

Hindi Calendar Cube Design

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WebSites	http://www.mementoslangues.fr/	http://www.randelshofer.ch/

Introduction

The Magic Cube was invented in 1974 by Hungarian-born **Ernő Rubik** and was later called the **Rubik's Cube**. An English calendar cube was subsequently invented and calendar cubes have been designed in many other languages since then. A **Hindi Calendar Cube** is a 3x3x3 **Rubik's Cube** used as a **Hindi Calendar**. 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 Hindi 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/>).

Hindi Language – Useful Links	
http://en.wikipedia.org/wiki/Hindi	http://en.wikipedia.org/wiki/Languages_of_India
http://anton-c.blogspot.com/2008/09/watches-day-wheel-languages.html	

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 Hindi Calendar Cube																											
<table border="1"> <tr> <td>शनि</td> <td>१९</td> </tr> <tr> <td>शुक्र</td> <td>२०</td> </tr> <tr> <td>गुरु</td> <td>२१</td> </tr> <tr> <td>शुक्र</td> <td>२२</td> </tr> <tr> <td>शनि</td> <td>२३</td> </tr> <tr> <td>शुक्र</td> <td>२४</td> </tr> <tr> <td>गुरु</td> <td>२५</td> </tr> <tr> <td>शुक्र</td> <td>२६</td> </tr> <tr> <td>शनि</td> <td>२७</td> </tr> <tr> <td>शुक्र</td> <td>२८</td> </tr> <tr> <td>गुरु</td> <td>२९</td> </tr> <tr> <td>शुक्र</td> <td>३०</td> </tr> <tr> <td>शनि</td> <td>३१</td> </tr> </table>	शनि	१९	शुक्र	२०	गुरु	२१	शुक्र	२२	शनि	२३	शुक्र	२४	गुरु	२५	शुक्र	२६	शनि	२७	शुक्र	२८	गुरु	२९	शुक्र	३०	शनि	३१	
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Hindi Calendar Cube Texture	Virtual Hindi Calendar Cube																										

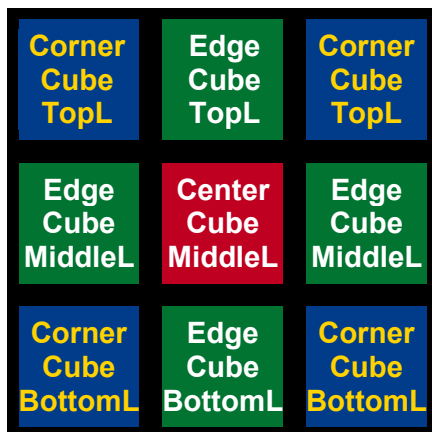
Design Features

In this design, weekdays are displayed on **Top Layer**, days on **Middle Layer** and months on **Bottom Layer**. Weekdays are split in 2 parts and months are abbreviated in their first 3 letters.

Weekdays *abbreviated* forms, i.e. without the word 'वार' or 'day' in Hindi, can also be displayed as an option.

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

Hindi Calendar Cube Design

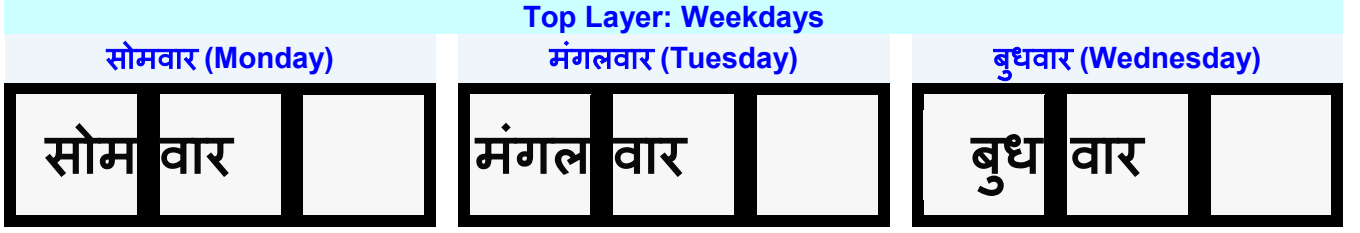
Hindi Calendar

Hindi (Devanagari) Calendar											
Months					Weekdays						
English	Hindi				English	Hindi					
January	जनवरी	ज न व री				Monday	सोमवार	सोम वार			
February	फरवरी	फ र व री				Tuesday	मंगलवार	मंगल वार			
March	मार्च	मा र्च				Wednesday	बुधवार	बुध वार			
April	अप्रैल	अ प्रै ल				Thursday	गुरुवार	गुरु वार			
May	मई	म ई				Friday	शुक्रवार	शुक्र वार			
June	जून	ज न				Saturday	शनिवार	शनि वार			
July	जुलाई	ज ला ई				Sunday	रविवार	रवि वार			
August	अगस्त	अ ग स्त									
September	सितम्बर	सि त म्ब र									
October	अक्तूबर	अ क्तू ब र									
November	नवम्बर	न व म्ब र									
December	दिसम्बर	दि स म्ब र									
8 letters on Bottom Left corner cubes					ज फ मा अ म सि न दि						
11 letters on Bottom Center cubes					न र र्च प्रै ई ला ग त कू व स						
6 letters plus 1 blank on Bottom Right corner cubes					व ल ई स्त म्ब ब blank						
Hindi (Devanagari) Numerals											
Arabic	0	1	2	3	4	5	6	7	8	9	
Hindi	०	१	२	३	४	५	६	७	८	९	
Arabic	10	11	12	13	14	15	16	17	18	19	
Hindi	१०	११	१२	१३	१४	१५	१६	१७	१८	१९	
Arabic	20	21	22	23	24	25	26	27	28	29	
Hindi	२०	२१	२२	२३	२४	२५	२६	२७	२८	२९	
Arabic	30	31	32	33	34	35	36	37	38	39	
Hindi	३०	३१	३२	३३	३४	३५	३६	३७	३८	३९	

Cube Layout

In this design, weekdays are displayed on **Top Layer**, days of the month on **Middle Layer** and months on **Bottom Layer**.

Top Layer Layout



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

- 1- 7 **T**op **L**eft weekday parts: सोम, मंगल, बुध, गुरु, शुक्र, शनि, रवि
- 2- 1 **T**op **C**enter weekday part and 1 blank on 1 edge cube: वार, blank
- 3- 2 **T**op **R**ight blanks on 2 corner cubes

Weekdays are now combined on corner cubes:

- 1- 3 **T**op **L**eft corner cubes: (सोम,मंगल,बुध), (गुरु,शुक्र,blank), (शनि,रवि,blank)*
- 2- 1 **T**op **C**enter edge cube: (वार,blank)

* This ensures that there is at least 1 blank on a **Top Right** corner cube for all weekdays.

Note 1: Weekdays *abbreviated* forms, i.e. without the word 'वार' or 'day' in Hindi, are displayed when using a **Top Center** blank.

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

Middle Layer Layout



Numbers on the **Middle Layer** are sorted out as follows:

- 1- 4 **Middle Left** numbers, 1 blank, 1 **Bottom Center** letter on edge cubes: ०, १, २, ३, blank, र_BC
- 2- 6 **Middle Center** numbers on center cubes: ०, १, २, ३, ४, ५
- 3- 3 **Middle Right** numbers, 1 blank on edge cubes: ६, ७, ८, ९, blank

Letters are now combined on edge cubes:

- 1- 3 **Middle Left** edge cubes: (०,१), (२,blank), (३,र_BC)
- 2- 3 **Middle Right** edge cubes: (६,७), (८,blank), (९,blank)

Note 2: **Bottom Center** letter 'र' is placed on an edge cube common to both **Bottom** and **Middle Layers**. This is the center letter of months **फरवरी** (February). There are no more than 29 days in February, so there is no need to display 30 or 31 days in this case. Therefore **Bottom Center** letter 'र' and **Middle Left** number '३' can be placed on a *same* edge cube.

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

Bottom Layer Layout



Letters on the **Bottom Layer** are sorted out as follows:

- 1- 8 **Bottom Left** letters on a corner cube: ज, फ, मा, अ, म, सि, न, दि
- 4- 11 **Bottom Center** letters on edge cubes: न, र, र्च, प्रै, ई, ला, ग, त, कू, व, स ('र' and '३' are already placed)
- 2- 6 **Bottom Right** letters plus 1 blank on corner cubes: व, ल, ई, स्त, म्ब, ब, blank_BottomRight

Letters are now combined on corner and edge cubes:

- 1- 3 **Bottom Left** corner cubes: (ज,फ,मा), (अ,म,सि), (न,दि,blank_BottomRight)**
- 2- 5 **Bottom Center** edge cubes: (न,र्च), (प्रै,ई), (ला,ग), (त,कू), (व,स)
- 3- 2 **Bottom Right** corner cubes: (व,ल,ई), (स्त,म्ब,ब)

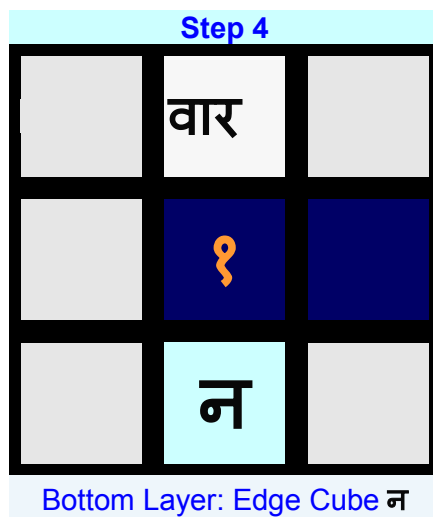
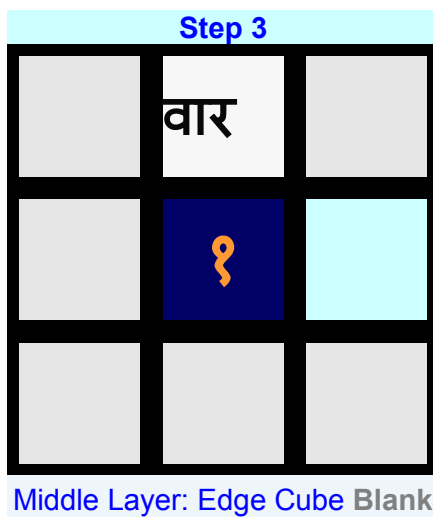
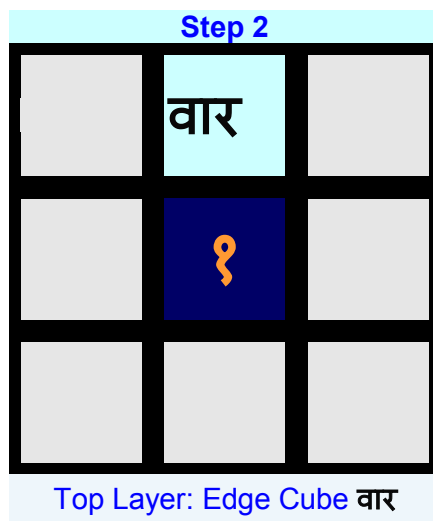
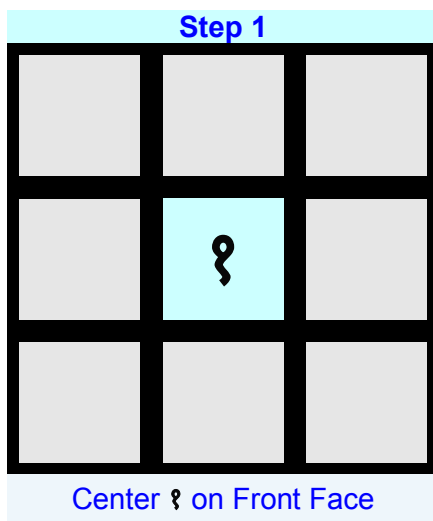
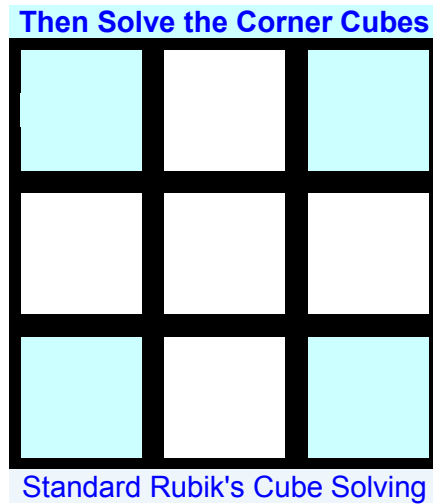
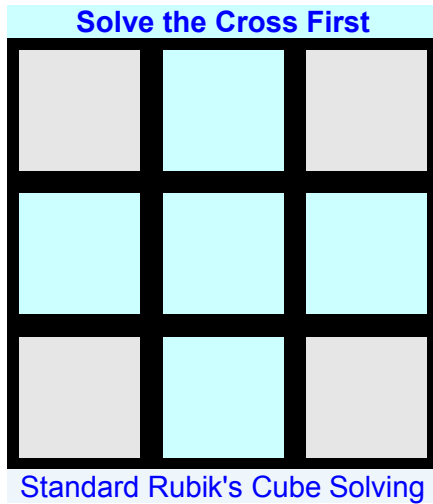
** The **Bottom Right** blank can be placed on the same cube as the first letters of November and December, because it is used only for March, May and June.

Hindi Calendar Cube – Layout Table**Reading from Left to Right**

Top Left – Corner cubes	Top Center – Edge cube	Top Right – Corner cube
सोम, मंगल, बुध, गुरु, शुक्र, शनि, रवि	वार, blank	blank
Middle Left – Edge cubes	Middle Center – Center cubes	Middle Right – Edge cubes
०, १, २, ३, blank	०, १, २, ३, ४, ५	६, ७, ८, ९, blank
Bottom Left – Corner cubes	Bottom Center – Edge cubes	Bottom Right – Corner cubes
ज, फ, मा, अ, म, सि, न, दि	न, र, र्च, प्रै, ई, ला, ग, त, कू, व, स	व, ल, ई, स्त, म्ब, ब, blank

Solving a Hindi Calendar Cube Step by Step

In this example, a step by step solving process is applied to the Hindi 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.



Step 5

	वार	
◦	१	
	न	

Middle Layer: Edge Cube ◦

Step 6

सोम	वार	
◦	१	
	न	

Top Layer: Corner Cube सोम

Step 7

सोम	वार	
◦	१	
	न	

Top Layer: Corner Cube Blank

Step 8

सोम	वार	
◦	१	
	न	व

Bottom Layer: Corner Cube व

Step 9

सोम	वार	
◦	१	
ज	न	व

Bottom Layer: Corner Cube ज

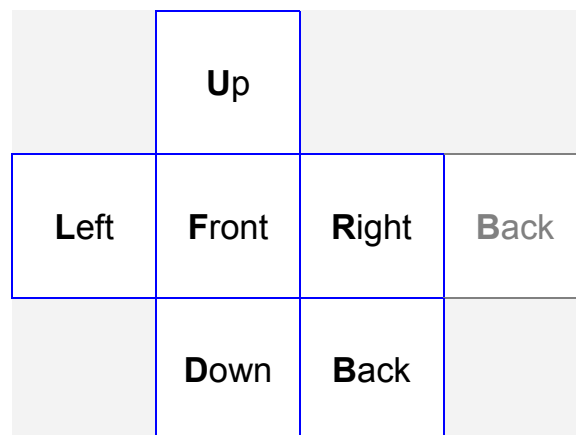
Step 10

सोम	वार	
◦	१	
ज	न	व

That's it !

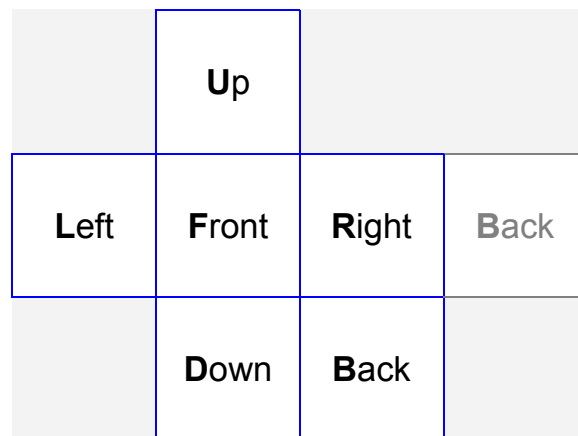
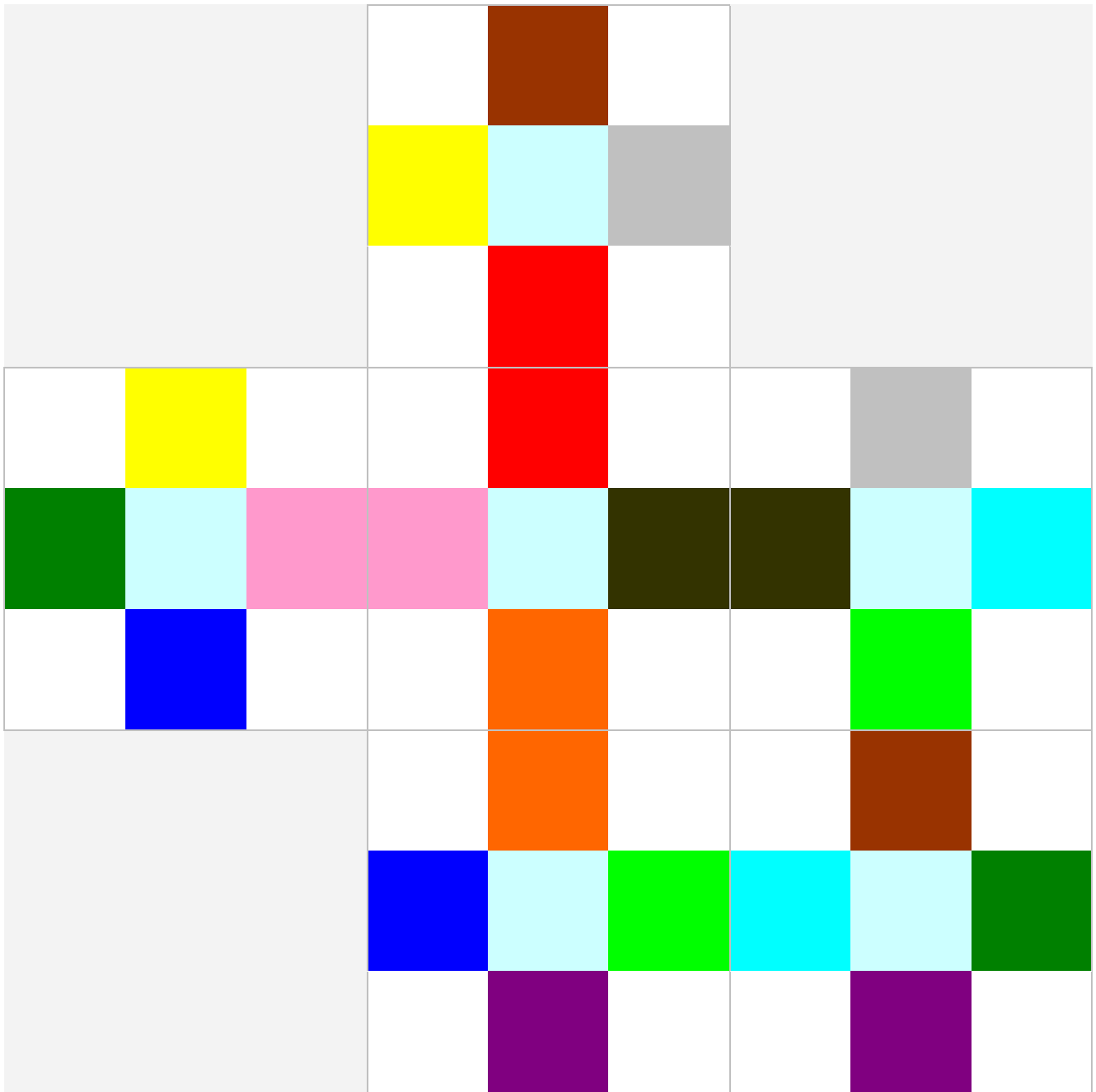
Corner Cubes Final Check

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.

