1231.00 **Cosmic Illions**

1231.01 Western-world humans are no longer spontaneously cognizant of the Greek or Latin number prefixes like *dec*-, or *non*-, or *oct*-, nor are they able spontaneously to formulate in appropriate Latin or Greek terms the larger numbers spoken of by scientists nowadays only as *powers of ten.* On the other hand, we are indeed familiar with the Anglo-American words *one*, *two,* and *three,* wherefore we may prefix these more familiar designations to the constant *illion,* suffix which we will now always equate with a set of three successive zeros. (See Table 1238.80.)

1231.02 We used to call 1,000 *one thousand.* We will now call it *oneillion.* Each additional set of three zeros is recognized by the prefixed number of such three-zero sets. 1,000,000= two-illion. 1,000,000,000 is 1 threeillion. (This is always hyphenated to avoid confusion with the set of subillion enumerators, e.g., 206 four-illions.) The English identified illions only with six zero additions, while the Americans used illions for every three zeros, starting, however, only *after 1,000,* overlooking its three zeros as common to all of them. Both the English and American systems thus were forced to use awkward nomenclature by retaining the initial word *thousand* as belonging to a different concept and an historically earlier time. Using our consistent illion nomenclature, we express the largest experientially conceivable measurement, which is the diameter of the thus-far- observed Universe measured in diameters of the nucleus of the atom, which measurement is a neat 312 fourteenillions. (See Sec. 1238.50.)

1232.00 **Binomial Symmetry of Scheherazade Numbers**

1232.10 **Exponential Powers of 1,001:** As with all binomials, for example A2 + 2AB +B2, the progressive powers of the 1,001 Scheherazade Number produced by 7 × 11 × the product of which, multiplied by itself in successive stages, provides a series of symmetrical reflection numbers. They are not only sublimely rememberable but they resolve themselves into a symmetrical mirror pyramid array:

1001^2 = 1,00**2**,001

1001^3 = 1,00**3**,00**3**,001

1001^4 = 1,00**4**,006,00**4**,001

1001^5 = 1,00**5**,010,010,00**5**,001

1001^6 = 1,00**6**,015,020,015,00**6**,001

1001^7 = 1,00**7**,021,035,035,021,00**7**,001

1001^8 = 1,00**8**,028,056,070,056,028,00**8**,001

1001^9 = 1,00**9**,036,084,126,126,084,036,00**9**,001

1001^{10} = 1,0**10**,045,120,210,252,210,120,045,0**10**,001

1232.11 The binomial symmetry expands all of its multiples in both left and right directions in reflection balance. Note that the exponential power to which the 1,001 Scheherazade Number is raised becomes the second whole integer from either end. As with $(A+B)^2 = A^2 + 2AB + B^2$, the interior integers consist of expressions and products of the exponent power.

1232.20 **Cancellation of "Leftward Spillover":** In the pyramid array of 1,001 Scheherazade Numbers (see Sec. 1232.10), we observe that *due to the double-symbol notation of the number 10,* the symmetry seems to be altered by the introduction of the leftward accommodation of the two integers of 10 in a single-integer position. For instance,

$$1001^5 = 1\,,005\,,010\,,010\,,005\,,001$$

$$10 \quad 10$$

$$1001^5 = 1\,,005\,,000\,,000\,,005\,,001$$

$$1 \quad 1$$

$$1001^5 = 1\,,005\,,000\,,000\,,005\,,001$$

Ten could be written vertically as

$$\begin{matrix} 1 \\ 0 \end{matrix}$$

instead of 10, provided we always assumed that the vertically superimposed integer was to be spilled into the addition of the next leftward column, for we build leftward positively and rightward negatively from our decimal *zero-zero.*

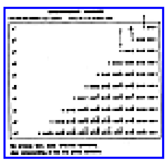


Table 1232.21

1232.21 The abacus with its wires and beads taught humans how to fill a column with figures and thereafter to fill additional columns, by convention to the left. The Arabic numerals developed as symbols for the content of the columns. They filled a column and then they emptied it, but the cipher prevented them from using the column for any other notation, and the excess—by convention—was moved over to the left. This "spillover" can begin earlier or later, depending on the modulus employed. The spillover to the next column begins later when we are employing Modulo 12 than when we are employing Modulo 10. To disembarrass the symmetry of the leftward spillover, the spillover number in the table has been written vertically.

1232.22 The table of the ten successive powers of the 1,001 Scheherazade Number accidentally discloses a series of progressions:

(1) in the extreme right-hand column, a progression of zeros;

(2) in the fourth column from the right, an arithmetical progression of

$$\frac{N^2 - N}{2},$$

which we will call triangular; and

(3) in the seventh column from the right, a tetrahedral progression.

1232.23 The tetrahedron can be symmetrically or asymmetrically altered to accommodate the four unique planes that produce the fourth-dimensional accommodation of the vector equilibrium. The symmetry disclosed here may very well be four-dimensional symmetry that we have simply expressed in columns in a plane.

1232.24 The number 1,001 looks exciting because we are very close to the binary system of the computers. (We remember that Polynesians only counted to one and two.) The binary yes-no sequence looks so familiar. The Scheherazade Number has all the numbers you have in the binary system. The l,001-ness keeps persisting throughout the table.

1232.25 The numbers 7 × 11 × 13 × 17 included in the symmetric dividend 510,510 may have an important function in atomic nucleation, since it accommodates all the prime numbers involved in the successive periods.

SCHEHERAZADE NUMBERS

(7 × 11 × 13 = 1001) "CRAP" NUMBERS   Raising 1001 to ten successive powers

arith. $\frac{n^2-n}{2}$ Tetra

n^1	1 001
n^2	1 002 001
n^3	1 003 003 001
n^4	1 004 006 004 001
n^5	1 005 $00\overset{1}{0}$ $00\overset{1}{0}$ 005 001
n^6	1 006 $00\overset{1}{5}$ $00\overset{2}{0}$ $00\overset{1}{5}$ 006 001
n^7	1 007 $00\overset{2}{1}$ $00\overset{3}{5}$ $00\overset{3}{5}$ $00\overset{2}{1}$ 007 001
n^8	1 008 $00\overset{2}{8}$ $00\overset{5}{6}$ $00\overset{7}{0}$ $00\overset{5}{6}$ $00\overset{2}{8}$ 008 001
n^9	1 009 $00\overset{3}{6}$ $00\overset{8}{4}$ $00\overset{1}{\overset{2}{6}}$ $00\overset{1}{\overset{2}{6}}$ $00\overset{8}{4}$ $00\overset{3}{6}$ 009 001
n^{10}	1 $00\overset{1}{0}$ $00\overset{4}{5}$ $00\overset{1}{\overset{2}{0}}$ $00\overset{2}{\overset{1}{0}}$ $00\overset{2}{\overset{5}{2}}$ $00\overset{2}{\overset{1}{0}}$ $00\overset{1}{\overset{2}{0}}$ $00\overset{4}{5}$ $00\overset{1}{0}$ 001

We witness here, basic reflective symmetry, plus compounding of first five prime numbers.

Table 1232.21 Cancellation of "Leftward Spillover" to Disclose Basic Reflection Symmetry of Successive Powers of the Scheherazade Numbers: Raising 1001 to ten successive powers, we recognize basic reflective symmetry plus compounding of five basic primes. 7 × 11 × 13 = 1001.

1232.26 Many mathematicians assume that the integer 1 is not to be counted as a prime. Thus 2, 3, 5, 7, 11, and 13 make a total of six effective primes that may be identified with the fundamental vector edges of the tetrahedron and the six axes of conglomeration of 12 uniradius spheres closest packed around one nuclear sphere, and the fundamental topological abundance of universal lines that always consist of even sets of six.

1232.30 **Scheherazade Reflection Patterns:**

$1 \cdot 2 \cdot 3 \cdot 5$	30
$7 \cdot 11 \cdot 13$	1,001
$1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13$	30,030
$(1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13)^2$	901,800,900
$(1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13)^2 \cdot 5$	4,509,004,500
$(1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13)^3$	27,081,081,027,000
$(1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13)^3 \cdot 9$	243,729,729,243,000
$(1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13)^4$	813,244,863,240,810,000
$(1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13)^4 \cdot 3$	2,439,734,589,722,430,000
$(1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13)^5$	24,421,743,243,121,524,300,000
$1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13 \cdot 17$	510,510
$(1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13 \cdot 17)^2$	260,620,460,100
$1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13 \cdot 17 \cdot 19$	9,699,690
$1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13 \cdot 17 \cdot 19 \cdot 23 \cdot 29$	6,469,693,230
$1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13 \cdot 17 \cdot 19 \cdot 23 \cdot 29 \cdot 31$	200,560,490,130
$(1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13) \cdot (1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13 \cdot 17)$	153,306,153
$(1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13) \cdot (1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13 \cdot 17)^2$	459,918,459

1234.00 **Seven-illion Scheherazade Number**

1234.01 The Seven-illion Scheherazade Number includes the first seven primes, which are:

$(1 \cdot 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13)^5$ ... to the fifth power.

It reads,

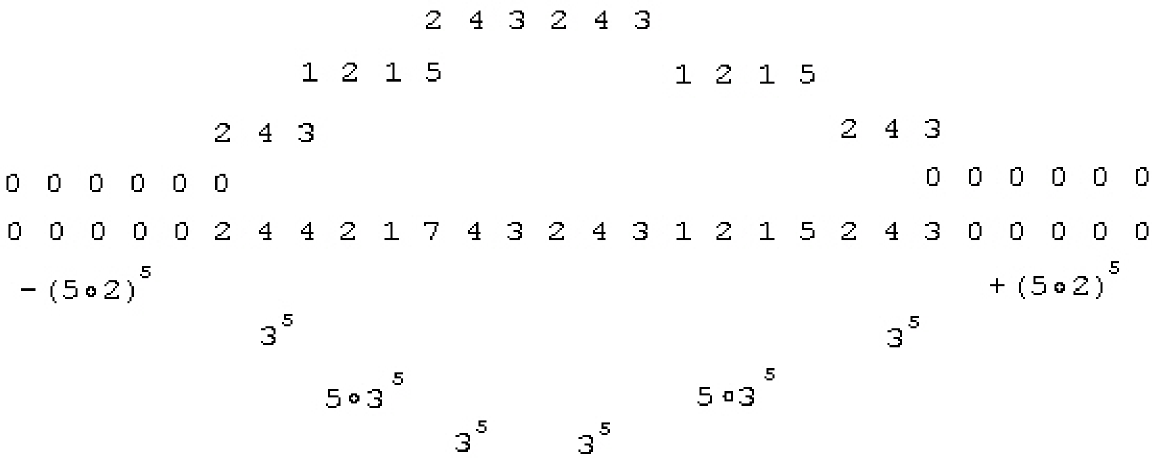
24,421,743,243,121,524,300,000

1234.02 In the first days of electromagnetics, scientists discovered fourth-power energy relationships and Einstein began to find fifth-power relationships having to do with gravity accommodating fourth- and fifth-powering. The first seven primes factorial is a sublimely rememberable number. It is a big number, yet rememberable. When nature gives us a number we can remember, she is putting us on notice that the cosmic communications circuits are open: you are connected through to many sublime truths!

1234.03 Though factored by seven prime numbers, it is expressible entirely as various-sized increments of three to the fifth power. There is a four-place overlapping of one. Three to the fifth power means five-dimensionality triangulation, which means that five-dimensional structuring as triangulation is structure.

1234.04 When it is substituted as a comprehensive dividend for 360° 00' 00" to express cyclic unity in increments equal to one second of arc, while recalculating the tables of trigonometric functions, it is probable that *many,* if not *most,* and possibly *all* the function fractions will be expressible as whole rational numbers. The use of 24,421,743,243,121,524,300,000 as cyclic unity will eliminate much cumulative error of the present trigonometric-function tables.

1234.10 **Seven-illion Scheherazade Number: Symmetrical Mirror Pyramid Array**



where 3^5 = 243, $5\cdot3^5$ = 1215, $-(5\cdot2)^5$ = five zero prefix, + $(5\cdot2)^5$ = five zero sufix

1236.00 **Eight-illion Scheherazade Number**

1236.01 The Eight-illion Scheherazade Number is

$1\cdot2\cdot3\cdot5\cdot7\cdot11\cdot13$

$1\cdot2\cdot3\cdot5\cdot7\cdot11\cdot13\cdot17$

$1\cdot2\cdot3\cdot5\cdot7\cdot11\cdot13\cdot17\cdot19\cdot23\cdot29\cdot31$

Which is:

$1^n\cdot2^3\cdot3^8\cdot5^5\cdot7^4\cdot11^3\cdot13^3\cdot17^2\cdot19\cdot23\cdot29\cdot31$

It reads:

1,452,803,177,020,770,377,302,500

1236.02 The Eight-illion Scheherazade Number accommodates all trigonometric functions, spherical and planar, when unity is 60 degrees; its halfway turnabout is 30 degrees. It also accommodates the octave-nine-zero of the icosahedron's corner angles of 72 degrees, one-half of which is 36 degrees (ergo, 31 is the greatest prime involved), which characterizes maximum spherical excess of the vector equilibrium's sixty- degreeness.

1237.00 **Nine-illion Scheherazade Number**

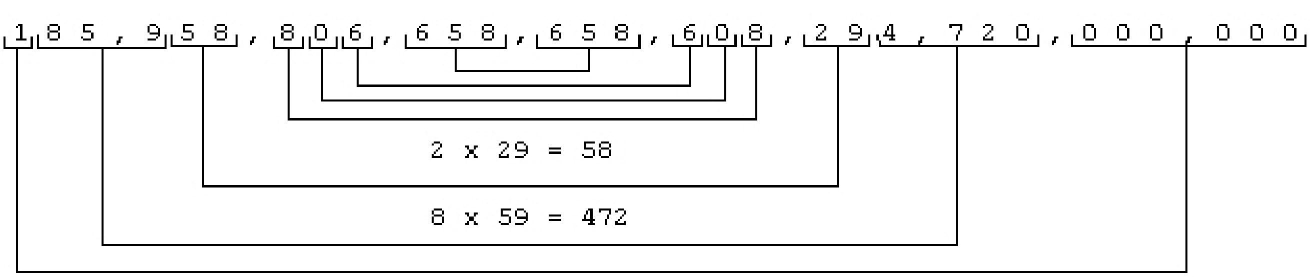
1237.01 The Nine-illion Scheherazade Number includes the first 12 primes, which are:

$$1^n\cdot2^{10}\cdot3^8\cdot5^8\cdot7^4\cdot11^3\cdot13^3\cdot17^2\cdot19\cdot23\cdot29\cdot31$$

It reads:

185,958,806,658,658,608,294,720,000,000

It is full of mirrors:



1238.00 **Fourteen-illion Scheherazade Number**

1238.20 **Trigonometric Limit: First 14 Primes:** The Fourteen-illion Scheherazade Number accommodates all the omnirational calculations of the trigonometric function tables whose largest prime number is 43 and whose highest common variable multiple is 45 degrees, which is one-eighth of unity in a Universe whose polyhedral systems consist always of a minimum of four positive and four negative quadranted hemispheres.

1238.21 45 degrees is the zero limit of covarying asymmetry because the right triangle's 90-degree corner is always complemented by two corners always together totalling 90 degrees. The smallest of the covarying, 90-degree complementaries reaches its maximum limit when both complementaries are 45 degrees. Accepting the concept that one is not a prime number, we have 14 primes—2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43—which primacy will accommodate all the 14 unique structural faceting of all the crystallography, all the biological cell structuring, and all bubble agglomerating: the 14 facets being the polar facets of the seven and only seven axes of symmetry of Universe, which are the 3-, 4-, 6-, 12-great circles of the vector equilibrium and the 6-, 10-, 15-great circles of the icosahedron.

1238.22 **Tetrahedral Complementations** The sphere-to-space, space-to-sphere intertransformability is a conceptual generalization holding true independent of size, which therefore permits us to consider the generalized allspace-filling complementarity of the convex (sphere) and concave (space) octahedra with the convex (sphere) and concave (space) vector equilibria; this also permits us to indulge our concentrated attention upon local special-case events without fear of missing further opportunities of enjoying total synergetically conceptual advantage regarding nonsimultaneously considerable Scenario Universe. (See Secs. 970.20 and 1032.)

1238.23 We know the fundamental intercomplementations of the external convex macrotetra and the internal concave microtetra with all conceptual systems. Looking at the four successive plus, minus, plus, minus, XYZ coordination quadrants, we find that a single 90-degree quadrant of one hemisphere of the spherical octahedron contains all the trigonometric functioning covariations of the whole system. When the central angle is 90 degrees, then the two small corner angles of the isosceles triangle are each 45 degrees. After 45 degrees the sines become cosines, and vice versa. At 45 degrees they balance. Thereafter all the prime numbers that can ever enter into prime trigonometric computation (in contradistinction to *complementary* function computation) occur below the number 45. What occasions irrationality is the inability of dividends to be omni-equi-divisible, due to the presence of a prime number of which the dividend is not a whole product.

1238.24 This is why we factor completely or intermultiply all of the first 14 prime numbers existing between 1 and 45 degrees. Inclusive of these 14 numbers we multiply the first eight primes to many repowerings, which produces this Scheherazade Number, which, when used as the number of units in a circle, becomes a dividend permitting omnirational computation accommodation of all the variations of all the trigonometries of Universe.

1238.25 The four vertexial stars A, B, C, D defining the minimum structural—ergo, triangulated—system of Universe have only four possible triangular arrangements. There are only four possible different topological vertex combinations of a minimum structural system: ABC, ABD, ACD, BCD. In multifrequenced, modular subdivisioning of the minimum structural system, the subdividing grid may develop eight positive and negative aspects:

ABC obverse (convex)	ABC reverse (concave)
ABD obverse (convex)	ABD reverse (concave)
ACD obverse (convex)	ACD reverse (concave)
BCD obverse (convex)	BCD reverse (concave)

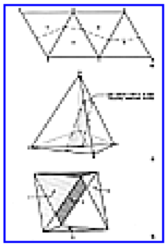


Fig. 1238.26

1238.26 Three unopened edges AB, AD, BC. (Fig. 1238.26A.)

Four edge-bonded triangles of the tetrahedron. (Fig. 1238.26B.)

Three pairs of opened edges; three pairs of unopened edges. Each triangle has also both obverse and reverse surfaces; ergo, minimum closed system of Universe has four positive and four negative triangles—which equals eight cases of the same.

The same four triangles vertex-bond to produce the octahedron. (Fig. 1238.26C.)

1238.27 In a spherically referenced symmetrical structural system one quadrant of one hemisphere contains all the trigonometric variables of the whole system. This is because each hemisphere constitutes a 360-degree encirclement of its pole and because a 90-degree quadrant is represented by three equi-right-angle surface-angle corners and three equi-90-degree central-angle-arc edges, half of which 90-degree surface and central angles is 45 degrees, which is the point where the sine of one angle becomes the cosine of the other and knowledge of the smallest is adequate—ergo, 45° 45° is the limit case of the smallest.

1238.28 Spherical Quadrant Phase: There is always a total of eight (four positive, four negative) unique

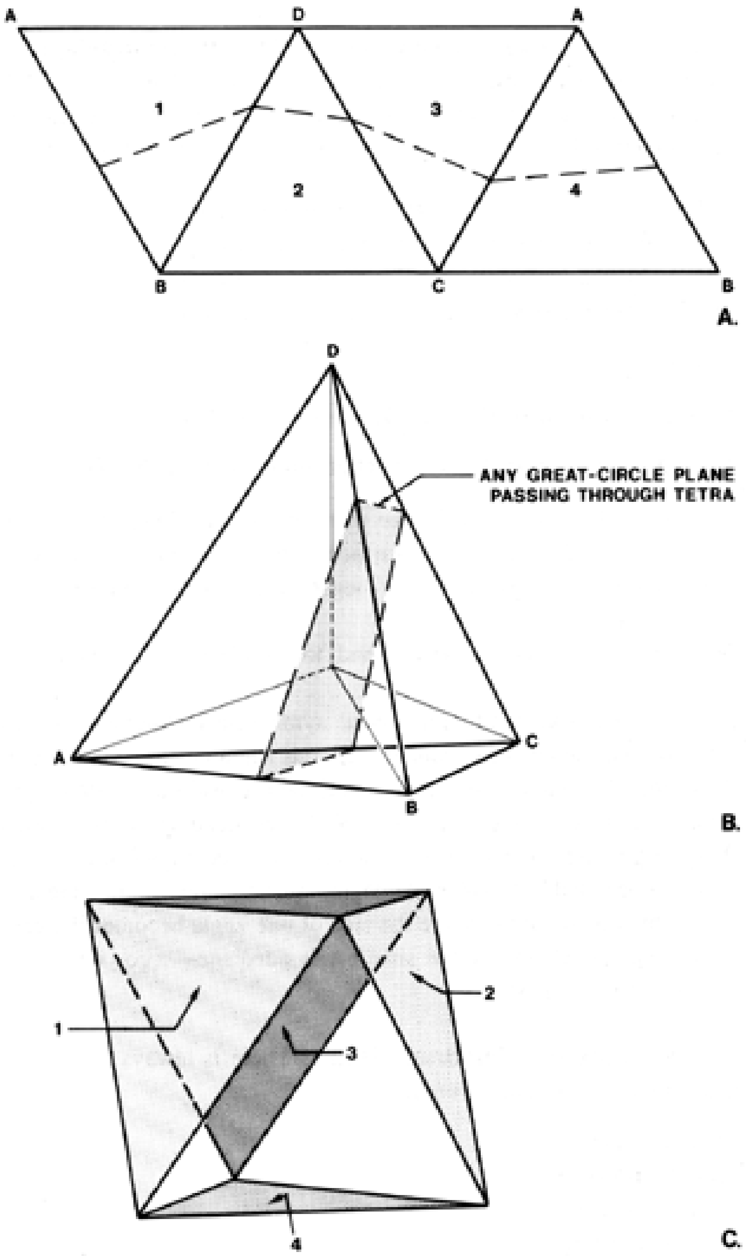
interpermutative,
intertransformative,
interequatable,
omniembracing

phases of all cyclically described symmetrical systems (see Sec. 610.20), within any one octave of which all the intercovariable ranging complementations of number occur. For instance, in a system such as spherical trigonometry, consisting of 360 degrees per circle or cycle, all the numerical intervariabilities occur within the first 45 degrees, .: 45 × 8 = 360. Since the unit cyclic totality of the Fourteen-illion Scheherazade Number is the product of the first 15 primes, it contains all the prime numbers occurring within the 45- degree-limit numerical integer permutations of all cyclic systems together with an abundance of powers of the first eight primes, thus accommodating omnirational integrational expressibility to a 1×10^{-42} fraction of cyclic unity, a dividend so comprehensive as to permit the rational description of a 22 billion-light-year-diameter Universe in whole increments of 1/10,000ths of one atomic nucleus diameter.

1238.29

(+)·(+)=(+)
(+)·(-)=(-) Multiply
(-)·(+)=(-)
(-)·(-)=(+)

(+)/(+)=(+)
(+)/(-)=(-) Divide
(-)/(+)=(-)
(-)/(-)=(+)



Figs. 1238.26A. B, C: In this plane net of four hinged triangles the dotted line indicates the intersection of a great-circle plane passing through the assembled tetra.

Four edge-bonded triangles of the tetra with great-circle plane passing through.

The same four triangles may be vertex-bonded to describe an octahedron with alternate open and closed faces.

Next Section: 1238.30