RAENBO DOZENALS

A project promoting base 12 counting and measuring.
Ideas and designs by DSA member (#342) and board
member, Timothy F. Travis.

I became aware as a teenager of base twelve numbering from a *Popular Science* article. Although I went on to get a degree in math, I was never as taken with mathematically playing with dozenals as I was with the everyday applications that base twelve numbering could bring about in weights and measure. Developing my design interests, I worked as a designer and builder of houses and apartments. Although I am a serious promoter of base twelve and the dozenal movement, it is mostly a fun thing. When immersed in these ideas and designs, I am taken back to my childhood when everything was wonderfully new and I could get lost in drawing and possibilities and colors. So, I present to you some of my dozenal creations. I hope your inner child finds fun in them. And, if other young people find such as this interesting, I hope they will take their interests into the future, too.

RAENBO DOZENALS

A project promoting base 12 counting and measuring.

--The case for base 12 is well presented on the Dozenal Society of America
and Dozenal Society of Great Britain websites.

For the two new numbers required for base 12 counting, the RAENBO project uses ꓒ and Ո.
ꓒ is called "dek" and Ո is called "brad". IᗡO in base 12 is named "doz". The numbers are I,2,3,4,5,6,7,8,ꓒ,Ո,IO and
we count one, two, three, four, five, six, seven, eight, nine, dek, brad, doz. ꓒO is "deka" and ՈO is "brada".
I3 is dozy-three, ꓒՈ is deka-brad, and Ոꓒ is brada-dek.

"dek, brad, doz"
Dozenal Hand

The reason most traditional number systems are based on 10 is because
we have10 fingers. By using hand finger pads, we can count in base 12.
You can use your thumb to touch each of the 12 pads when counting.

You may view or download the Dozenal Hand by clicking
View   or   Download

Dozenal Multiplication Table

1	2	3	4	5	6	7	8	9	↊	↋	10
2	4	6	8	↊	10	12	14	16	18	1↊	20
3	6	9	10	13	16	19	20	23	26	29	30
4	8	10	14	18	20	24	28	30	34	38	40
5	↊	13	18	21	26	2↋	34	39	42	47	50
6	10	16	20	26	30	36	40	46	50	56	60
7	12	19	24	2↋	36	41	48	53	5↊	65	70
8	14	20	28	34	40	48	54	60	68	74	80
9	16	23	30	39	46	53	60	69	76	83	90
↊	18	26	34	42	50	5↊	68	76	84	92	↊0
↋	1↊	29	38	47	56	65	74	83	92	↊1	↋0
10	20	30	40	50	60	70	80	90	↊0	↋0	100

RAENBO

Calendar
Mandala

Winter Solstice
Two Holidays
"YULE"

November (Scorpio)
December (Sagittarius)
January (Capicorn)
February (Aquarius)
October (Libra)
March (Pisces)

Autumn

Winter

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9	ᘔ	Ɛ	10
11	12	13	14	15	16
17	18	19	1ᘔ	1Ɛ	1ᘔ
21	22	23	24	25	26

Autumn Equinox
Holiday

Spring Equinox
Holiday

September (Virgo)
April (Aries)

Summer

Spring

August (Leo)
May (Taurus)
July (Cancer)
Summer Solstice Holiday
Add day at Leap Year
June (Gemini)

Uses base 12,
dozenal, counting.
ᘔ is called dek (and ᘔ0 deka).
Ɛ is called brad (and Ɛ0 brada).
10 is called doz.

Each month is the same
with five, six-day weeks.
30 days in each of the 12
months equals 360 days. The 5 1/4
extra days in a year become solstice and
equinox holidays between the 4 seasons.

You may view or download the RAENBO mandala calendar by clicking
View   or   Download

WINTER

Two Winter Solstice Holidays

JANUARY

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

FEBRUARY

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

MARCH

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

SPRING

Spring Equinox Holiday

APRIL

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

MAY

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

JUNE

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

SUMMER

Summer Solstice Holiday -Plus Holiday at Leap Year

JULY

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

AUGUST

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

SEPTEMBER

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

FALL

Autumn Equinox Holiday

OCTOBER

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

NOVEMBER

SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

DECEMBER

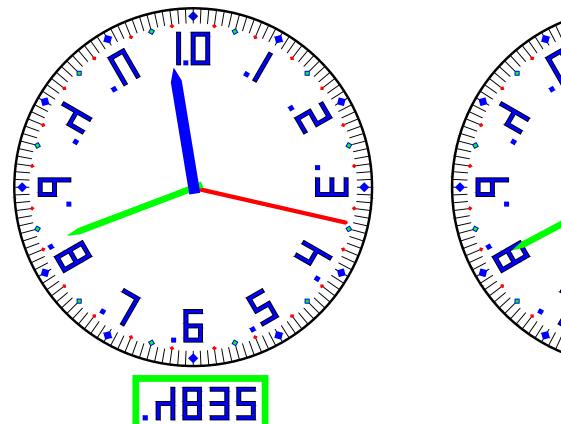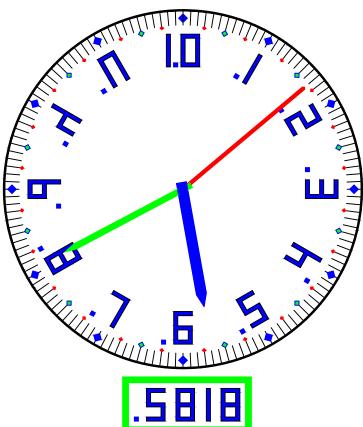| SUN	MON	TUE	WED	FRI	SAT
1	2	3	4	5	6
7	8	9			10
11	12	13	14	15	16
17	18	19			20
21	22	23	24	25	26

Dozenal Circle

Dozenal Clock

Once around the DOZENAL CIRCLE or CLOCK is one unit. Once around the clock is a day. Increments are expressed
as dozenal "decimals" of the whole. This eliminates the need for units such as hours, minutes, seconds, and degrees.
The time on the clock above is expressed as "point five eight one eight o'clock", as shown.
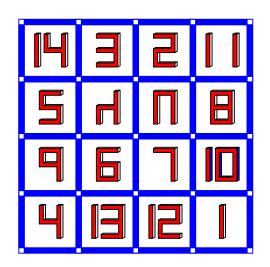We could also say, "point dek eight three five of the circle" or "o'circle".

You may view or download the RAENBO Circle and Clock by clicking

View   or   Download

Please note: Just as the French metric system of weights and measure is superior to the English system, we have also developed
a RAENBO weights and measure system superior to the metric system. For example, note the logic of the RAENBO cirlce and clock.
Note that there is no official metric clock or circle which would be based on 10 or 100.
We have developed the RAENBO, more logical and consistent, measurements for weight, length, volume, pressure and so forth.
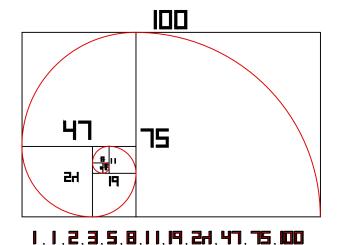
Some fun things:

Here is an example of a Magic Square using Dozenal numbers. With a magic square all the rows, columns, both diagonals, and the numbers in each quadrant add up to the same number. For this magic square, that sum is 2Ↄ.

You may view or download this Magic Square by clicking:
View   or   Download

Check out this wonderful you tube video: Magic Square Tutorial

Below the graphic to the left is the Fibonacci number sequence written in Dozenal numbers. The sequence is generated by adding the two previous numbers to get the next.

The graphic shows a Fibonacci spiral (approximating the Golden Spiral) using quarter circle arcs inscribed in squares whose sides are the lengths of the numbers of the Fibonacci sequence.

You may view or download this Fibonacci graphic by clicking:
View   or   Download

There is a not-to-be-missed video on youtube; Doodling in Math: Spirals, Fibonacci, and Being a Plant [1 of 3]

Design for the back of Dozenal playing cards.

-Now we need to have cards made and make up some games. Game ideas anyone?