THE DUODECIMAL BULLETIN

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THE DOZENAL SOCIETY OF AMERICA
c/o Math Department
Nassau Community College
Garden City, New York 11530-6793

FOUNDED 1160;(1944.)

✧ Visit our *NEW* Website - See page19;(21.) ✧

THE DOZENAL SOCIETY OF AMERICA

(Formerly: The Duodecimal Society of America)

is a voluntary, non profit, educational corporation, organized for the conduct of research and education of the public in the use of base twelve in calculations, mathematics, weights & measures, & other branches of pure & applied science.

Membership dues are $12 (US) for one calendar year. Student Membership is $3 (US) per year, and a life Membership is $144 (US).

The Duodecimal Bulletin is an official publication of the DOZENAL SOCIETY OF AMERICA, INC., % Math Department, Nassau Community College, Garden City, LI, NY 11530-6793.

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THE DUODECIMAL BULLETIN

Whole Number Nine Dozen Three

Volume Four Dozen Seven

Number 2;

11#2;

DSA

FOUNDED 1160; (1944.)

IN THIS ISSUE

PRESIDENT'S MESSAGE

On a personal note, I would firstly like to thank my Board friends for their concern and support during my accident/illness this winter. It is really nice to know that there are caring and giving people remaining in this world that can be crazy at times. I happily am completely healed and have resumed normal activities. With regards to our dozenal pursuits, we are endeavoring to repair our Website which currently has some glitches. Our Secretary Christina, John Impagliazzo and various others are working very diligently to produce what eventually will be a first class product and serve as an informational source for all who are interested in ideas regarding dozens and number bases in general. (See page 19;)

Our Annual Meeting will take place on Saturday, October 7, 2006 at Nassau Community College. For further information, please contact Gene Zirkel, our Board Chair at (631) 669-0273. You will be extremely disappointed if you miss our Annual Meeting. (See page 12;)

In this issue we observe the passing of 2 very enthusiastic dozenalists, **Arthur Whillock** (See page 5) and **Ian Patten** (See page 13;). Their efforts will be sorely missed.

In addition please note:

- Two journals of interest on page 16;
- Members please see the reminder re dues on page 7
- Non members please see the note on page 13; If you wish to continue receiving this *Bulletin.*

My best wishes to all as we pursue our dozenal journey.

Professor Jay L. Schiffman
President

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DOT ORG, NOT DOT COM

Recently, I tried to log onto our website at Dozenal.org. However, I carelessly typed Dozenal.com. To my surprise, I discovered a 21; page paper by Takashi Suga. Try it you'll like it! - gz

ARTHUR WHILLOCK, RIP

Dozenal advocates lost a loyal advocate with the death of Arthur Whillock Saturday, 23; May of this year, just 3 months after the death of his wife Ruby (see p 17;). Over the years Arthur was a prolific writer. His listing in our dozenal periodical index contains 4 dozen entries. In addition he wrote many tracts and pamphlets. He held the office of Information Secretary with the Dozenal Society of Great Britain.

He was responsible for the current issue of the *Journal* of the DSGB (see below) which he prepared for publication and passed on to Shaun Ferguson shortly before he passed away.

When Arthur and his wife Ruby visited the USA years ago we held a special meeting of the Society so that all of us could get to speak with him.

Arthur joined the Dozenal Society of America as member number 262; on 4 July 1192;(1982.) and later was made a Fellow and then an Honorary Member of the DSA. The Board of directors recognized his efforts by bestowing its Annual Award on him in 11#3(1995.). A picture of Arthur and Ruby graced the cover of the next issue of this *Bulletin.*

Truly one of the last of the 'Renaissance men', Arthur was not only interested, but *very* interested in dozenal counting, units of measurement, old and new, games, numerology, science, etc.

May both Arthur and Ruby rest in peace.

THROW OUT THE TENS!

or ***A Dozen Is King!***

A CARD GAME FOR 2, 3, 4 OR 6 PLAYERS[1]

by Burt Smith

The object of the game is to earn points by acquiring **'pairs'** of cards. A 'pair' is defined as either a king or 1 or 2 cards *of the same color* which add up to 1 or 2 dozen.

A **Super 'Pair'** is a king or 1 or 2 cards of the *same suit*. [+2 points]
An **Ordinary 'Pair'** is 1 or 2 cards of the *same color*, but not the same suit. [+1]
A **Red-&-Black** is 2 cards of *different colors* which add up to 1 or 2 dozen. [-1]

Ace is high, but a *Dozen is King*.

The game goes like this:

Throw Out the Tens to make a 4-dozen-card deck, and deal all the cards one at a time to the players. With 4 or 6 players, the players opposite one another form a team.

The order is 2, 3, 4, 5, 6, 7, 8, 9, J (⋇), Q (#), K (Dozen) Ace (A baker's dozen).
Before play begins, the players meld 'pairs' from their hands that add up to 1 or 2 dozen, e.g. 3 & 9, J & 2, Q & A. The King is melded as a Dozen by itself. 'Pairs' from the same suit earn 2 points, from the same color earn 1 point. Kings earn 2 points. One need not meld a Red-&-Black.

Once players have melded and their points have been recorded, they pick up their cards and play tricks with the deuce (2) of clubs starting play.

A player must follow suit if possible. The exception to this rule is if you can make a 2-card dozen, you can play any suit.

The highest card of the suit which is led wins the trick. The exception to this rule is that king or dozen of the suit led always wins. Also, as in pinochle or bridge, cards that do not follow the suit led cannot win the trick.

The winner of a trick starts the next trick.

If a player plays a card that makes a 'pair' with a previously played card they take that pair out of the trick and keep it separate in front of them. Whoever has

the high card of the suit that was led wins the trick and gets the remaining two cards unless, of course, some one else creates a second 'pair' in which case that player gets the 'pair'.

If a player makes a pair that is a **Red-&-Black** then the player who laid down the first card takes the 2 cards and receives a negative point .

At the end of the tricks the cards won are picked up and the players can pick out new Dozens from their pile to add to the pairs they collected during play. The player isn't required to play a **Red-&-Black** .

1. The proper factors of twelve

BURT SMITH
1920 BRANCHED OAK ROAD
DAVEY, NE USA 68336

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DUES ARE DUE

♡Please forward you dues for 11#2;(2006.) to

PROF ELLEN TUFANO, TREASURER
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♢As in the past, we are very grateful to those who can afford to give more than our very low dues. Gifts to the DSA, a non profit educational corporation are tax deductible.

♤Dues are only one dozen dollars a year. Students pay only $3 a year. Please be both generous and prompt. Thanks.

♧Sale! Why not save your self some trouble by paying several years at once. We offer you a half dozen years of membership for the price of only five years. And you save on the ever increasing postage also.

THE MOST APPEALING INTEGER TWELVE

FIVE DOZEN INTRIGUING IDEAS WHERE DOZENS PLAY A ROLE

Jay L. Schiffman, Rowan University, President - DSA

Part II. (Part I, Properties 1 to 43; was published in our previous issue.)

An address given at the Annual Meeting of the Dozenal Society of America,
Babylon, New York, Oct. 2004
Commemorating Five Dozen Years 1160; - 11#0;(1944. - 2004.)

INTRODUCTION: The integer twelve plays an essential role in a great deal of work in mathematics and pure and applied science ranging in scope from measurement to abstract mathematics. In the following list, the reader will witness a number of dynamic results that are outcomes of twelve, multiples of twelve or divisors of twelve. The author will gladly extrapolate on any of these ideas in the list that require clarification. The abbreviations adjacent to the results are [M], [NT], [ALG], [GEN], and [GT] which respectively connote measurement, number theory, algebra, general knowledge, and graph theory.

PROPERTY 44: The first dozen Fibonacci primes in base duo are 2, 3, 5, 11, 75, 175, #11, 14701, 209705, 101214↋05, 6↋#079201, 65314430#↋65#975. The prime integers enumerated correspond to the following terms of the Fibonacci sequence respectively: F_3, F_4, F_5, F_7, F_8, F_{11}, F_{15}, F_{18}, F_{25}, F_{37}, F_{39}, F_{75}. It remains an open question as to whether or not there are finitely many Fibonacci primes in contrast to the infinitude of the prime numbers in general. One can prove that F_n is composite if n is composite and $n \neq 4$. ($F_4 = 3$, a prime). The converse is not true since 17 is prime but $F_{17} = 2505 = 31 \times 95$. [NT]

PROPERTY 45: The first dozen Lucas primes in base duo are 3, 7, #, 25, 3#, 147, 375, 133#, 2097, 54#1, 1012125, 16110875. The prime integers enumerated correspond to the following terms of the Lucas sequence respectively: L_2, L_4, L_5, L_7, L_8, L_9, L_{11}, L_{14}, L_{15}, L_{17}, L_{27}, L_{31}. As in the case of the Fibonacci primes, it remains an open problem as to whether there are finitely or infinitely many Lucas primes. [NT]

PROPERTY 46: Twelve is a constructible number in the sense that a regular dodecahedron is constructible solely by employing the geometer's tools (These allowable tools are the ruler or straightedge and the compass.) since the only odd prime dividing 10 is 3, a Fermat prime and $3^2 = 9$ which is not a factor of do (10;). Fermat primes are prime outputs of the form $p(n) = 2^{(2^n)} + 1$ where $n \in W = \{0, 1, 2, 3, 4, 5, ...\}$, the set of whole numbers. The only currently known Fermat Primes are 3, 5, 15, 195, and 31#15. These correspond to the whole

numbers n = 0,1,2,3,4 respectively. One can show that $p(5) = 2^{(2^5)} + 1 = 2^{28} + 1 = 9\#↋\ 461594 + 1 = 9\#↋\ 461595 = 455 \times 22\#1681$. Mathematicians have wrestled with this problem for several centuries attempting to secure new Fermat Primes. It is unknown if any additional Fermat Primes exist. Numerous prominent mathematicians seem to believe that there are no additional ones. Complete or at least partial factorizations have been obtained through n = 21. Powerful electronic digital computers and ornate factorization methods such as The Elliptic Curve Method serve as aids in an attempt to resolve the problem. Since the factorization of large positive integers is an extreme challenge for even the most sophisticated technology, it will occupy a great deal of time for research mathematicians well into the future. [NT]

PROPERTY 47: The dodecahedron has twelve faces. It serves as the geometric dual of the icosahedron which has twelve vertices. (In the geometric dual of a graph, one places a dot in each face. One then joins the dots by an edge if and only if the faces share a common edge. In the dual map, the number of vertices in the original graph coincides with the number of faces in the dual map and conversely. Meanwhile the number of edges in both the map and its dual remains the same.) This concept is important in the study of the celebrated Four Color Theorem. [GT]

PROPERTY 48: The octahedron, the geometric dual of the cube has one dozen edges as does the cube. [GT]

PROPERTY 49: The icosahedron serves as an example of a maximal planar graph in the sense that edges never intersect except at vertices but if even a single edge is added to the graph, one will encounter at least one pair of crossing edges which is not accidental. One will not be able to reconfigure the graph in the plane so that the edges never intersect except at vertices. [GT]

PROPERTY 4↋: There are fourteen dozen primes (one hundred sixty eight decimally) among the initial one thousand decimal integers. [NT]

PROPERTY 4#: The initial constructible numbers less than one gross in the spirit of PROPERTY 46 are 3, 4, 5, 6, 8, 9, ↋, 10, 13, 14, 15, 18, 20, 26, 28, 2↋, 34, 40, 43, 50, 54, 58, 68, 71, 80, 86, ↋0, ↋ 8. Regular polygons having the above number of sides are constructible using the geometer's tools. [NT]

PROPERTY 50: While the number of positive primes is infinite, there are wide gaps between consecutive primes and the gaps may be made as large as one pleases. It is not surprising that in a range of one hundred decimal integers, the

range can be rich in primes, sparse in primes, or have no primes at all! The following lists the first dozen outcomes consisting of exactly one dozen primes in a range of one hundred decimal integers:

(1). 1101-1200 (2). 1501-1600 (3). 1701-1800 (4). 1801-1900
(5). 2801-2900 (6).3001-3100 (7).3701-3800 (8).4501-4600
(9).4601-4700 (✳).4701-4800 (#).5001-5100 (10).5601-5700 [NT]

CONCLUSION: The integer twelve is seen to play a significant role in the mathematical spectrum. If you find a number of these properties appealing, then consider the joy of working and counting in dozens. After all, how often was the integer ten mentioned in achieving dynamic results? Certainly not as often as one might believe. It is natural to be cautious and dubious when for the vast majority of our lives we performed our activities via traditional approaches such as counting in tens. On the other hand, at times newer and better methods of resolving problems render themselves appealing if one keeps an open mind. We extend an open invitation to consider our approach and form your own conclusions. A change to the dozenal system of numeration should be gradual. After a bit of reflection, the reader may view mathematics and science from a new and improved perspective. We extend our best wishes as you consider embarking on this scientific journey.

SELECTED BIBLIOGRAPHY OF ONE DOZEN WORKS ON DOZENALS:

[1]. TWELVE. The Duodecimal Bulletin (83); (99.)
[2]. Kelly, Jean, An Extension Of A Familiar Problem, The Duodecdimal Bulletin, Vol. 42, No.2; P. 16-1 ✳;.
[3]. Milou, Eric and Schiffman, Jay L., A Most Unusual Social Security Number.
A "Mega-Clue" Problem, New Jersev Mathematics Teacher, Vol. 58, No.1, Fall, 2000. (Reprinted in The Duodecimal Bulletin, Volume 4 Dozen 3, Number 2, 11 ✳✳; (2002.))
[4]. Patten, Ian B., The Future Of Counting And Measurement (Article 8), The Duodecimal Bulletin, 83; (99.), Volume 41; (49.), Number 2, 11 ✳8; (2000.), P. 12;-16;.
[5]. Schiffman, Jay L. and Zirkel, Gene - Which Repunits Are Prime? The Duodecimal Bulletin, Volume 4 Dozen 3, Number 2, 11 ✳✳; (2002.), P. 1#;-21;.
[6]. Schiffman, Jay L. - Number Base Conversion With A CAS (Computer Algebra System), The Duodecimal Bulletin 83; (99.) Volume 41; (49.0 Number 2, 11 ✳8; (2000.), P. 17; - 18;.
[7]. Schiffman, Jay L. - Three Recursive Sequences In Three Different Number Bases, The Duodecimal Bulletin 7✳; (94.), Volume 3#;, Number 1, 11 ✳6; (1998.), P.16-1#; (P. 18.-23.)

[8]. Schiffman, Jay L., The Personality Of The Inteeers From One To One Gross, The Duodecimal Bulletin 74; Volume 38; Number 3; 1995, 11 ✳3; P. 9-1#;.
[9]. Schiffman, Jay L., A Dozen Properties Of The Number Twelve, The Duodecimal Bulletin, Whole Number 45, Volume 27, Number 3, Fall 1982, P. 9-10;.
[✳;]. Schiffman, Jay L., A Group Theoretic Application Of The Number Twelve, The Duodecimal Bulletin, Whole Number 43, Volume 27, Number 1, Winter 1982, P.I0;-25;.
[#;]. Smith, Joe K., The nth Polyeonal Number, The Mathematics Teacher, Volume 65, 1972, P. 221-225.
[10;]. Zirkel, Gene, I'm A Dozener. The Duodecimal Bulletin 7✳; (94.) Volume 3#, Number 1 11 ✳6; (1998.), P. 12;-15; (14-17.).

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In France, the birthplace of the awkward decimal metric system agricultural production is often measure not in kilograms, or grams but in "*qx*" - metric quintals.

-from Système International/Metric System, at www.Freedom2Measure.org

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The French people in fact did not readily take to the metric system. They only seriously began using it when **forced to by legislation** in the 1840s. Even today certain non-metric units survive in specific applications.

-from Napoleon on Metrication at www.Freedom2Measure.org

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Check out "The Base 10 Myth" at www.Freedom2Measure.org

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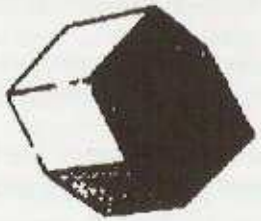
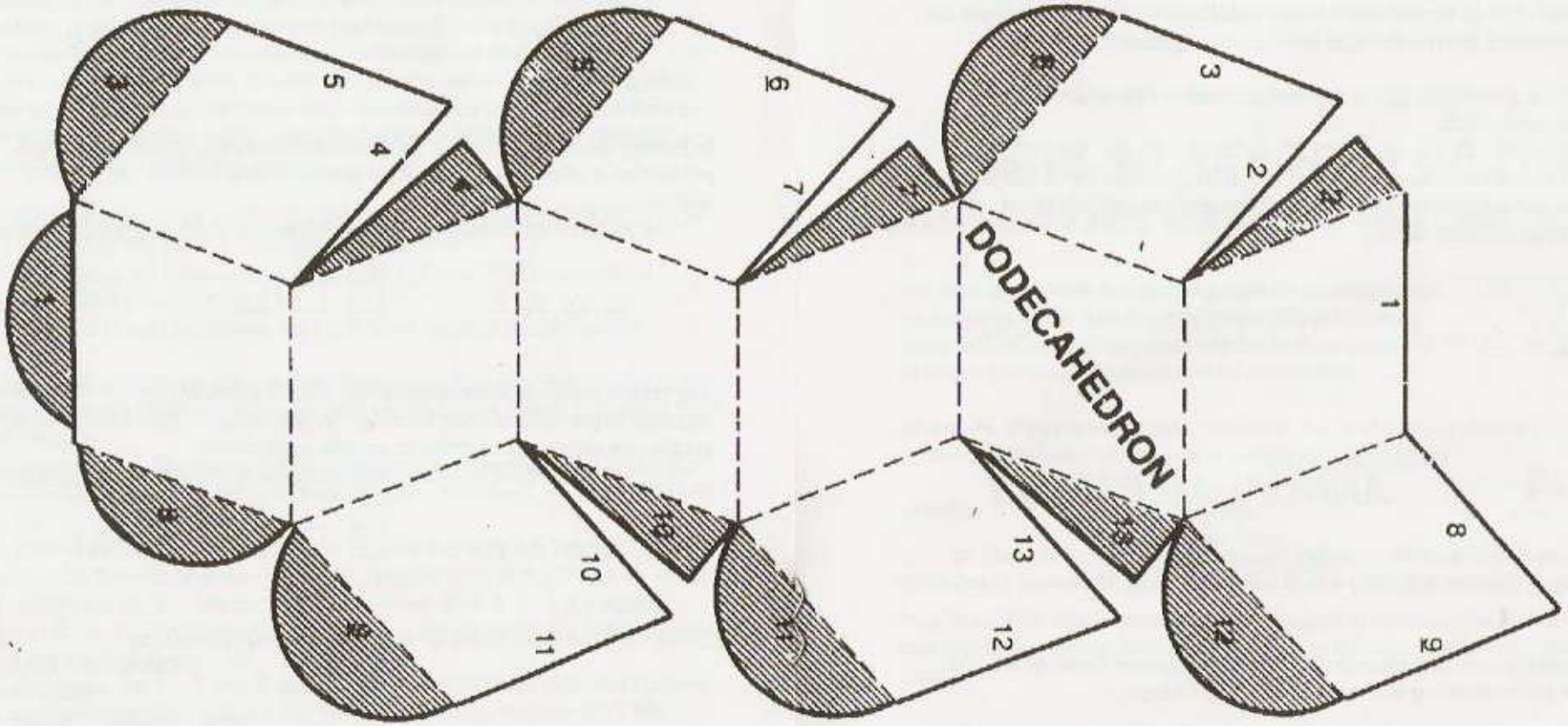
DODECAHEDRON



Directions for Building a Dodecahedron

1. Cut along all dark lines with scissors.
2. Fold along all dashed lines.
3. Put shaded tab "1" under edge "1" & tape the edge
4. Repeat step 3 for each shaded tab and corresponding edge.

You should have 12 parallelogram-shaped faces when you finish.



TENGWAR NUMERALS

Was J R R Tolkien, the creator of *Middle Earth* a dozenalist?

We recently came across the Tengwar Numerals he invented. His creatures used an alphabet of 3 dozen original characters and the first twelve (or ten) could be used as numerals.

We will use our alphabet to illustrate his method, where A is 0, B is 1, C is 2, ... J is 9, K is ↊, and L is #. In order to differentiate the Tengwar Numerals from letters in words the creatures of Middle Earth who used them put a dot or a line under them when using base twelve and over them when using base ten.

In addition, they reversed the order from our usual custom of putting the most significant digit on the left and the least significant on the right. They put the most significant digit on the right and the least significant on the left.

Thus ILL is a word, but $\underline{\text{ILL}}$ is the dozenal number ##8; while $\overline{\text{CAD}}$ is the decimal number 302.

Tolkien also divided the solar year of 265;3(365.25) days into a half dozen seasons, and created the *yen*, a period of one gross years made up of 50↊6;(8766.) six-day weeks. ✹

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ANNUAL MEETINGS

The *Annual Meeting of the Board of Directors of the DSA* will be held on Saturday, 7 October at ↊;(10.) AM. It will followed by the *Annual Membership Meeting*.

Both meetings will take place in the upstairs Conference Room of the Old Student Union Building at Nassau Community College.

Remember the date: October ↊;(10.) AM on Saturday 7 October 11#2;(2006.) ✹

IAN PATTEN, RIP

Ian Patten, member number 305; of Alaska passed away on 19;(21.) March 11#1(2005.). Ian joined our Society on 9 November 1199;(1989.). His niece, Mrs. Alison Currie, informed us of his death and that the DSA is one of the beneficiaries of his estate. Ian was active in promoting *Modular Counting* and *The Modular System*, two booklets advocating dozenals by P. D. Thomas. We are grateful for his thoughtfulness and support. Our condolences to his family. May he rest in peace. ✹

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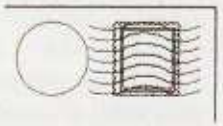
REGULAR READERS OF THIS BULLETIN, PLEASE NOTE:

We have discovered that several people on our mailing list no longer reside at the address we have. So, to eliminate waste in both our printing costs and our postage costs and to insure that you continue to receive our *Bulletin* —



Members, if you have not paid your dues[1] this year and you wish to continue to receive our Bulletin, let us know at genezirk@optonline.net

or write Duodecimal Bulletin
472 Village Oaks Lane
Babylon LI NY 11702-3123

Non Members, this announcement is not meant to eliminate you. If you wish to continue to receive our *Bulletin* let us know as above so that you will not miss an issue.

1. For dues payment see page 7. ✹

PROBLEM CORNER

Consider the dodecahedron in the centerfold of the issue. Each face is a rhombus. Using a common ruler choose one-sixteenth of an inch as a unit of length.

1. Verify that the sides of the rhombi are approximately 18; units (s ≈ 18;), the major diagonal approximately 29; units (D ≈ 29;), and the minor diagonal is approximately 1#; units (d ≈ 1#;).

2. Using the *Pythagorean Theorem* verify that the diagonals intersect at a right angles, by showing that $(d/2)^2 + (D/2)^2 \approx s^2$.

3. Using trigonometry or a protractor verify that the angles of the rhombi are approximately 92;° and 5Ж;°. Why isn't this exact?

4. According to *Euler's Theorem* V = 2 + E - F, where V is the number of vertices, E the number of edges, and F the number of faces of a **simple** polyhedron. (A simple polyhedron is one which is topologically equivalent to a sphere, that is a polyhedron containing no "holes".) Verify that the number of edges is ½(4 ×10;).

5. Using *Euler's Theorem* calculate V.

6. A **regular** polyhedron is one with congruent faces and congruent polyhedral angles at each face. Do the faces appear to be congruent polygons?

7. Do the polyhedral angles appear to be congruent? Hint: If the polyhedron were made of wood we could cut off a pyramid at each vertex of the dodecahedron. Could these pyramids be congruent?

8. Research the **regular** polyhedrons. How many are there? Is one of them a dodecahedron? What polygons constitute its faces?

For solutions see page 19; ✹

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Remember — your gift to the D S A is tax deductible

A NEW AND IMPROVED CALCULATOR

Discovering that Michael Punter's excellent dozenal calculator[1] gave 8 × 8 as 53;BBB... we contacted him. He replied: *Yes, I know about this anomaly. It is only 0;00000000001 error.*

> [Note, in general dozenals are more accurate than decimals. For example
> 1/7 is approximately 0.143 ± 0 .0005 or 0;187 ± 0;0006
> 0.0005 ≈ 0;000X4
> 0;0006 ≈ 0.00029
> and 0;000X4(0.0005) is much greater than 0;0006(0.00029) - Ed.]

The problem is to do with rounding the result. If you change it to decimal it is exact. I found if I try and round it too much then you get in decimal 64.00000000001 but correct in dozenal.

I have tried to resolve this problem but it is beyond my knowledge. That is why I am pleased to give my code so that maybe someone out there could do a better job of it.

Michael

> And altho Michael wrote the above, he did continue to work on the code and finally corrected it. For those of you who use this excellent tool, you may want to email Michael for a copy of the newer version. michael.punter@talk21.com I am using it and it works fine. ✹

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DOZENS NATURALLY

PROBLEM: SALT STICKS IN THE SHAKER SOLUTION: A DODECAHEDRON

Researchers knew that salt crystals (sodium chloride) stack up in a cubic pattern and the flat surfaces make it easier to stick together. Many years ago, scientists discovered how to slow the growth around the edges making the crystal almost spherical — actually a twelve sided rhombic dodecahedron. Investigators in India have now found a way to make the process economically practical. (See centerfold, page 10;) -NY Times 13 June 2006 ✹

TWO JOURNALS

DSGB'S DOZENAL JOURNAL

Our sister society, the Dozenal Society of Great Britain, has posted the latest issue of their bulletin, *The Dozenal Journal* on their web site, **http://www.dozenalsociety.org.uk**.

Simply click on these two links:

1-Magazine: our *Dozenal Journal* is now available for download: **Journal**. 2-Please also download the covering letter at **about this issue**.

Members of the DSA who do not have internet access may request a copy of the *Dozenal Journal* by writing to the DSA/ 472 Village Oaks Lane/ Babylon LI NY 11702-3123. ●

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BWMA'S YARDSTICK

For your information, various **British Weights and Measures Association** publications, including several editions of their journal, The *Yardstick*, are available online. Future editions of the *Yardstick* will also be publically available, but only about six months after their publication date at. http://www.bwmaonline.com/Publications.htm ●

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The dsa does NOT endorse any particular symbols for the digits ten and eleven. for uniformity in publications we use the asterisk (*) for ten and the octothorpe (#) for eleven. Whatever symbols are used, the numbers commonly called "ten", "eleven" and "twelve" are pronounced "dek", "el" and "do" in the duodecimal system.

When it is not clear from the context whether a numeral is a decimal or a dozenal, we use a period as a unit point for base ten and a semi-colon, or Humphrey point, as a unit point for base twelve.

Thus ½ - 0.5 = 0;6 ●

MAIL BAG

March 24;
Subject: time and watches

In about 1987 I got someone to create a digital dozenal metric clock. There are only three in existence. But the idea was simple: using cheap 7-segment displays for digits, create a four-digit clock with nested twelves, the largest division being two conventional hours, down to the smallest, 4.1667 (decimal) seconds.

I don't know what my acquaintance (who then moved far away) did with simple computer parts to get this to work, but the clock works to this day. It also works in conventional time-telling mode. You may toggle between that and the dozenal mode.

Obviously it is harder to do this in a watch, where there may be little room to change or add parts. (I am no technician.) Nonetheless, I have long wanted a dozenal watch, preferably digital, like the clock.

Do you have a suggestion where to begin inquiring? This strikes me as a task for a techno-whiz rather than a conventional watchmaker, who, after all, is unlikely to make watches, as opposed to repair or restore them. I have no idea where to look for such a person, who would have to have some enthusiasm for the challenge as well as be a good and reliable communicator.

There was no Internet to speak of in 1987. It should be easier now to find a right person. All suggestions welcome.

Feel free to pass this messge (but intact) to anyone who may be interested.

Dr. Paul Rapoport, Professor (Emeritus)
School of the Arts, McMaster University, Canada
Rapoport@mcmaster.ca

***

RIP

March 2006

I thought I should let you know that my mother, **Ruby Whillock**, died, on 24 February. She was very frail and had 2 spells in hospital. The second because she broke her hip in a fall but she never recovered from that. I think that you visited them at one time and know you used to correspond with my father.

Unfortunately the very next day my father, **Arthur**, fell and broke his hip so you can imagine what a stressful time we have all had.

He is now doing quite well and was able to attend the funeral, being brought from hospital for the occasion. However, he can no longer live on his own and he is being moved to a Nursing & Residential Care Home near to where I live in Lincolnshire. His sight is very poor despite two cataract operations but when we can get him a new pair of glasses we hope he might be able to manage a little better. Together they supported each other in different ways but they could not have continued to live at Moulsford on their own.

The journal which Daddy was working on for so long is now in the hands of Shaun Ferguson so may now get produced! (See page ??. - Ed.)

His new address will be:

ARTHUR WHILLOCK
TANGLEWOOD CARE HOME
36 LOUTH ROAD
HORNCASTLE
LINCS
LN9 3EN UK

He can just about read large clear print or you can send him an e-mail c/o us.

Sincerely,

Anne & Roger Parsons
http://homepages.enterprise.net/rogerp/ ●

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At one dozen minutes and one dozen seconds after noon on December twelfth in the year 2012 it will be 12:12:12 12/12/12 in the awkward decimal system or 10:10:10 10/10/10 in duodecimals ●

SOLUTIONS TO PROBLEM CORNER

2. #;6^2 + 14;6^2 = #0;3 + 1Ж8;3 = 298;6 which is approximately equal to 18;^{2} = 294; The measurements in Question number 1 were not exact. The error, 4;6/294; < 0;018

3. Let 2α & 2β be the smaller & the larger angles one of the rhombi. Now we have a right triangle (see question #2) whose sides are ½(1#) or #;6 and ½(29;) or 14;6 (see question #1) thus
   tan α = #;6 ÷ 14;6 ≈ 0;8444...
   α ≈ 2Ж;Ж60 °
   2α ≈ 5Ж °
   2β = 130;° - 2α ≈ 130;° - 5Ж ° ≈ 92;°
   These are approximate since 1# and 29; were approximated and also the tangent tables are approximate.

4. One dozen rhombi with 4 edges each yields 4 dozen edges in all except that every edge is shared by two faces, hence there are only 2 dozen edges.

5. V = 2 + E - F = 2 + 20; - 10; = 12;

6. Yes.

7. No. Eight of the pyramids would have triangular bases while the other six would have quadrilateral bases. Thus the polyhedral angles are not congruent.

8. *Euler's Theorem* proves that there are only 5 **regular** polyhedrons. The dodecahedron has one dozen pentagonal faces. The other four are:
   the tetrahedron composed of 4 triangles
   the hexahedron (cube) composed of 6 squares
   the octahedron composed of 8 triangles
   the icosahedron composed of 18; triangles ●

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OUR NEW WEBSITE

Thanks to the devoted efforts of Our Secretary, Christina D'Aiello 35Ж; and Board member Dr. John Impagliazzo 27#; our new web site is up and running. Enjoy it at **www.Dozenal.org**. ●

WHY CHANGE?

This same question was probably rife in Europe between the years 1000 and 1500, when the new Hindu-Arabic numerals were slowly making their inching progress in displacing the comfortable and familiar Roman numerals then universally used.

Yet, although it took D years, and despite much opposition–("Who needs a symbol for nothing?")–the new notation did come into popular use. Released from the drag of Roman notation, people's thinking leapt forward dramatically, and mathematicians discovered a new dimension in mathematical symbolism. Working with Hindu-Arabic numeration, they found that the new system better accommodated mathematical statements and facilitated the working out of ideas. Re-examining their fundamental concepts of numbers, they made advances in arithmetic, algebra, logarithms, analytic geometry and calculus, and thus contributed to the explosion of human thought which later became known as the Renaissance. Then, in a related development, people awoke to the fact that different number bases could be used.

A parallel to today seems tenable. The notation of the dozen base better accommodates mathematical statement and facilitates ideation. It, too, is a step forward in numerical symbolism. The factorable base is preferred for the very same advantages which led the carpenter to divide the foot into twelve inches, the baker and the grocer (one who deals in *grosses*) to sell in dozens, the chemist and the jeweler to subdivide the Troy pound into twelve ounces. And yet, this is accomplished by such simple means that students in the primary grades can tell why they are better. Literally, the decimal base is unsatis**FACTOR**y because it has **NOT ENOUGH FACTORS**.

Then should we change? Yes, but no change should be forced, and we urge no mandated change. All the world counts in tens. But people of understanding should learn to use duodecimals to facilitate their thinking, their computations and their measurings. Base twelve should be man's second mathematical language. It should be taught in all the schools. In any operation, the most advantageous base should be used, the one best suited to the task at hand. (Similar to computer scientists use of binary, hexadecimal or octal - whichever is most convenient.) If this were done, duodecimals would progressively earn their way into general popularity because they simplify the all-important problem of the correlation of weights and measures, the expansion of fractions (1/3 = 0;4) and give an advantage in calculations involving time and our twelve-month calendar. Perhaps by the year 2000, (or maybe by 1200; which is 14; years later!) duodecimals may be the more popular base. But then no change need be made, because people will already be using the more convenient base.

If "playing with numbers" has sometimes fascinated you, if the idea of experimenting with a new number base seems intriguing, if you think you might like to be one of the adventurers along new trails in a science which some have erroneously thought staid and established and without new trails, then whether you are a professor of mathematics of international reputation, or merely an interested pedestrian who can add and subtract, multiply and divide, your membership in the Society may prove mutually profitable, and is most cordially invited

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YOU ARE INVITED TO JOIN THE DOZENAL SOCIETY OF AMERICA
The only requirement is a constructive interest in duodecimals

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To facilitate communication do you grant permission for your name, address & phones to be furnished to other members of our Society?
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Please include on a separate sheet your particular duodecimal interests, comments, and other suggestions.

Mail to: Dozenal Society of America
c/o Math Department
Nassau Community College
Garden City LI NY 11530-6793