obere Schicht, obere Scheibe
middle layer	couronne intermédiaire	mittlere Schicht, mittlere Scheibe, Mittelschicht, Mittelscheibe
bottom layer	couronne inférieure	untere Schicht, untere Scheibe
orientation, direction	orientation	Orientierung
to solve	résoudre	lösen, zusammen drehen
to twist	pivoter	drehen
to rotate	tourner, effectuer une rotation	drehen
clockwise	dans le sens horaire	im Uhrzeigersinn
anticlockwise, counter-clockwise	dans le sens anti-horaire	im Gegenuhrzeigersinn

French Calendar Cube Design

French Calendar

French Calendar				
Months			Weekdays	
English	French		English	French
January	<u>JAN</u> vier	Janvier	Monday	Lundi
February	<u>FEV</u> rier	Février	Tuesday	Mardi
March	<u>MAR</u> s	Mars	Wednesday	Mercredi
April	<u>AVR</u> il	Avril	Thursday	Jeudi
May	<u>MAI</u>	Mai	Friday	Vendredi
June	<u>JUIN</u>	Juin	Saturday	Samedi
July	<u>JUILL</u> et or <u>JUILL</u> et	Juillet	Sunday	Dimanche
August	<u>AOU</u> t	Août		
September	<u>SEP</u> tembre	Septembre		
October	<u>OCT</u> obre	Octobre		
November	<u>NOV</u> embre	Novembre		
December	<u>DEC</u> embre	Décembre		
9 letters on Middle Left edge cubes (Months)			J F M A S O N D	
6 letters on Middle Center cubes (Months)			A E V U O C	
9 letters on Middle Right edge cubes (Months)			N V R I L U P T C	
'N' Middle Left is the same letter as 'N' Middle Right.				

Additional Letter Combinations (Middle Layer)

French Cities		
<u>AUC</u> h	<u>AUR</u> illac	<u>AUT</u> un
<u>AVI</u> gnon	<u>AVR</u> anches	<u>FEC</u> amp
<u>FOI</u> x	<u>FON</u> tainebleau	<u>MAC</u> on
<u>MAR</u> seille	<u>MAT</u> ignon	<u>MEN</u> de
<u>MENT</u> on	<u>MET</u> z	<u>MON</u> tuçon
<u>MON</u> tauban	<u>MON</u> téliard	<u>MON</u> tpellier
<u>MOU</u> lins	<u>MOU</u> tiers	<u>NAR</u> bonne
<u>NEV</u> ers	<u>SAIN</u> tes	<u>SAU</u> lieu
<u>SEN</u> s	<u>SET</u> e	
<u>AOC</u> Appellation d'Origine <u>C</u> ontrôlée	<u>NUIT</u> s St Georges	<u>SAU</u> mur
Swiss Cities		
<u>AAR</u> au	<u>MAR</u> tigny	<u>MON</u> treux
<u>MOU</u> don	<u>NEU</u> châtel	<u>SAR</u> nen

Cube Layout

In this design, weekdays are displayed on **Top Layer**, months on **Middle Layer** and either day of the month or time or temperature or year on **Bottom Layer**.

Top Layer Layout

Top Layer								
<u>Lundi</u>			<u>Mardi</u>			<u>Mercredi</u>		
Lun	di		Mar	di		Mercr	di	

Weekdays on **Top Layer** are sorted out as follows:

- 1- 7 **T**op **L**eft weekday parts on corner cubes: Lun, Mar, Mercr, Jeu, Vendr, Same, Di
- 2- 2 **T**op **C**enter weekday parts on an edge cube: di, manche
- 3- 1 **T**op **R**ight blank on a corner cube: blank

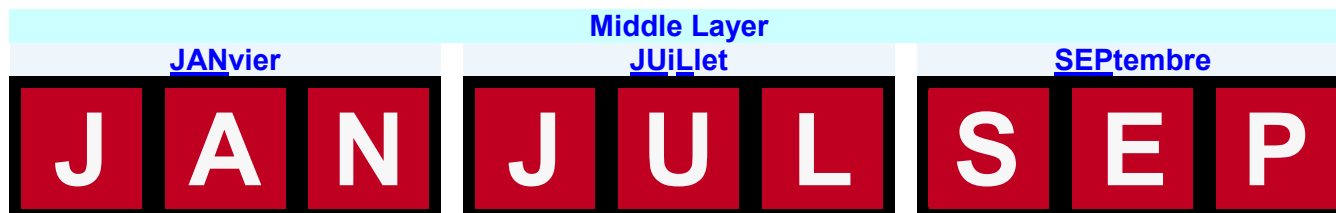
Weekdays are now *logically* combined on corner cubes:

- 1- 3 **T**op **L**eft corner cubes: (Lun, Mar, Mercr), (Jeu, Vendre, blank*), (Same, Di, blank*)
- 2- 1 **T**op **C**enter edge cube: (di, manche)

*This ensures that there is at least one blank on a **T**op **R**ight corner cube.

So, now there are 5 corner and 11 edge cubes left that can be used for the 2 remaining layers.

Middle Layer Layout



Letters on the Middle Layer are sorted out as follows:

- 1- 9 **M**iddle **L**eft letters on edge cubes: J, F, M, A, **S**, **O**, **N**, D
- 2- 6 **M**iddle **C**enter letters on center cubes: A, E, V, U, O, C
- 3- 8 **M**iddle **R**ight letters on edge cubes: V, R, **I**, L, U, P, T, C, **N**

Note 1: Middle **R**ight letter **N** is Middle **L**eft letter **N** that has been 180° rotated. **N** can then be used for displaying either **JAN** or **NOV**.

Note 2: 'Juillet' can be displayed either as 'JUL' or 'JUI'.

Letters are now *logically* combined on edge cubes:

- 1- 4 **M**iddle **L**eft edge cubes: (J,F), (M,**S**), (A,**O**), (**N**,D)
- 2- 4 **M**iddle **R**ight edge cubes: (L,P), (V,R), (**I**,U), (T,C)

So, now there are 5 corner and 3 edge cubes left that can be used for the Bottom Layer.

Bottom Layer Layout



Numerals and symbols on the Bottom Layer are sorted out as follows:

- 1- 3 **B**ottom **L**eft symbols on a corner cube: ', :, °C (these are used as *selectors*, see **Note 3**)
- 2- 6 **B**ottom **C**enter numerals on edge cubes: 0, 1, 2, 3, 4, 5
- 3- 10 **B**ottom **R**ight numerals on corner cubes: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Numerals and symbols are now *logically* combined on corner and edge cubes:

- 1- 1 **B**ottom **L**eft corner cube: (',:,°C)
- 2- 3 **B**ottom **C**enter edge cubes: (1,2), (3,blank), (4,5)
- 3- 4 **B**ottom **R**ight corner cubes: (1,2,3), (4,5,blank**), (6,7,8), (9,0,blank**)

This ensures that there is at least one blank on a **Bottom **L**eft corner cube.

Note 3: symbols ', :, °C are used as *selectors* for selecting display of Year ('), Time (:) or Temperature (°C)

Layout Table		
Reading from Left to Right		
Top Left – Corner cubes Lun, Mar, Mercre, Jeu, Vendre, Same, Di	Top Center – Edge cube di, manche	Top Right – Corner cube blank
Middle Left – Edge cubes J, F, M, S , A, O , N , D	Middle Center – Center cubes A, E, V, U, O, C	Middle Right – Edge cubes L, P, V, R, I , U, T, C, N
Bottom Left – Corner cubes blank, ', :, °C	Bottom Center – Edge cubes 1, 2, 3, 4, 5, blank	Bottom Right – Corner cubes 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

French Calendar Cube – Examples

Monday, June 30

Lun	di	
J	U	N
	3	0

Tuesday, December, Year '08

Mar	di	
D	E	C
'	0	8

Wednesday, Montreux: 32 °C

Mercre	di	
M	O	N
°C	3	2

Thursday, July 31

Jeu	di	
J	U	L
	3	1

Thursday, July, 19:52

Jeu	di	
J	U	L
	1	9

Thursday, July, 19:52

Jeu	di	
J	U	L
:	5	2

Solving a French Calendar Cube Step by Step

In this example, a step by step solving process is applied to the French Calendar Cube, just described before. Note that we only need to solve a *single* Face out of six. We will solve a Face for Monday, January 01.

Solve the Cross First

Standard Rubik's Cube Solving

Then Solve the Corner Cubes

Standard Rubik's Cube Solving

Step 1

	A	

Center **A** on Front Face

Step 2

	di	
	A	

Top Layer: Edge Cube **di**

Step 3

	di	
	A	N

Middle Layer: Edge Cube **N**

Step 4

	di	
	A	N

Bottom Layer: Edge Cube **Blank**

Step 5

	di	
J	A	N

Middle Layer: Edge Cube J

Step 6

Lun	di	
J	A	N

Top Layer: Corner Cube Lun

Step 7

Lun	di	
J	A	N

Top Layer: Corner Cube Blank

Step 8

Lun	di	
J	A	N
		1

Bottom Layer: Corner Cube 1

Step 9

Lun	di	
J	A	N
		1

Bottom Layer: Corner Blank

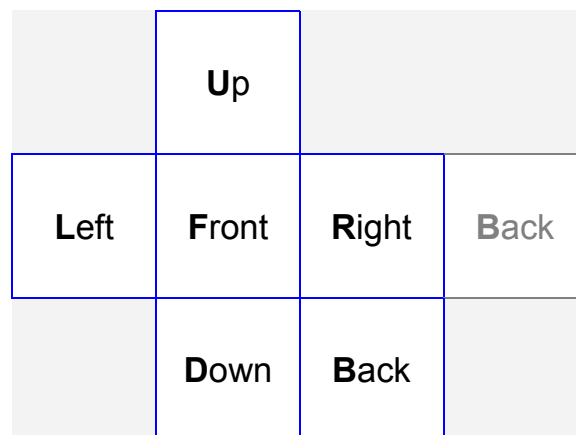
Step 10

Lun	di	
J	A	N
		1

That's it !

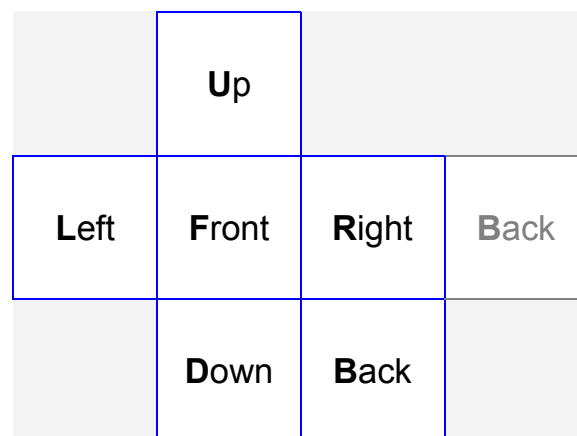
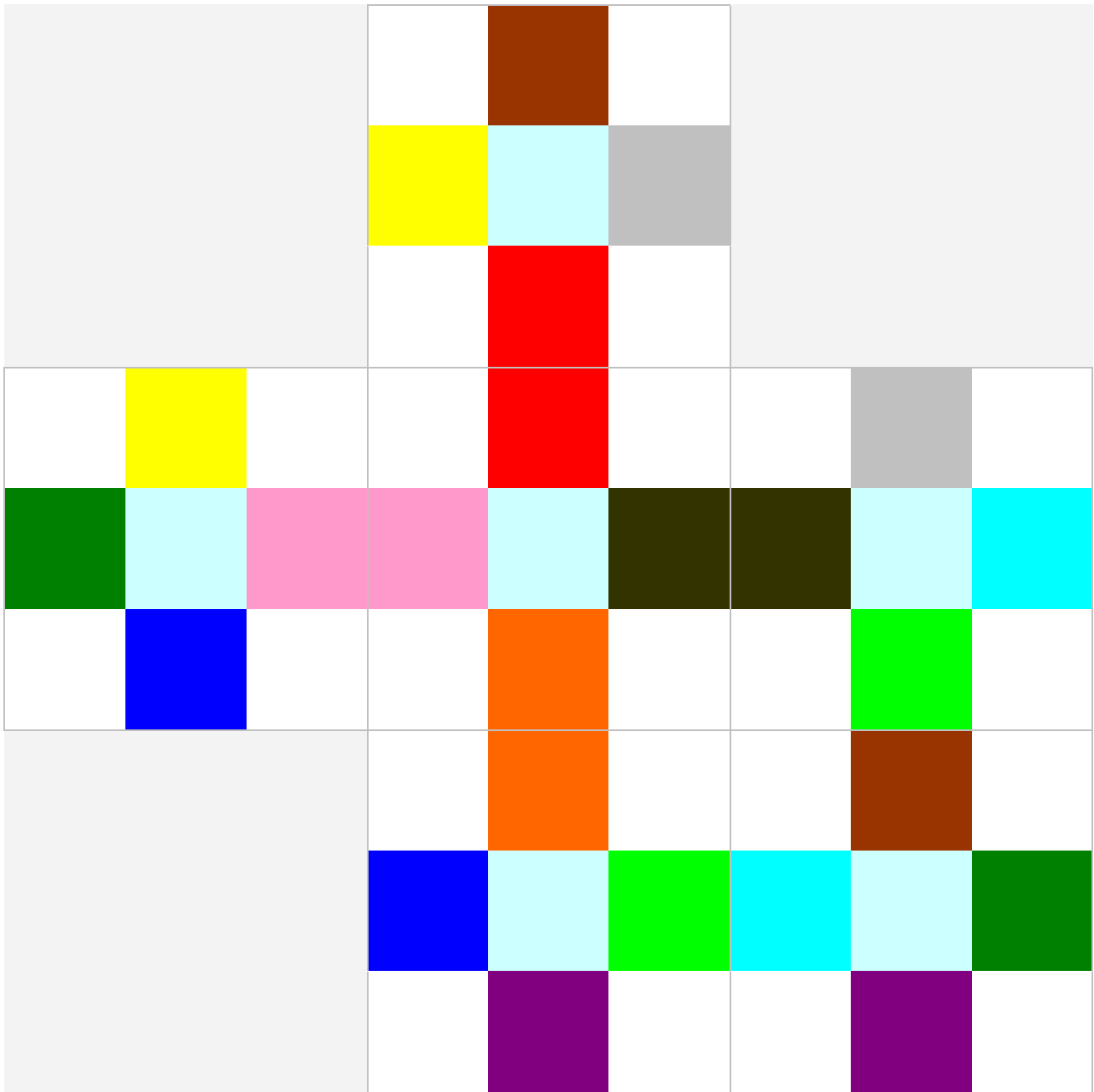
Corner Cubes Final Check

There are 8 Corner Cubes and 3 faces per Corner Cube. In the diagram below, each Corner Cube is displayed in 8 different colors and with the same color applied to each of its 3 faces. This diagram can be used as a convenient *visual aid* to check Design Rules (DRC).



Edge Cubes Final Check

There are 12 Edge Cubes and 2 faces per Edge Cube. In the diagram below, each Edge Cube is displayed in 12 different colors and with the same color applied to each of its 2 faces. This diagram can be used as a convenient *visual aid* to check Design Rules (DRC).



Texture Template

This is a texture template that can be printed out and used for writing down numbers and letters by hand *prior to* texture design. All is needed are pencil, rubber...and time.

