

Calendar Cube Design

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Introduction

A **Calendar Cube** is a 3x3x3 **Rubik's Cube** used as a **Calendar**. Calendars can be **Perpetual** (without any current year display) or **Yearly** (with current year display).

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 Calendar Cube is designed by placing letters (or characters) and numbers 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 date can be set on a Calendar Cube in *many* different languages as shown in the following two examples.

Examples of Virtual Perpetual Calendar Cubes



Indonesian Calendar Cube



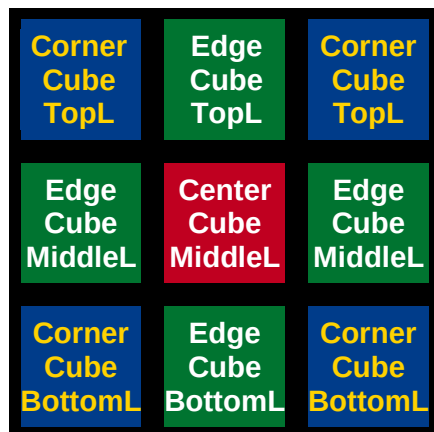
Russian Calendar Cube

Download **CubeTwister** from: <http://www.randelshofer.ch/>

Designing a Calendar Cube that *works* is definitely not a trivial task but **Design Rules** exist that should be applied for designing Calendar Cubes that will work for *any* day and month of a year. Because it is nearly impossible to test all configurations (remember there are 365 or 366 days per year), the placement of numbers and letters on a texture should be carefully checked at *the end* of the design process. This is carried out by applying a **Design Rules Check (DRC)** in the final design stage.

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	Würfelteil, 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

Practical Examples of Calendar Cubes

Some DIY (Do-It-Yourself) Calendar Cubes have been designed and built as *demonstrators* using off-the-shelf 3x3x3 Rubik's Cubes. Letters and numbers have been printed on Polyester self-adhesive sheets. Stickers have been cut out from these printed sheets and stuck down on each cube face.

Examples of DIY Perpetual Calendar Cubes (set to Wednesday, April 16, 2008)



Arabic	Breton	Russian	Home-made Stickers for Calendar and Memo Cubes
Stickers for Calendar Cubes			
Home-made			
Polyester self-adhesive sheets		InkJet Printer	
Micro Application (France)		Canon	
Autocollants Spécial Extérieur – 7 A4 Sheets		iX4000	
Note that good-quality stickers can be ordered from Cubesmith			
http://cubesmith.com/			

An Example of a DIY Yearly Calendar Cube (very similar to the rubiks.com Calendar Cube)



Initial State	Date set to Friday, April 18, 2008	Date set to Thursday, April 18, 2013
---------------	------------------------------------	--------------------------------------

There are 6 years that can be set using this kind of calendar: 2008, 2009, 2010, 2011, 2012 and 2013.

Other Calendar Cubes



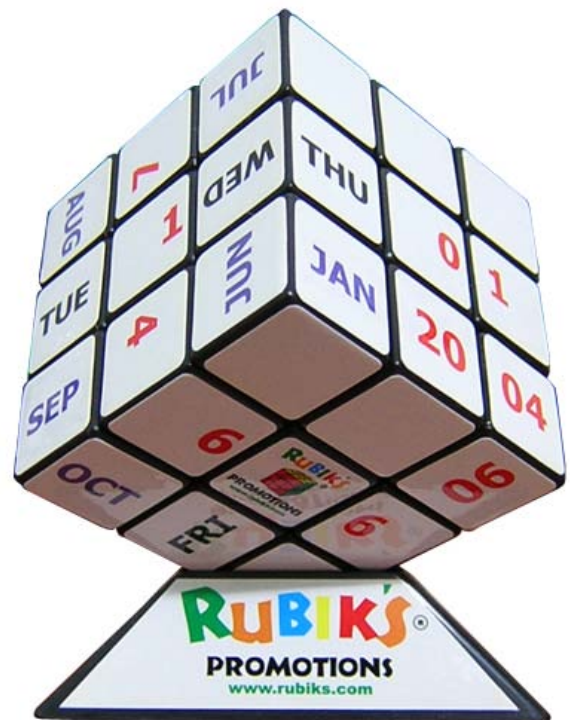
Breton Virtual Perpetual Calendar Cube
<http://www.randelshofer.ch/>



Irish Virtual Perpetual Calendar Cube
<http://www.randelshofer.ch/>



Italian Virtual Perpetual Calendar Cube
<http://www.randelshofer.ch/>



English Real/ Yearly Calendar Cube
<http://www.rubiks.com/>

Yearly Calendar Cube Design

In this particular design, the 12 months of a year are laid on Corner Cubes. Because the upper row should be white when the Cube is solved, then 1 out of 3 faces of a (month) Corner Cube should be white. So, a total of 6 Corner Cubes are needed for placing 12 months ($6 \times 2 = 12$). Moreover, we cannot place a year and a month on the same corner cube.

There are now 2 Corner Cubes that are left. These can be used for placing the last 2 numbers of a year. This means that a maximum of $2 \times 3 = 6$ years can be placed on these 2 Corner Cubes. But if we may want to place only 5 years on a Cube, then the Back face is white/blank. In that case there will be 3 white faces and 6 blank faces on that Back face that can be used for anything else (logo,...).

Here are the general Design Rules:

- 1- First 3 letters of days of the week on left-hand edge cubes
- 2- First 3 letters of months of the year on left-hand corner cubes (6 corner cubes)
- 3- Numbers 0, 1, 2 and 3 on center cubes
- 4- Numbers 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 on right-hand edge cubes
- 5- Numbers 08, 09, 10, 11, 12 and 13 on right-hand corner cubes (2 corner cubes)

Design Rules Check (DRC): see also [Corner Cubes Final Check](#)

- 1- 1 out of 3 faces of each month corner cube should be white
- 2- A year and a month cannot be placed on the same corner cube



Yearly Calendar Cube Texture



Virtual Yearly Calendar Cube

UTC Yearly Calendar Cube Design

This is an improved version of the Yearly Calendar Cube. In this latter calendar, the upper layer is blank (white). We may think of using this blank layer for displaying *additional information* for example about date, namely **Time Zones**. By doing so, *localized* versions can then be created. These will be based on the UTC (Universal Coordinated Time) time inside a particular globe zone.

This UTC Yearly Calendar Cube cube would be slightly more difficult to solve than the Yearly Calendar Cube but this added difficulty is what is needed to get a full insight into learning to solve a regular Rubik's Cube.

Localized vs Unlocalized

British Calendar (English) – Localized					
Winter Time			Summer Time		
UTC	+0	WET	UTC	+1	WEST
TUE	0	1	TUE	0	1
JAN	20	08	JUL	20	08
Western European Time			Western European Time		

European Calendar (English) – Unlocalized					
Winter Time			Summer Time		
UTC	+1	CET	UTC	+2	CEST
TUE	0	1	TUE	0	1
JAN	20	08	JUL	20	08
Central European Time			Central European Time		

Bulgarian Calendar (Bulgarian) – Localized					
Winter Time			Summer Time		
UTC	+2	EET	UTC	+3	EEST
ВТО	0	1	ВТО	0	1
ЯНУ	20	08	ЮЛИ	20	08
Eastern European Time			Eastern European Time		

Russian Calendar (Russian) – Localized					
Winter Time			Summer Time		
UTC	+1	CET	UTC	+2	CEST
ВТО	0	1	ВТО	0	1
ЯНВ	20	08	ИЮЛ	20	08
Moscow Time			Moscow Time		

Hegirian Calendar – Ramadan					
Unlocalized (English)			Localized (Arabic)		
UTC	+3	EAT	UTC	+3	مكة
SUN	1	4	يوم الأحد	١	٤
SEP	20	08	رمضان	٢٠	٠٨
Mecca (or Makkah) Time			Mecca (or Makkah) Time		

Time Zones of Europe

There are four Time Zones in Europe and two periods of time, as shown in the table below:

Time Zones of Europe											
Western European Time (WET)						Western European Summer Time (WEST)					
UTC+0						UTC+1					
Central European Time (CET)						Central European Summer Time (CEST)					
UTC+1						UTC+2					
Eastern European Time (EET)						Eastern European Summer Time (EEST)					
UTC+2						UTC+3					
Moscow Time (MT)						Moscow Summer Time (MST)					
UTC+3						UTC+4					
Winter Time and Summer Time in Europe											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Winter Time			Summer Time							Winter Time	

Upper layer design

We already know that in the Yearly Calendar Cube case, the 12 months of a year are laid on 4 Corner Cubes. We also know that because the upper row should be white when the Cube is solved, then 1 out of 3 faces of a (month) Corner Cube should be white. If we decide to replace this upper white layer with a UTC layer, we have to take into account the following constraints:

- 1- CET and any of the following months cannot be placed on the same Corner Cube:
JAN, FEB, MAR, OCT, NOV and DEC
- 2- CEST and any of the following months cannot be placed on the same Corner Cube:
MAR, APR, MAY, JUN, JUL, AUG, SEP and OCT

- 3- MAR and OCT can *only* be placed on a Corner Cube on which there is an UTC
- 4- There should be at least *two* CET, *two* CEST and *two* UTC placed on Corner Cubes (**two** is the trick !)
- 5- Time Offsets +1 and +2 can be placed on Edge Cubes, but there should be at least *two* +1 and *two* +2 placed on Edge Cubes (**two** is the trick again !)

Placement of CET or CEST on Corner Cubes											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
			Summer Time								
			APR	MAY	JUN	JUL	AUG	SEP			
			CET or UTC								
Placement of CEST on Corner Cubes											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Winter Time										Winter Time	
JAN	FEB									NOV	DEC
CEST										CEST	
Placement of UTC on Corner Cubes											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Winter Time										Winter Time	
		MAR							OCT		DEC
		UTC							UTC		
Placement of UTC, CET and CEST on 6 Corner Cubes (CCubes)											
UTC				CET				CEST			
CCube 1	AUG	SEP	UTC	CCube 3	APR	MAY	CET	CCube 5	NOV	DEC	CEST
CCube 2	OCT	MAR	UTC	CCube 4	JUN	JUL	CET	CCube 6	JAN	FEV	CEST
Placement of Time Offset on Edge Cubes											
2	Blank	8	Blank	20	Blank	TUE	Blank	FRI	Blank	THU	Blank
2	+1	8	+1	20	Blank	TUE	+2	FRI	Blank	THU	+2

Examples of UTC Yearly Calendar Cubes

UTC		+2		CET	
NOV		2			
SUN		3			
APR	3				
DEC	1				
THU	0				
SEP					
AUG		1			
JUN		4			
TUE		1			
OCT		7			
MAY		8			
MAR					
SAT		2			
JUL		6			
FRI		12			
JAN		20			
FEB					
MON					
WED					
APR		09			
MAY		10			
JUN		13			
JUL		1+			
AUG		2+			
SEP					
OCT					
NOV					
DEC					
JAN					
FEB					
MAR					
APR					
MAY					
JUN					
JUL					
AUG					
SEP					
OCT					
NOV					
DEC					
JAN					
FEB					
MAR					
APR					
MAY					
JUN					
JUL					
AUG					
SEP					
OCT					
NOV					
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MAY					
JUN					
JUL					
AUG					
SEP					
OCT					
NOV					</

UTC Yearly Calendar Cube Texture

UTC Yearly British Calendar Cube (Western European Time)

		SEP	THU	DEC		
		SAT	2	5		
		MAR	8	MAY		
AUG	7	OCT	UTC +0	WET	APR	SUN
TUE	1	WED	MON	0	1	3
JUN	4	WEST	JAN	20	08	09
			FEB		10	1
				6	6	0+
			JUL	FRI	12	13
						UTC +1
						WET

UTC Yearly Calendar Cube Texture



Virtual UTC Yearly Calendar Cube

UTC Yearly Russian Calendar Cube (Moscow Time)

		СЕН	ЧЕТ	ДЕК		
		СУБ	2	5		
		МАР	8	МАЙ		
АВГ	7	ОКТ	UTC +3	МТ	АПР	ВОС
ВТО	1	СРЕ	ПОН	0	1	3
ИЮН	4	МСТ	ЯНВ	20	08	09
			ФЕВ		10	1
				6	6	3+
			ИЮЛ	12	13	UTC +4
						МТ

UTC Yearly Calendar Cube Texture



Virtual UTC Yearly Calendar Cube

Perpetual Calendar Cube Design

As is the case for *Yearly* Calendars, the placement of letters and numbers on a *Perpetual* Calendar is not unique and design steps and placement rules should be applied. There are *many* possibilities for placing numbers and letters on a texture. For example, numbers can be placed on the middle layer and letters on the bottom layer or just the reverse. **In this document, we will only consider the first case.**

First Step: Choose Letters and Layers

Months and days names should be written down firstly (see [Months and Days](#)). Then each month name should be abbreviated into 3 letters. These are usually the first 3 letters of the month. For example, the abbreviation for JANuary is JAN in English. After that, a 3-column and 12-line table is built from the list of the 12 abbreviated months by placing their first letter in the first column, middle letter in the second and last letter in the third. Each column is then checked to **eliminate redundant letters**.

Case A) Remember that there are 6 center cubes per Cube. So, if the total number of *remaining middle* letters is less than or equal to 6, then they can be placed on center cubes in the **middle layer**. After that, first and third letters are placed on edge cubes. This is the case for German, French and Greek calendars, for example.

Case B) But if the total number of remaining **middle** letters exceeds 6, then they **cannot** be placed on center cubes and must be placed somewhere else on the Cube. In this case, the design is quite more complex. It has been solved by Alfonso Pérez Arnal and introduced in the Spanish forum ► [El Cubo de Rubik de la A a la Z](#). In this design, numbers are placed on the middle layer and letters on the bottom layer.

In this paper, we are only concerned with **Case B)**, which is the case for all languages listed in [Months and Days](#).

Second Step: Place Numbers and Letters

For languages that read from left to right, apply the following rules for month letters:

- 1- First letters on left-hand corner cubes
- 2- Middle letters on edge cubes
- 3- Third letters on right-hand corner cubes
- 4- The first and third letters of any month name **cannot** be placed on the *same* corner cube

For languages that read from right to left (Arabic...), apply the following rules for month letters:

- 1- First letters on right-hand corner cubes
- 2- Middle letters on edge cubes
- 3- Third letters on left-hand corner cubes
- 4- The first and third letters of any month name **cannot** be placed on the *same* corner cube

Note that Rule #4 should be checked at the end of the design process, because there might be a need to change place to or swap some letters as a result of the final **DRC**.

These are general rules that must be applied. We can now proceed to a more detailed design phase. In this particular design phase, we will consider designing a *Russian* Perpetual Calendar. Most other calendar cubes can also be designed similarly.

We will first begin with the Top Layer, then proceed with the Middle Layer and finally end with the Bottom Layer.

Top Layer Layout

The 7 days of a week name should be displayed on the top layer. In this particular design, a *full* day name is displayed on a cubie, so there is 1 day name per face.

- 1- 5 day names on edge cubes: Day1, Day2, Day3, Day4, Day5
- 2- 2 day names on corner cubes: Day6, Day7

Day names are now combined on edge and corner cubes:

- 1- 3 edge cubes: (white,Day1), (Day2,Day3), (Day4,Day5)
- 2- 2 corner cubes: (white,white,Day6), (white,white,Day7)

For a *localized* version of this perpetual calendar, we may want to add the name of the **Capital City** of the country where the language is the *most* spoken. In this case, day and **Capital City** names are combined as follows:

- 1- 3 edge cubes: (white,Day1), (Day2,Day3), (Day4,Day5)
- 2- 2 corner cubes: (white,**City**,Day6), (white,**City**,Day7)

Top Layer					
Unlocalized			Localized		
	Day1			Day1	City
	Day2			Day2	City
	Day3			Day3	City
	Day4			Day4	City
	Day5			Day5	City
Day6			Day6		City
Day7			Day7		City

For a Russian Calendar Cube, Days and City names are usually chosen as follows:

Days and City names for a Russian Calendar Cube			
Day1	Day2	Day3	Day4
Monday	Tuesday	Wednesday	Thursday
Понедельник	Вторник	Среда	Четверг
Day5	Day6	Day7	Capital City
Friday	Saturday	Sunday	Moscow
Пятница	Суббота	Воскресенье	Москва

So, now there are 9 edge and 6 corner cubes left that can be used for the 2 remaining layers.

Middle Layer Layout

Numbers from 00 up to 31 should be displayed on the middle layer. Numbers are sorted out as follows:

- 1- Numbers on 6 center cubes: 0, 1, 2, 3, 4, 6 (or 9)
- 2- Right-hand numbers on 2 edge cubes: (5,7), (8,blue)
- 3- Left-hand numbers on 3 edge cubes: (0,1), (2,blue), (3,blue)

Middle Layer		
0	1	
0	2	
0	3	
0	4	
	0	5
0	6	
	0	7
	0	8
0	9	
1	0	
3	0	
3	0	
3	1	

Days of the months are displayed as 2-digit numbers. The number can vary from 00 up to 39 by 01 steps. This range includes the usual 01-31 range of days of the months. Numbers that end with 0, 1, 2, 3, 4, 6, 9 are displayed on the *left* while numbers that end with 5, 7, 8 are displayed on the *right*.

So, now there are 4 edge and 6 corner cubes left that can be used for the bottom layer.

Bottom Layer Layout

The 3 first letters of a month's name should be displayed on the bottom layer. Letters that are on the *same* corner cube should not be part of the *same* month's name (**DRC**). Letters are sorted out as follows:

- 1- Center letters on 4 edge cubes: (H,E), (A,П), (Ю,В), (К,О)
- 2- Right-hand letters on 3 corner cubes: (В,Р,Й), (H,Л,Г), (Т,Я,К)
- 3- Left-hand letters on 3 corner cubes: (Я,Ф,М), (А,И,С), (О,Н,Д)

Bottom Layer		
Я	Н	В
Ф	Е	В
М	А	Р
А	П	Р
М	А	Й
И	Ю	Н
И	Ю	Л
А	В	Г
С	Е	Н
О	К	Т
Н	О	Я
Д	Е	К

Examples of Perpetual Calendar Cube Textures

Indonesian Calendar Cube

Original design 2008 by André Boulouard and Walter Randelshofer

D

0

T

Kamis

Sabtu

Selasa

Jumat

Senin

Minggu

Rabu

2

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0

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D

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Russian Calendar Cube

Original design 2008 by André Boulouard and Walter Randelshofer

В

0

П

Четверг

Среда

Пятница

Суббота

Понедельник

Воскресенье

Вторник

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1

2

3

7

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В

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R

B

D

B

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4

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6

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С

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Unlocalized Indonesian Calendar Cube

Breton Calendar Cube

Original design 2008 by André Boulouard and Walter Randelshofer

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Sadorn

Meurzh

Merther

Yaou

Sul

Un

Gwener

2

1

0

1

2

3

7

E

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E

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Unlocalized Russian Calendar Cube

Arabic Calendar Cube

Original design 2008 by André Boulouard and Walter Randelshofer

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الاثنين

الثلاثاء

الخميس

الاثنين

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Unlocalized Breton Calendar Cube

Unlocalized Arabic Calendar Cube

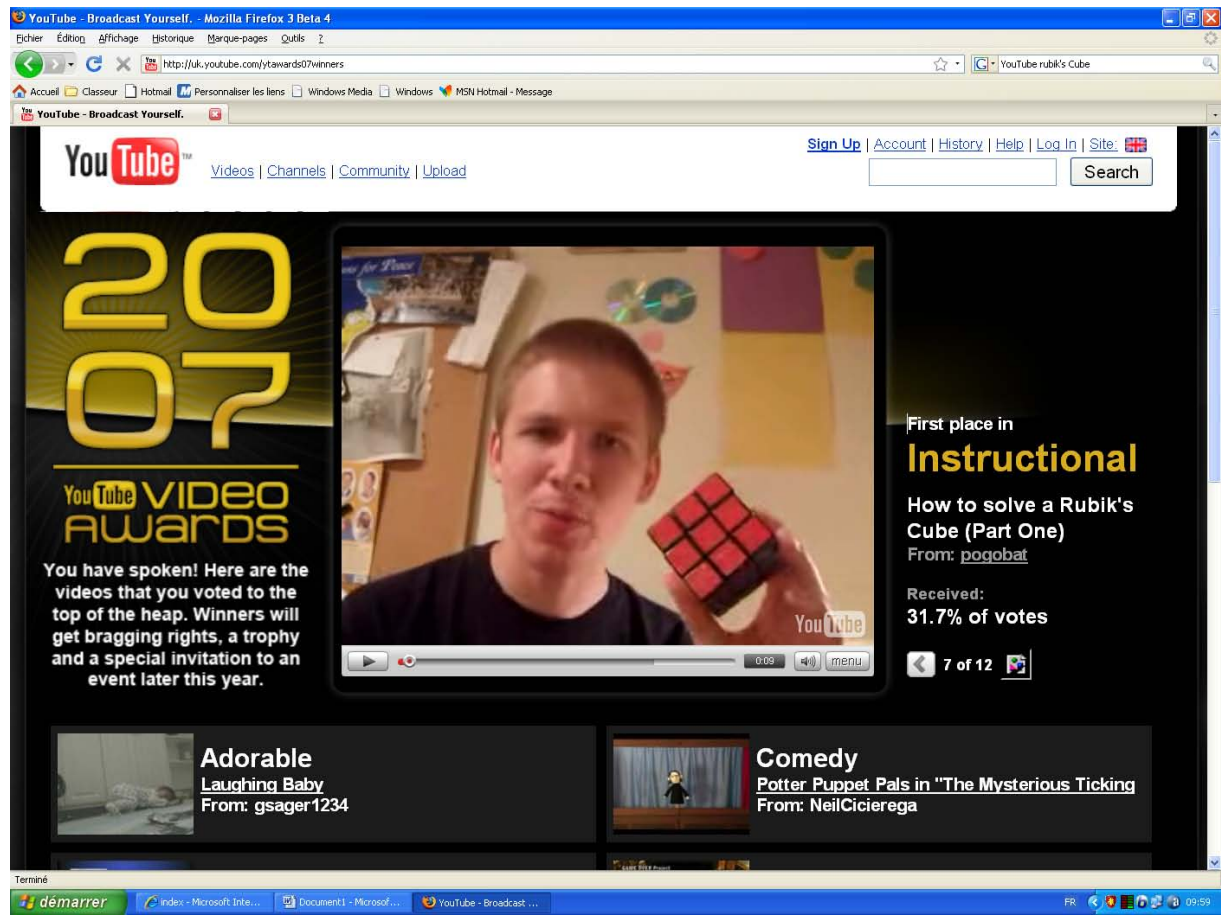
<http://www.randelshofer.ch/>

Solving a Calendar Cube

Solving a Rubik's Cube

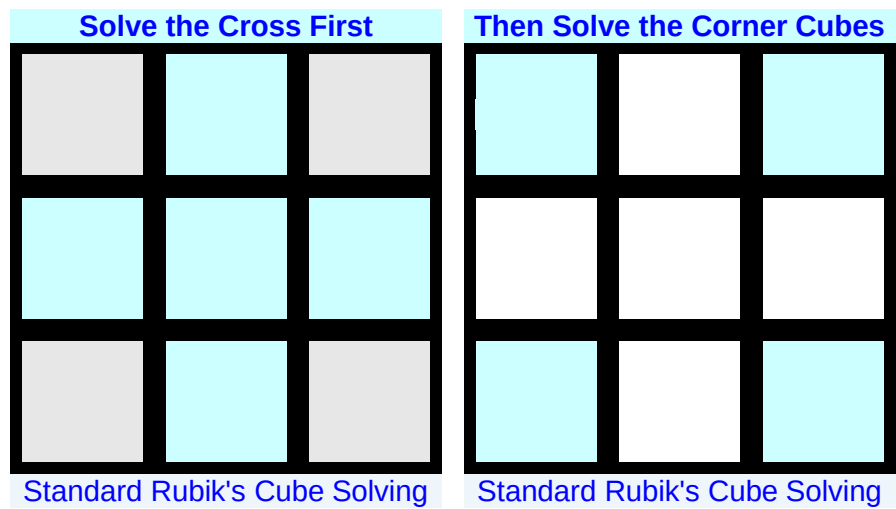
Solving a *Calendar* Cube is generally easier than solving a *Regular* Rubik's Cube because there is only 1 Cube Face that needs to be solved instead of 6. Solving a single Face is done in a very similar way in both cases, but don't forget *character orientation* !

There are many WebSites explaining how to solve Rubik's Cubes. One of the best presentations I have found is a video from YouTube at: <http://uk.youtube.com/ytawards07winners>



Solving a Calendar Cube Step by Step

In this example, a step by step solving process is applied to the Yearly Calendar Cube just described before. Note that the same process applies equally to other Calendar Cubes as well and remember that we only need to solve a *single* Face for the date of the day.



Step 1		
	1	

Center Cube 1 on Front Face

Step 2		
	1	8

Middle Layer: Edge Cube 8

Step 3		
FRI	1	8

Middle Layer: Edge Cube FRI

Step 4		
FRI	1	8
	20	

Bottom Layer: Edge Cube 20

Step 5		
FRI	1	8
	20	

Top Layer: Edge Cube White

Step 6		
FRI	1	8
	20	08

Bottom Layer: Corner Cube 08

Step 7		
FRI	1	8
APR	20	08

Bottom Layer: Corner Cube APR

Step 8		
FRI	1	8
APR	20	08

Top Layer: Corner Cube White

Step 9		
FRI	1	8
APR	20	08

Top Layer: Corner Cube **White**

Step 10		
FRI	1	8
APR	20	08

That's it !

Months and Days

Russian				
Months of the Year			Days of the Week	
English	Russian		English	Russian
January	<u>ЯН</u> Варь	Январь	Monday	Понедѣльник
February	<u>ФЕВ</u> раль	Февраль	Tuesday	Вторник
March	<u>МАР</u> т	Март	Wednesday	Среда
April	<u>АПР</u> ель	Апрель	Thursday	Четверг
May	<u>МАЙ</u>	Май	Friday	Пятница
June	<u>ИЮН</u> ь	Июнь	Saturday	Суббота
July	<u>ИЮЛ</u> ь	Июль	Sunday	Воскресенье
August	<u>АВГ</u> уст	Август		
September	<u>СЕН</u> тябрь	Сентябрь		
October	<u>ОКТ</u> ябрь	Октябрь		
November	<u>НОЯ</u> брь	Ноябрь		
December	<u>ДЕК</u> абрь	Декабрь		
9 letters on left-hand corner cubes			Я Ф М А И С О Н Д	
8 letters on edge cubes			Н Е А П Ю В К О	
9 letters on right-hand corner cubes			В Р Й Н Л Г Т Я К	
Bulgarian				
Months of the Year			Days of the Week	
English	Bulgarian		English	Bulgarian
January	<u>ЯН</u> Уари	Януари	Monday	Понеделник
February	<u>ФЕВ</u> руари	Февруари	Tuesday	Вторник
March	<u>МАР</u> т	Март	Wednesday	Сряда
April	<u>АПР</u> ил	Април	Thursday	Четвъртък
May	<u>МАЙ</u>	Май	Friday	Петък
June	<u>ЮНИ</u>	Юни	Saturday	Събота
July	<u>ЮЛИ</u>	Юли	Sunday	Неделя
August	<u>АВГ</u> уст	Август		
September	<u>СЕП</u> тември	Септември		
October	<u>ОКТ</u> омври	Октомври		
November	<u>НОЕ</u> мври	Ноември		
December	<u>ДЕК</u> ември	Декември		
9 letters on left-hand corner cubes			Я Ф М А Ю С О Н Д	
8 letters on edge cubes			Н Е А П Л В К О	
10 letters on right-hand corner cubes			У В Р Й И Г П Т Е К	
Serbian				
Months of the Year			Days of the Week	
English	Serbian		English	Serbian
January	<u>ЈАН</u> уар	Јануар	Monday	Понедељак
February	<u>ФЕБ</u> руар	Фебруар	Tuesday	Уторак
March	<u>МАР</u> т	Март	Wednesday	Среда
April	<u>АПР</u> ил	Април	Thursday	Четвртак
May	<u>МАЈ</u>	Мај	Friday	Петак
June	<u>ЈУН</u> (и)	Јун(и)	Saturday	Субота
July	<u>ЈУЛ</u> (и)	Јул(и)	Sunday	Недеља
August	<u>АВГ</u> уст	Август		
September	<u>СЕП</u> тембар	Септембар		
October	<u>ОКТ</u> обар	Октобар		
November	<u>НОВ</u> ембар	Новембар		
December	<u>ДЕЦ</u> ембар	Децембар		
8 letters on left-hand corner cubes			Ј Ф М А С О Н Д	
7 letters on edge cubes			А Е П У В К О	
10 letters on right-hand corner cubes			Н Б Р Ј Л Г П Т В Ц	

Croatian				
Months of the Year			Days of the Week	
English	Croatian		English	Croatian
January	<u>SIJ</u> ećanj	Síjećanj	Monday	Ponédjeljak
February	<u>VEL</u> jača	Véljača	Tuesday	Útorak
March	<u>OŽU</u> jak	Óžujak	Wednesday	Srijéda
April	<u>TRA</u> vanj	Trávanj	Thursday	Četvrtak
May	<u>SVI</u> banj	Svíbanj	Friday	Pétak
June	<u>LIP</u> anj	Lípanj	Saturday	Súbota
July	<u>SRP</u> anj	S්රpanj	Sunday	Nédjelja
August	<u>KOL</u> ovoz	Kólovoz		
September	<u>RUJ</u> an	Rújan		
October	<u>LIS</u> topad	Lístopad		
November	<u>STU</u> deni	Stúdeni		
December	<u>PRO</u> sinac	Prósinac		
8 letters on left-hand corner cubes			S V O T L K R P	
8 letters on edge cubes			I E Z R V O U T	
8 letters on right-hand corner cubes			J L U A I P S O	
Hungarian				
Months of the Year			Days of the Week	
English	Hungarian		English	Hungarian
January	<u>JAN</u> uár	Január	Monday	Hétfő
February	<u>FEB</u> ruár	Február	Tuesday	Kedd
March	<u>MÁR</u> cius	Március	Wednesday	Szerda
April	<u>ÁPR</u> ilis	Április	Thursday	Csütörtök
May	<u>MÁJ</u> us	Május	Friday	Péntek
June	<u>JÚN</u> ius	Június	Saturday	Szombat
July	<u>JÚL</u> ius	Július	Sunday	Vasárnap
August	<u>AUG</u> usztus	Augusztus		
September	<u>SZE</u> ptember	Szeptember		
October	<u>OKT</u> óber	Október		
November	<u>NOV</u> ember	November		
December	<u>DEC</u> ember	December		
9 letters on left-hand corner cubes			J F M Á A S O N D	
9 letters on edge cubes			A E Á P Ú U Z K O	
10 letters on right-hand corner cubes			N B R J L G E T V C	
Malay				
Months of the Year			Days of the Week	
English	Malay		English	Malay
January	<u>JAN</u> uari	(bulan) Januari	Monday	(hari) Isnin
February	<u>FEB</u> ruari	(bulan) Februari	Tuesday	(hari) Selasa
March	<u>MAC</u>	(bulan) Mac	Wednesday	(hari) Rabu
April	<u>APR</u> il	(bulan) April	Thursday	(hari) Khamis
May	<u>MEI</u>	(bulan) Mei	Friday	(hari) Jumaat
June	<u>JUN</u>	(bulan) Jun	Saturday	(hari) Sabtu
July	<u>JUL</u> ai	(bulan) Julai	Sunday	(hari) Ahad
August	<u>OGO</u> s	(bulan) Ogos		
September	<u>SEP</u> tember	(bulan) September		
October	<u>OKT</u> ober	(bulan) Oktober		
November	<u>NOV</u> ember	(bulan) November		
December	<u>DIS</u> ember	(bulan) Disember		
8 letters on left-hand corner cubes			J F M A O S N D	
8 letters on edge cubes			A E P U G K O I	
11 letters on right-hand corner cubes			N B C R I L O P T V S	

Indonesian					
Months of the Year			Days of the Week		
English	Indonesian		English	Indonesian	
January	<u>JAN</u> uari	(bulan) Januari	Monday	(hari) senin	
February	<u>FEB</u> ruari	(bulan) Februari	Tuesday	(hari) Selasa	
March	<u>MAR</u> et	(bulan) Maret	Wednesday	(hari) Rabu	
April	<u>APR</u> il	(bulan) April	Thursday	(hari) Kamis	
May	<u>MEI</u>	(bulan) Mei	Friday	(hari) Jumat	
June	<u>JUN</u> i	(bulan) Juni	Saturday	(hari) Sabtu	
July	<u>JUL</u> i	(bulan) Juli	Sunday	hari Minggu	
August	<u>AGU</u> stus	(bulan) Agustus			
September	<u>SEP</u> tember	(bulan) September			
October	<u>OKT</u> ober	(bulan) Oktober			
November	<u>NOV</u> ember	(bulan) November			
December	<u>DES</u> ember	(bulan) Desember			
8 letters on left-hand corner cubes			J F M A S O N D		
7 letters on edge cubes			A E P U G K O		
10 letters on right-hand corner cubes			N B R I L U P T V S		
Turkish					
Months of the Year			Days of the Week		
English	Turkish		English	Turkish	
January	<u>OCA</u> k	Ocak	Monday	Pazartesi (günü)	
February	<u>SUB</u> at	Şubat	Tuesday	Salı (günü)	
March	<u>MAR</u> t	Mart	Wednesday	Çarşamba (günü)	
April	<u>NIS</u> an	Nisan	Thursday	Perşembe (günü)	
May	<u>MAY</u> ıs	Mayıs	Friday	Cuma (günü)	
June	<u>HAZ</u> iran	Haziran	Saturday	Cumartesi (günü)	
July	<u>TEM</u> muz	Temmuz	Sunday	Pazar (günü)	
August	<u>AĞU</u> stos	Ağustos			
September	<u>EYL</u> ül	Eylül			
October	<u>EKİ</u> m	Ekim			
November	<u>KAS</u> ım	Kasım			
December	<u>ARA</u> lık	Aralık			
9 letters on left-hand corner cubes			O Ş M N H T A E K		
9 letters on edge cubes			C U A I E Ğ Y K R		
10 letters on right-hand corner cubes			A B R S Y Z M U L İ		
Breton (Breton language is spoken in Brittany – France)					
Months of the Year			Days of the Week		
English	Breton		English	Breton	
January	<u>GEN</u> ver	Genver	*Sunday	Sul, **disul	
February	<u>C'HW</u> evrer	C'hwevrer	Monday	Lun, dilun	
March	<u>MEUR</u> zh	Meurzh	Tuesday	Meurzh, dimeurzh	
April	<u>EBR</u> el	Ebrel	Wednesday	Merc'her, dimerc'her	
May	<u>MAE</u>	Mae	Thursday	Yaou, diyaou	
June	<u>MEZ</u> heven, (<u>EVEN</u>)	Mezheven, (Even)	Friday	Gwener, digwener	
July	<u>GOU</u> here	Gouhere	Saturday	Sadorn, disadorn	
August	<u>EOST</u>	Eost	* Traditional Breton weeks begin on Sundays ** 'di' prefixed when day used as an adverb		
September	<u>GWEN</u> golo	Gwengolo			
October	<u>HERE</u>	Here			
November	<u>DU</u>	Du			
December	<u>KER</u> zu	Kerzu			
7 letters on left-hand corner cubes			G C' M E H D K		
8 letters on edge cubes			E H B A V O W U		
7 letters on right-hand corner cubes			N W U R E Z S		

Polish					
Months of the Year			Days of the Week		
English	Polish		English	Polish	
January	<u>STY</u> czeń	Styczeń	Monday	Poniedziałek	
February	<u>LUT</u> y	Luty	Tuesday	Wtorek	
March	<u>MAR</u> zec	Marzec	Wednesday	Środa	
April	<u>KWI</u> ecień	Kwiecień	Thursday	Czwartek	
May	<u>MAJ</u>	Maj	Friday	Piątek	
June	<u>CZE</u> rwiec	Czerwiec	Saturday	Sobota	
July	<u>LIP</u> iec	Lipiec	Sunday	Niedziela	
August	<u>SIE</u> pień	Sierpień			
September	<u>WRZ</u> esień	Wrzesień			
October	<u>PAŹ</u> dziernik	Październik			
November	<u>LIS</u> topad	Listopad			
December	<u>GRU</u> dzień	Grudzień			
8 letters on left-hand corner cubes			S L M K C W P G		
7 letters on edge cubes			T U A W Z I R		
11 letters on right-hand corner cubes			Y T R I J E P Z Ź S U		
Czech					
Months			Weekdays		
English	Czech		English	Czech	
January	<u>LED</u> en	Leden	Monday	<u>PON</u> dělí	Pondělí
February	<u>ÚNO</u> r	Únor	Tuesday	<u>ÚTE</u> rý	Úterý
March	<u>BŘE</u> zen	Březen	Wednesday	<u>STŘ</u> eda	Středa
April	<u>DUB</u> en	Duben	Thursday	<u>ČTV</u> rtek	Čtvrtek
May	<u>KVĚ</u> ten	Květen	Friday	<u>PÁT</u> ek	Pátek
June	<u>ČerVeN</u>	Červen	Saturday	<u>SOB</u> ota	Sobota
July	<u>ČerVenec</u>	Červenec	Sunday	<u>NED</u> ěle	Neděle
August	<u>SRP</u> en	Srpen			
September	<u>ZÁŘ</u> í	Září			
October	<u>ŘÍJ</u> en	Říjen			
November	<u>LIS</u> topad	Listopad			
December	<u>PRO</u> sinec	Prosinec			
Months	10 letters on left-hand corner cubes		L Ú B D K Č S Z Ř P		
	9 letters on edge cubes		E N Ř U V R Á Ī		
	11 letters on right-hand corner cubes		D O E B Ě N C P Ř J S		
Note 1: There are too many letters for displaying abbreviated month names on a 3x3x3 cube					
Weekdays	5 letters on left-hand edge cubes		P Ú S Č N		
	4 letters on center cubes		O T Á E		
	7 letters on right-hand edge cubes		N E Ř V T B D		
Note 2: Abbreviated weekday names can be displayed on a 3x3x3 cube					
Slovak					
Months of the Year			Days of the Week		
English	Slovak		English	Slovak	
January	<u>JAN</u> uár	Január	Monday	Pondelok	
February	<u>FEB</u> ruár	Február	Tuesday	Utorok	
March	<u>MAR</u> ec	Marec	Wednesday	Streda	
April	<u>APR</u> íl	Apríl	Thursday	Štvrtok	
May	<u>MÁJ</u>	Máj	Friday	Piatok	
June	<u>JÚN</u>	Jún	Saturday	Sobota	
July	<u>JÚL</u>	Júl	Sunday	Nedeľa	
August	<u>AUG</u> ust	August			
September	<u>SEP</u> tember	September			
October	<u>OKT</u> óber	Október			
November	<u>NOV</u> ember	November			
December	<u>DEC</u> ember	December			
8 letters on left-hand corner cubes			J F M A S O N D		
8 letters on edge cubes			A E P Á Ú U K O		
10 letters on right-hand corner cubes			N B R J L G P T V C		

Estonian				
Months of the Year			Days of the Week	
English	Estonian		English	Estonian
January	<u>JAA</u> nuar, <u>JAa</u> Nuar	Jaauar	Monday	Esmaspäev
February	<u>VEE</u> bruar, <u>VEe</u> Bruar	Veebruar	Tuesday	Teisipäev
March	<u>MAe</u> Rts	Märts	Wednesday	Kolmapäev
April	<u>APR</u> ill	Aprill	Thursday	Neljapäev
May	<u>MAI</u>	Mai	Friday	Reede
June	<u>JUUn</u> i, <u>JUu</u> Nni	Juuni	Saturday	Laupäev
July	<u>JUULi</u> , <u>JUu</u> Li	Juuli	Sunday	Pühapäev
August	<u>AUG</u> ust,	August		
September	<u>SEP</u> tember	September		
October	<u>OKT</u> oober	Oktoober		
November	<u>NOV</u> ember	November		
December	<u>DET</u> sember	Detsember		
8 letters on left-hand corner cubes			J V M A S O N D	
6 letters on edge cubes			A E P U K O	
10 (12) letters on right-hand corner cubes			(A) N (E) B R I U L G P T V	
Latvian				
Months of the Year			Days of the Week	
English	Latvian		English	Latvian
January	<u>JAN</u> vāris	Janvāris	Monday	Pirmdiena
February	<u>FEB</u> ruāris	Februāris	Tuesday	Otrdiena
March	<u>MAR</u> ts	Marts	Wednesday	Trešdiena
April	<u>APR</u> īlis	Aprīlis	Thursday	Ceturtdiena
May	<u>MAI</u> js	Maijs	Friday	Piektdiena
June	<u>JŪN</u> ijs	Jūnijs	Saturday	Sestdiena
July	<u>JŪL</u> ijs	Jūlijs	Sunday	Svētdiena
August	<u>AUG</u> usts	Augusts		
September	<u>SEP</u> tembris	Septembris		
October	<u>OKT</u> obris	Oktobris		
November	<u>NOV</u> embris	Novembris		
December	<u>DEC</u> embris	Decembris		
8 letters on left-hand corner cubes			J F M A S O N D	
7 letters on edge cubes			A E P Ū U K O	
10 letters on right-hand corner cubes			N B R I L G P T V C	
Lithuanian				
Months of the Year			Days of the Week	
English	Lithuanian		English	Lithuanian
January	<u>SAU</u> sis	Sausis / Sausio	Monday	Pirmadienis
February	<u>VAS</u> aris	Vasaris / Vasario	Tuesday	Antradienis
March	<u>KOV</u> as	Kovas / Kovo	Wednesday	Trečiadienis
April	<u>BAL</u> andis	Balandis / Balandžio	Thursday	Ketvirtadienis
May	<u>GEG</u> užė	Gegužė / Gegužės	Friday	Penktadienis
June	<u>BIR</u> želis	Birželis / Birželio	Saturday	Šeštadienis
July	<u>LIE</u> pa	Liepa / Liepo	Sunday	Sekmadienis
August	<u>RUG</u> pūtis	Rugpjūtis / Rugpjūčio		
September	<u>RUS</u> ėjis	Rusėjis / Rugsėjo		
October	<u>SPA</u> lis	Spalis / Spalio		
November	<u>LAP</u> kritis	Lapkritis / Lapkričio		
December	<u>GRU</u> odis	Gruodis / Gruodžio		
7 letters on left-hand corner cubes			S V K B G L R	
8 letters on edge cubes			A O E I U P R	
10 letters on right-hand corner cubes			U S V L G R E S A P	

Slovenian				
Months of the Year			Days of the Week	
English	Slovenian		English	Slovenian
January	<u>JAN</u> nuar	Januar	Monday	Ponedeljek
February	<u>FEB</u> ruar	Februar	Tuesday	Torek
March	<u>MAR</u> ec	Marec	Wednesday	Sreda
April	<u>APR</u> il	April	Thursday	Četrtek
May	<u>MAJ</u>	Maj	Friday	Petek
June	<u>JUN</u> ij	Junij	Saturday	Sobota
July	<u>JUL</u> ij	Julij	Sunday	Nedelja
August	<u>AVG</u> ust	Avgust		
September	<u>SEP</u> tember	September		
October	<u>OKT</u> ober	Oktober		
November	<u>NOV</u> ember	November		
December	<u>DEC</u> ember	December		
8 letters on left-hand corner cubes			J F M A S O N D	
7 letters on edge cubes			A E P U V K O	
10 letters on right-hand corner cubes			N B R J L G P T V C	
Albanian				
Months of the Year			Days of the Week	
English			English	
January	<u>JAN</u> ar	Janar	Monday	e hënë / Hënë
February	<u>SHK</u> urt	Shkurt	Tuesday	e martë / Martë
March	<u>MAR</u> s	Mars	Wednesday	e mërkurë / Mërkurë
April	<u>PRIL</u>	Prill	Thursday	e enjte / Enjte
May	<u>MAJ</u>	Maj	Friday	e premte / Premte
June	<u>QER</u> shor	Qershor	Saturday	e shtunë / Shtunë
July	<u>KOR</u> rik	Korrik	Sunday	e diel / Diel
August	<u>GUS</u> ht	Gusht		
September	<u>SHT</u> ator	Shtator		
October	<u>TET</u> or	Tetor		
November	<u>NËN</u> tor	Nëntor		
December	<u>DHJ</u> etor	Dhjetor		
10 letters on left-hand corner cubes			J S M P Q K G T N D	
8 letters on edge cubes			A H R E O U Ë	
7 letters on right-hand corner cubes			N K R I J S T	
Maltese				
Months of the Year			Days of the Week	
English	Maltese		English	Maltese
January	<u>JAN</u> nar	Jannar	Monday	it-tnejn
February	<u>FRA</u> r	Frar	Tuesday	it-tlieta
March	<u>MAR</u> zu	Marzu	Wednesday	l-erbgha
April	<u>APR</u> il	April	Thursday	il-ġamis
May	<u>MEJ</u> ju	Mejju	Friday	il-ġimgħa
June	<u>ĠUN</u> ju	Ġunju	Saturday	is-sibt
July	<u>LUL</u> ju	Lulju	Sunday	il-ġadd
August	<u>AWI</u> ssu	Awissu		
September	<u>SET</u> tembru	Settembru		
October	<u>OTT</u> ubru	Ottubru		
November	<u>NOV</u> embru	Novembru		
December	<u>DIC</u> embru	Diċembru		
10 letters on left-hand corner cubes			J F M A Ġ L S O N D	
9 letters on edge cubes			A F P E U W T O I	
9 letters on right-hand corner cubes			N A R J L I T V Ċ	

Arabic Gregorian Solar Calendar (Used in Most Arabic Countries)								
Months of the Year			Connected Letters			Isolated Letters		
English	With Vowels	Without Vowels	3 rd	2 nd	1 st	3 rd	2 nd	1 st
January	يَنَآيِر	يِنَايِر	ا	ذ	ي	ا	ن	ي
February	فَبْرَآيِر	فَبْرَايِر	ر	ب	ف	ر	ب	ف
March	مَآرَس	مَارَس	ر	ا	م	ر	ا	م
April	أَبْرِيل	أَبْرِل	ر	ب	أ	ر	ب	أ
May	مَآيُو	مَآي	ي	ا	م	ي	ا	م
June	يُونَيُو	يُونُو	ذ	و	ي	ن	و	ي
July	يُولَيُو	يُولُو	ل	و	ي	ل	و	ي
August	أَغْصُطُس	أَغْصِطُس	س	غ	أ	س	غ	أ
September	سَبْتَمْبَر	سَبْتَمْبِر	ت	ب	س	ت	ب	س
October	أَكْطُوبَر	أَكْطُوبِر	ت	ك	أ	ت	ك	أ
November	نُوفَمْبَر	نُوفَمْبِر	ف	و	ذ	ف	و	ن
December	دِيسَمْبَر	دِيسَمْبِر	س	ي	د	س	ي	د
8 letters on left-hand corner cubes					ف ت س ل ن ي ر ا			
7 letters on edge cubes					ي ك غ و ا ب ن			
7 letters on right-hand corner cubes					د ن س أ م ف ي			
Days of the Week								
English	With Vowels	Without Vowels	English	With Vowels	Without Vowels			
*Sunday	يَوْمَ الْأَحَدِ	**يوم الأحد	Thursday	يَوْمَ الْخَمِيسِ	يوم الخميس			
Monday	يَوْمَ الْإِثْنَيْنِ	يوم الإثنين	Friday	يَوْمَ الْجُمُعَةِ	يوم الجمعة			
Tuesday	يَوْمَ الثَّلَاثَاءِ	يوم الثلاثاء	Saturday	يَوْمَ السَّبْتِ	يوم السبت			
Wednesday	يَوْمَ الْأَرْبَعَاءِ	يوم الأربعاء	* Arabic weeks begin on Sundays					
			** يوم (=day) not used in simplified forms					

Arabic Syriac Solar Calendar (Used in Middle-East)

Months of the Year								
English	Connected Letters		Isolated Letters					
	With Vowels	Without Vowels	3 rd	2 nd	1 st	3 rd	2 nd	1 st
January	كَانُونَ الثَّانِي	لِئَانُونَ الثَّانِي				ا	ث	ك
February	شَبَاط	شِبَاط				ا	ب	ش
March	آذار	آذار				ا	ذ	آ
April	نَيْسَانَ	نَيْسَان				س	ي	ن
May	أَيَّار	أَيَّار				ا	يَّ	أ
June	حُزَيْرَانَ	حُزَيْرَان				ي	ز	ح
July	تَمَّوز	تَمَّوز				و	مّ	ت
August	آب	آب					ب	آ
September	أَيْلُول	أَيْلُول				ل	ي	أ
October	تَشْرِينَ الْأَوَّل	بِشْرِينَ الْأَوَّل				و	أ	ت
November	تَشْرِينَ الثَّانِي	بِشْرِينَ الثَّانِي				ا	ث	ت
December	كَانُونَ الْأَوَّل	لِئَانُونَ الْأَوَّل				و	أ	ك

6 letters on left-hand corner cubes

وّل و ي س ا

8 letters on edge cubes

أمّ زيّ ي ذ ب ث

7 letters on right-hand corner cubes

ت ح أن آش ك

Days of the Week

English	With Vowels	Without Vowels	English	With Vowels	Without Vowels
*Sunday	يَوْمَ الْأَحَد	**يوم الأحد	Thursday	يَوْمَ الْخَمِيس	يوم الخميس
Monday	يَوْمَ الْإِثْنَيْن	يوم الإثنين	Friday	يَوْمَ الْجُمُعَة	يوم الجمعة
Tuesday	يَوْمَ الثَّلَاثَاء	يوم الثلاثاء	Saturday	يَوْمَ السَّبْت	يوم السبت
Wednesday	يَوْمَ الْأَرْبَعَاء	يوم الأربعاء	* Arabic weeks begin on Sundays		
			** يوم (=day) not used in simplified forms		

Arabic Hegirian Lunar Calendar (Used by Muslims)

Arabic Hegirian Lunar Calendar (Used by Muslims)								
Months of the Year			Connected Letters			Isolated Letters		
English	With Vowels	Without Vowels	3 rd	2 nd	1 st	3 rd	2 nd	1 st
January	مُحَرَّم	محرّم				رّ	ح	م
February	صَفَر	صفر				ر	ف	ص
March	رَبِيعَ الْأَوَّل	ربيع الأول				وّ	أ	ر
April	رَبِيعَ الثَّانِي	ربيع الثاني				ا	ث	ر
May	جُمَادَى الْأُولَى	جمادى الأولى				و	أ	ج
June	جُمَادَى الثَّانِيَةِ	جمادى الثانية				ا	ث	ج
July	رَجَب	رجب				ب	ج	ر
August	شَعْبَانَ	شعبان				ب	ع	ش
September	رَمَضَانَ	رمضان				ض	م	ر
October	شَوَّال	شوّال				ا	وّ	ش
November	ذُو الْحِجَّة	ذو الحجة				جّ	ح	ذ
December	ذُو الْقَعْدَةِ	ذو القعدة				ع	ق	ذ

9 letters on left-hand corner cubes

ع جّ ض ب و ا و ر رّ

9 letters on edge cubes

ق و م ع ج ث أ ف ح

6 letters on right-hand corner cubes

ذ ش ج ر ص م

Days of the Week

English	With Vowels	Without Vowels	English	With Vowels	Without Vowels
*Sunday	يَوْمَ الْأَحَد	يوم الأحد**	Thursday	يَوْمَ الْخَمِيس	يوم الخميس
Monday	يَوْمَ الْإِثْنَيْن	يوم الإثنين	Friday	يَوْمَ الْجُمُعَةِ	يوم الجمعة
Tuesday	يَوْمَ الثَّلَاثَاء	يوم الثلاثاء	Saturday	يَوْمَ السَّبْت	يوم السبت
Wednesday	يَوْمَ الْأَرْبَعَاء	يوم الأربعاء	* Arabic weeks begin on Sundays		
			** يوم (=day) not used in simplified forms		

Arabic Alphabet and Letters Pronunciation Table									
ء	hamza	ا	alif	د	dâl	ض	ḍâd	ك	kâf
أ	alif hamza	ب	bâ'	ذ	ḏâl	ط	tṭâ'	ل	lâm
آ	alif madda	ت	tâ'	ر	râ'	ظ	ẓâ'	م	mîm
جّ	jîm chadda	ث	ṭâ'	ز	zây	ع	ʿayn	ن	nûn
رّ	râ' chadda	ج	jîm	س	sîn	غ	ḡayn	ه	hâ'
وّ	wâw chadda	ح	ḥâ'	ش	šîn	ف	fâ'	و	wâw
يّ	yâ' chadda	خ	ḫâ'	ص	ṣâd	ق	qâf	ي	yâ'
Arabic Numerals									
0	1	2	3	4	5	6	7	8	9
٠	١	٢	٣	٤	٥	٦	٧	٨	٩

Design Example: Polish Calendar Cube

Polish Calendar Cube

Original design 2008 by André Boulouard, Walter Randelshofer and Xavier Regourd

Sobot

Czwartek

Wtorek

Niedziela

Poniedziałek

Środa

Piątek

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1 2 0 1 2 3 4

K Z S T Y C A I

U L F R B

D B



Polish Calendar Cube Texture

Virtual Polish Calendar Cube

Numbered Cube Texture – 3x3x3 Cubes

	18 19 20	
	21 22 23	
	24 25 26	
27 28 29	0 1 2	9 10 11
30 31 32	3 4 5	12 13 14
33 34 35	6 7 8	15 16 17
	36 37 38	45 46 47
	39 40 41	48 49 50
	42 43 44	51 52 53



Numbered Cube Texture

Virtual Numbered Cube

Polish Calendar Cube – Months

Letters						Months	
Left	Numbering	Middle	Numbering	Right	Numbering	Month	Numbering
S	6	T	7	Y	8	January	0
L	36	U	52	T	29	February	1
M	35	A	16	R	38	March	2
K	33	W	41	I	17	April	3
M	35	A	16	J	51	May	4
C	42	Z	34	E	44	June	5
L	36	I	39	P	20	July	6
S	6	I	39	E	44	August	7
W	53	R	37	Z	11	September	8
P	18	A	16	Ż	24	October	9
L	36	I	39	S	47	November	10
G	27	R	37	U	15	December	11

Polish Calendar Cube – Weekdays

Letters						Weekdays	
Left	Numbering	Middle	Numbering	Right	Numbering	Weekday	Numbering
Blank0/45	0/45	Niedziel	28	a	9	Sunday	0
Blank0/45	0/45	Ponied	1	zialek	2	Monday	1
Blank0/45	0/45	Wtor	25	ek	26	Tuesday	2
Blank0/45	0/45	Środ	10	a	9	Wednesday	3
Blank0/45	0/45	Czwart	23	ek	26	Thursday	4
Blank0/45	0/45	Piąt	46	ek	26	Friday	5
Blank0/45	0/45	Sobot	19	a	9	Saturday	6

Note 1: Use Blank45 for February and October and Blank0 for all other months

Polish Calendar Cube – Days

Left	Numbering	Middle	Numbering	Right	Numbering	Day	Numbering
Blank3	3	1	4	Blank5	5	1	1
Blank3	3	2	31	Blank5	5	2	2
Blank3	3	3	13	Blank5	5	3	3
Blank3	3	Blank22	22	4	4	4	4
Blank3	3	Blank22	22	5	5	5	5
Blank3	3	6	49	Blank5	5	6	6
Blank3	3	Blank22	22	7	7	7	7
Blank3	3	8	40	Blank5	5	8	8
Blank3	3	9	49 (180°)	Blank5	5	9	9
Blank5	5	1	4	0	0	10	10
1	30	1	4	Blank5	5	11	11
1	30	2	31	Blank5	5	12	12
1	30	3	13	Blank5	5	13	13
Blank3	3	1	4	4	4	14	14
Blank3	3	1	4	5	5	15	15
1	30	6	49	Blank5	5	16	16
Blank3	3	1	4	7	7	17	17
1	30	8	40	Blank5	5	18	18
1	30	9	49 (180°)	Blank5	5	19	19
Blank5	5	2	31	0	0	20	20
2	12	1	4	Blank3	3	21	21
2	12	2	31	Blank3	3	22	22
2	12	3	13	Blank3	3	23	23
Blank3	3	2	31	4	4	24	24
Blank3	3	2	31	5	5	25	25
2	12	6	49	Blank3	3	26	26
Blank3	3	2	31	7	7	27	27
2	12	8	40	Blank3	3	28	28
2	12	9	49 (180°)	Blank3	3	29	29
Blank5	5	3	13	0	0	30	30
3	43	1	4	Blank5	5	31	31

Note 2: Stickers with numbers ending in '9' should be 180° rotated

Polish Calendar Cube: Excel/VBA Code as used in CubeSynthesizer3

Sub mapPolishCalendarCube()

'This Sub will map the Polish Calendar Cube

'Initializing arrays

'Top Layer: Weekdays

'Blanks on Top Layer: use Blank 45 if month is equal to 1 (FEB) or 9 (OCT), else use Blank 0

If (month = 1) Or (month = 9) Then

weekdays(0, 0) = 45

weekdays(0, 1) = 28

weekdays(0, 2) = 9

weekdays(1, 0) = 45

weekdays(1, 1) = 1

weekdays(1, 2) = 2

weekdays(2, 0) = 45

weekdays(2, 1) = 25

weekdays(2, 2) = 26

weekdays(3, 0) = 45

weekdays(3, 1) = 10

weekdays(3, 2) = 9

weekdays(4, 0) = 45

weekdays(4, 1) = 23

weekdays(4, 2) = 26

weekdays(5, 0) = 45

weekdays(5, 1) = 46

weekdays(5, 2) = 26

weekdays(6, 0) = 45

weekdays(6, 1) = 19

weekdays(6, 2) = 9

Else

weekdays(0, 0) = 0

weekdays(0, 1) = 28

weekdays(0, 2) = 9

weekdays(1, 0) = 0

weekdays(1, 1) = 1

weekdays(1, 2) = 2

weekdays(2, 0) = 0

weekdays(2, 1) = 25

weekdays(2, 2) = 26

weekdays(3, 0) = 0

weekdays(3, 1) = 10

weekdays(3, 2) = 9

weekdays(4, 0) = 0

weekdays(4, 1) = 23

weekdays(4, 2) = 26

weekdays(5, 0) = 0

weekdays(5, 1) = 46

weekdays(5, 2) = 26

```
weekdays(6, 0) = 0
weekdays(6, 1) = 19
weekdays(6, 2) = 9
End If
```

'Middle Layer: Days

```
days(1, 0) = 3
days(1, 1) = 4
days(1, 2) = 5
```

```
days(2, 0) = 3
days(2, 1) = 31
days(2, 2) = 5
```

```
days(3, 0) = 3
days(3, 1) = 13
days(3, 2) = 5
```

```
days(4, 0) = 3
days(4, 1) = 22
days(4, 2) = 14
```

```
days(5, 0) = 3
days(5, 1) = 22
days(5, 2) = 48
```

```
days(6, 0) = 3
days(6, 1) = 49
days(6, 2) = 5
```

```
days(7, 0) = 3
days(7, 1) = 22
days(7, 2) = 50
```

```
days(8, 0) = 3
days(8, 1) = 40
days(8, 2) = 5
```

```
days(9, 0) = 3
days(9, 1) = 49
days(9, 2) = 5
```

```
days(10, 0) = 5
days(10, 1) = 4
days(10, 2) = 32
```

```
days(11, 0) = 30
days(11, 1) = 4
days(11, 2) = 5
```

```
days(12, 0) = 30
days(12, 1) = 31
days(12, 2) = 5
```

```
days(13, 0) = 30
days(13, 1) = 13
days(13, 2) = 5
```

```
days(14, 0) = 3
days(14, 1) = 4
days(14, 2) = 14
```

days(15, 0) = 3
days(15, 1) = 4
days(15, 2) = 48

days(16, 0) = 30
days(16, 1) = 49
days(16, 2) = 5

days(17, 0) = 3
days(17, 1) = 4
days(17, 2) = 50

days(18, 0) = 30
days(18, 1) = 40
days(18, 2) = 5

days(19, 0) = 30
days(19, 1) = 49
days(19, 2) = 5

days(20, 0) = 5
days(20, 1) = 31
days(20, 2) = 32

days(21, 0) = 12
days(21, 1) = 4
days(21, 2) = 3

days(22, 0) = 12
days(22, 1) = 31
days(22, 2) = 3

days(23, 0) = 12
days(23, 1) = 13
days(23, 2) = 3

days(24, 0) = 3
days(24, 1) = 31
days(24, 2) = 14

days(25, 0) = 3
days(25, 1) = 31
days(25, 2) = 48

days(26, 0) = 12
days(26, 1) = 49
days(26, 2) = 3

days(27, 0) = 3
days(27, 1) = 31
days(27, 2) = 50

days(28, 0) = 12
days(28, 1) = 40
days(28, 2) = 3

days(29, 0) = 12
days(29, 1) = 49
days(29, 2) = 3

days(30, 0) = 5
days(30, 1) = 13
days(30, 2) = 32

days(31, 0) = 43
days(31, 1) = 4
days(31, 2) = 5

'Bottom Layer: Months

months(0, 0) = 6
months(0, 1) = 7
months(0, 2) = 8

months(1, 0) = 36
months(1, 1) = 52
months(1, 2) = 29

months(2, 0) = 35
months(2, 1) = 16
months(2, 2) = 38

months(3, 0) = 33
months(3, 1) = 41
months(3, 2) = 17

months(4, 0) = 35
months(4, 1) = 16
months(4, 2) = 51

months(5, 0) = 42
months(5, 1) = 34
months(5, 2) = 44

months(6, 0) = 36
months(6, 1) = 39
months(6, 2) = 20

months(7, 0) = 6
months(7, 1) = 39
months(7, 2) = 44

months(8, 0) = 53
months(8, 1) = 37
months(8, 2) = 11

months(9, 0) = 18
months(9, 1) = 16
months(9, 2) = 24

months(10, 0) = 36
months(10, 1) = 39
months(10, 2) = 47

months(11, 0) = 27
months(11, 1) = 37
months(11, 2) = 15

'Initializing facelets

'Weekdays on Top Layer

frontFaceStickers(0) = weekdays(weekday, 0)
frontFaceStickers(1) = weekdays(weekday, 1)
frontFaceStickers(2) = weekdays(weekday, 2)

'Days on Middle Layer

```
frontFaceStickers(3) = days(day, 0)
frontFaceStickers(4) = days(day, 1)
frontFaceStickers(5) = days(day, 2)
```

'Months on Bottom Layer

```
frontFaceStickers(6) = months(month, 0)
frontFaceStickers(7) = months(month, 1)
frontFaceStickers(8) = months(month, 2)
```

'Center facelet orientation: 0 (0°), 1 (270°), 2 (180°), 3 (90°)
'Center facelet 49 can display either '6' (0°) or '9' (180°)

```
If (day = 9) Or (day = 19) Or (day = 29) Then
    centerOrientation = 2
Else
    centerOrientation = 0
End If
```

End Sub

Calendar Cube – Months

Letters						Months	
Left	Numbering	Middle	Numbering	Right	Numbering	Month	Numbering
						January	0
						February	1
						March	2
						April	3
						May	4
						June	5
						July	6
						August	7
						September	8
						October	9
						November	10
						December	11

Calendar Cube – Weekdays

Letters						Weekdays	
Left	Numbering	Middle	Numbering	Right	Numbering	Weekday	Numbering
						Sunday	0
						Monday	1
						Tuesday	2
						Wednesday	3
						Thursday	4
						Friday	5
						Saturday	6

Calendar Cube – Days

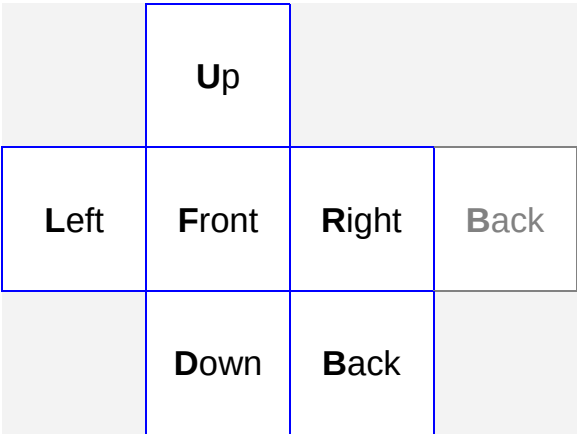
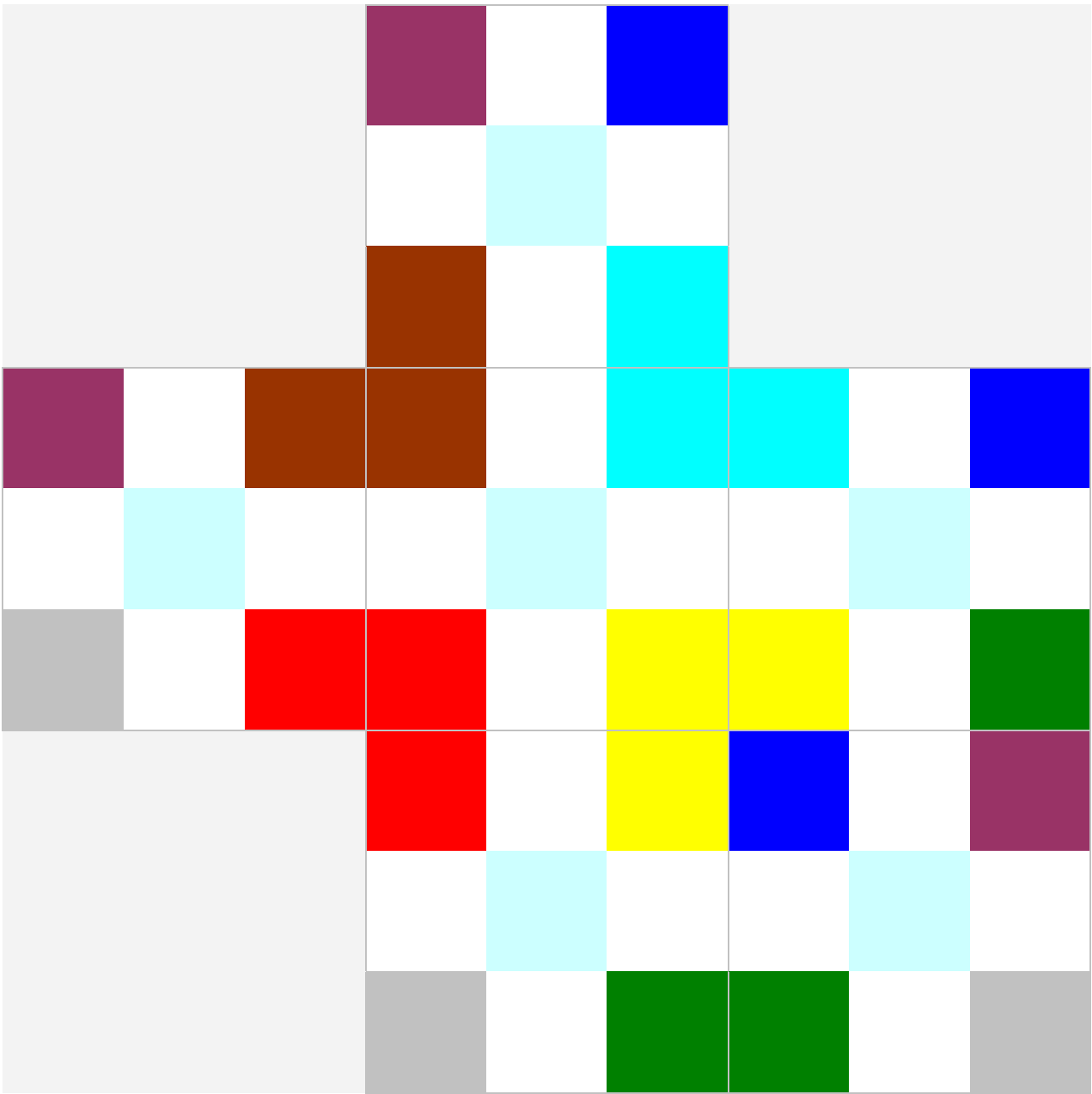
Left	Numbering	Middle	Numbering	Right	Numbering	Day	Numbering
						1	1
						2	2
						3	3
						4	4
						5	5
						6	6
						7	7
						8	8
						9	9
						10	10
						11	11
						12	12
						13	13
						14	14
						15	15
						16	16
						17	17
						18	18
						19	19
						20	20
						21	21
						22	22
						23	23
						24	24
						25	25
						26	26
						27	27
						28	28
						29	29
						30	30
						31	31

Print out this page and fill in the blank faces with *your* data. Then try to design your *own* Cube.

TL	TC	TR
ML	MC	MR
BL	BC	BR

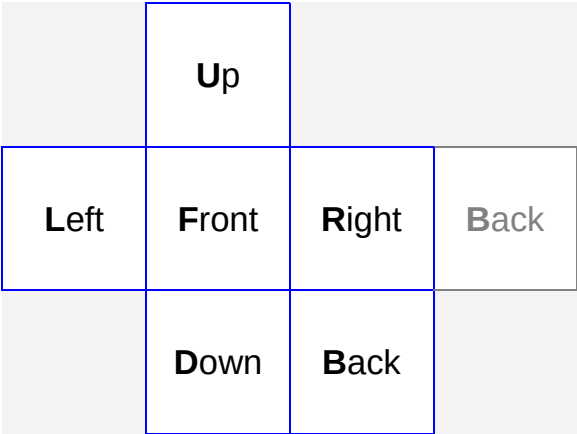
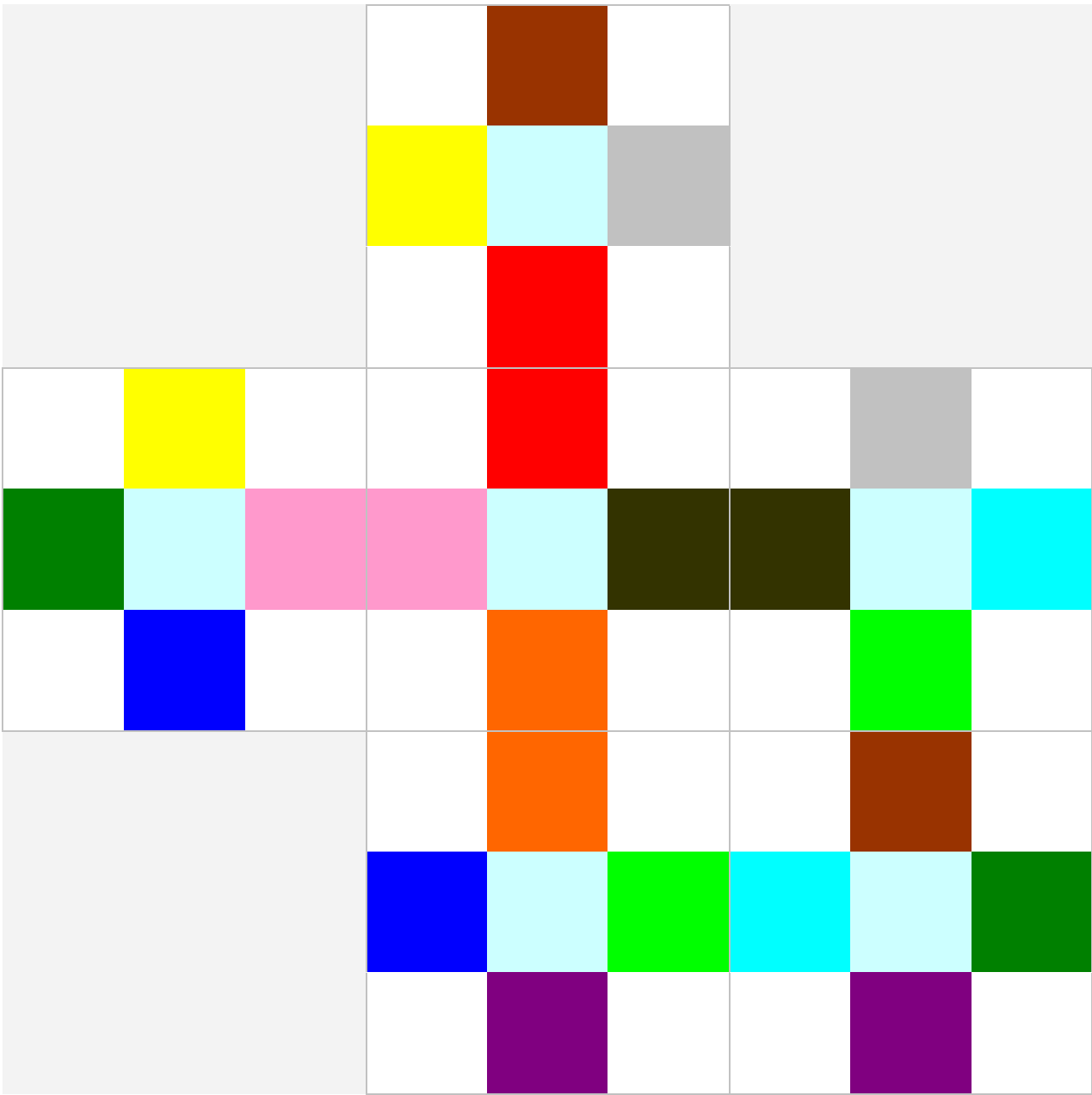
Corner Cubes Final Check

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.

