The Elliptical Constant

εpsilon, ε, equals One

. . . a corollary of the Brunardot Theorem

The Elliptical Constant creates orders of closely related ellipses and ellipsoids that are rationalized as:

Conceptual Ellipses, Brunardot Ellipses, Pulsoidal Ellipses, Ultron Ellipses, and many other complex ellipses that are referred to as Lemma Ellipses.

All motion has an elliptical component, which includes the sinusoidal motion of radiant energy that is generated by the resonance and pulsation of ellipsoidal seminal motion.

And, of course, straight lines and perfect circles are special ellipses that do not exist beyond the mind.

The heuristic logic that comprises the genesis of the Brunardot Theorem, and its special ellipsoids, has been unchallenged by academia for over 50 years.

It is amazing what unusual undiscovered properties can be found within ellipses.

The mathematics of the Elliptical Constant should be taught in all curriculums of Geometry and Algebra because of its fundamental significance, simplicity, and applications.

Mathematics does not
explain Nature;
Nature explains
***mathematics*.**

All mathematics is a function of Nature;
thus, its sublime poetry . . .

Ockham's Razor:

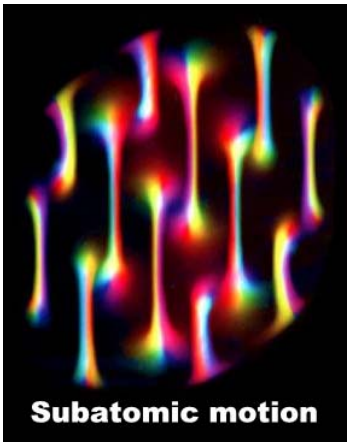
A principle of
economy of explanation
named for philosopher
William of Ockham (Occam)
(c. 1285-1350),

also called Law of Parsimony.

It holds that explanatory principles
should not be needlessly multiplied;

the simplest proof is usually the best.

Ockham's Razor
Random House Encyclopedia



The Elliptical Constant

a corollary of the

Brunardot Theorem

or, more popularly,

epsilon equals One.

The Elliptical Constant
has an integer value and
can be considered as a
structural part of *any* ellipse.

The Elliptical Constant
is the quintessential constant.

With simple
algebraic equations
the Elliptical Constant relates
the structural values of
any ellipse with one another.

The Elliptical Constant is referred to as: εpsilon.

There are many proofs for
the Elliptical Constant.

What is most important concerning the Elliptical Constant
and its "key" is that it rationalizes questions such as:

"Why" ellipses;
"Why" Natural integers;
"Why" symmetry;
"Why" the Pythagorean Theorem;
"Why" the Fibonacci sequence;
"Why" the Golden Ratio, Phi;
"Why" the Inverse Square Law;
"Why" orthogonal dimensions;
"Why" light and particle manifestations;
"Why" non-continuous phenomena;
"Why" no antimatter;
"Why" radiant energy morphs to mass;
and, of course, "Why" life?

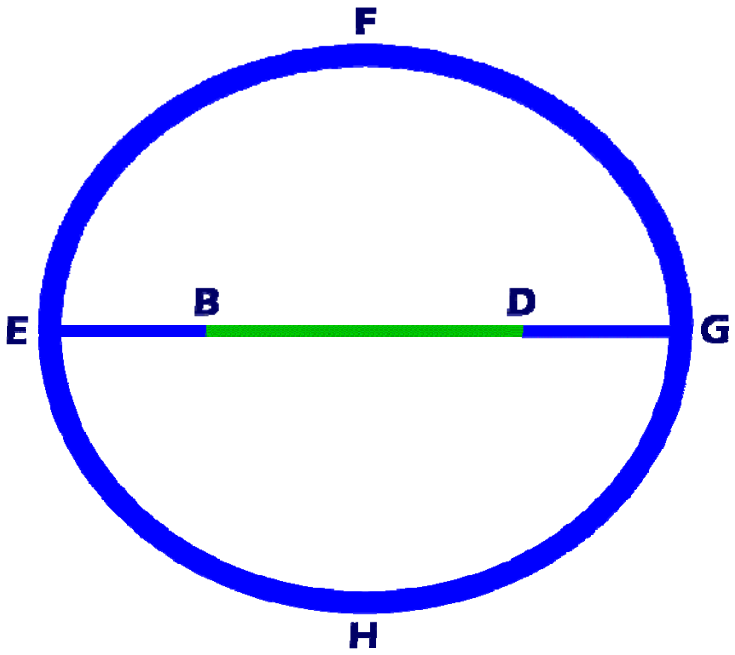
Historically, the discovery of the Elliptical Constant and the "key" are very important new additions to geometry because of their far-reaching, fundamental significance and applications.

Stranardoz
November 5, 2005

Begin with a line IG of *any* length.

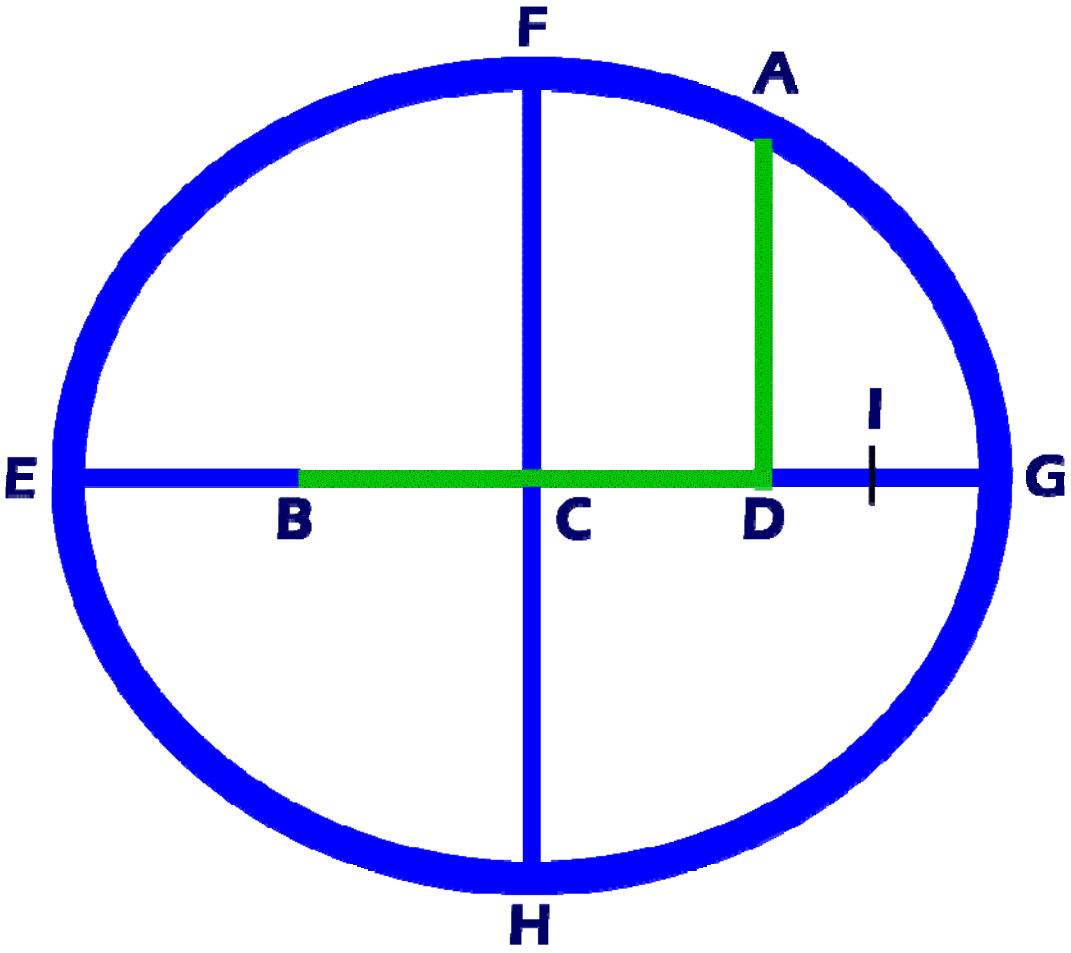
Or, an ellipse of *any* shape. (See: page 16)

Double line IG to line DG;
double line DG to line BD.



Construct an ellipse EFGH
with points B and D as the foci and
line DG as the perigee.
Thus, line BG is the apogee.

Draw line BE which will equal line DG.

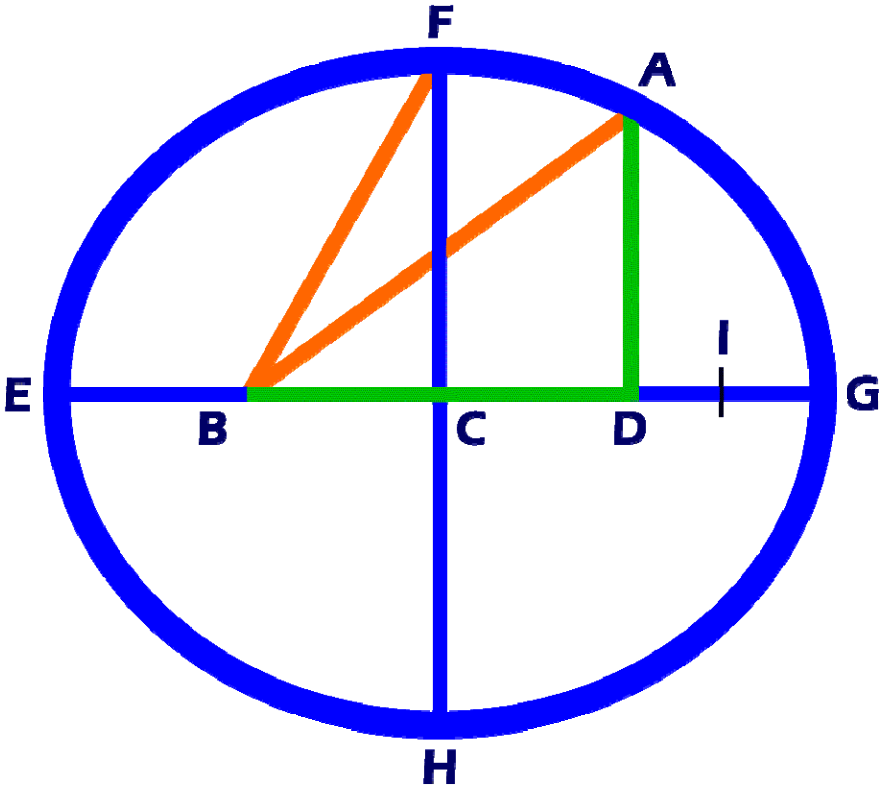


At the midpoint, C, of line BD,
draw line FH perpendicular to line BD.

Line FH intersects ellipse EFGH
at points F and H.

At focus D,
draw line AD perpendicular to line BD.

Line AD intersects ellipse EFGH at point A.



Draw Line AB.

Draw Line BF.

The definition of an ellipse is
a plane curve comprised of a
locus of points such that
the sum of the distances from
every point on the locus to
two fixed points is equal.

Thus, line AB plus line AD equals
line BE plus line BG, which equals
two times line BF, and so on.

Points B and D are the fixed points of
ellipse EFGH, each of which is a focus.

If line DI equals one, "1,"
line DG equals two, "2."

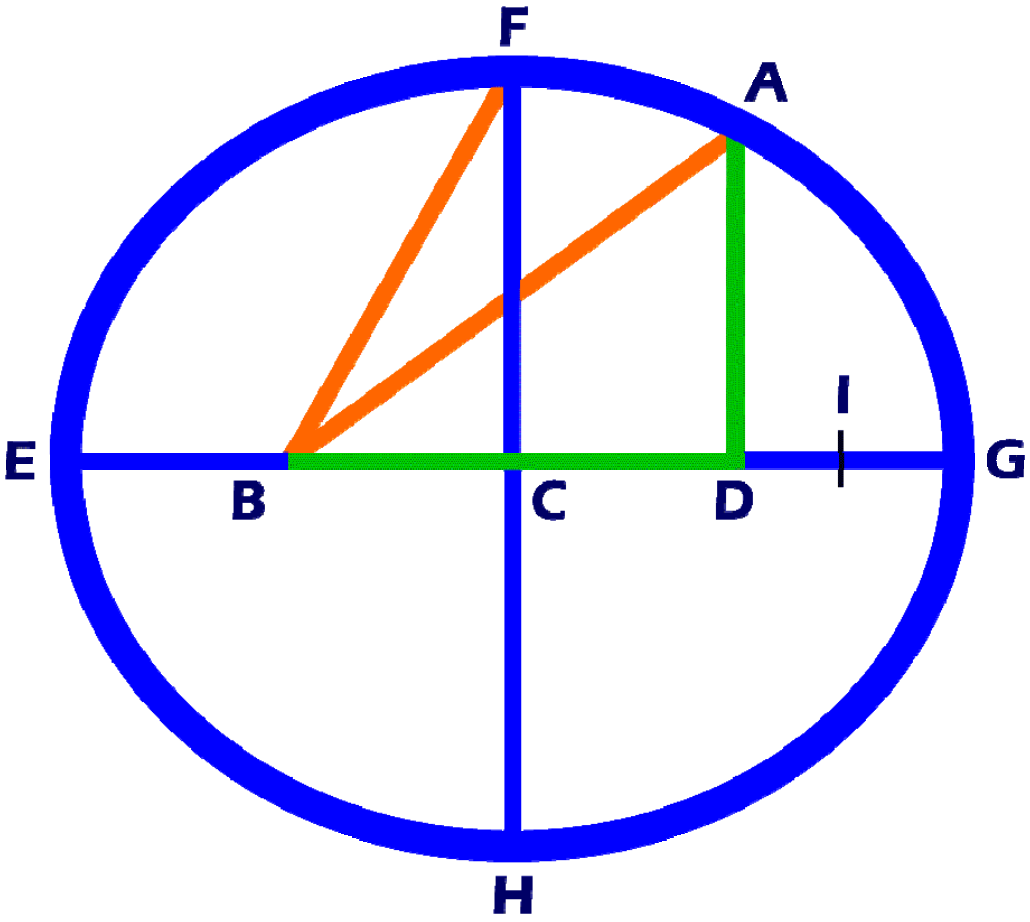
By the definition of an ellipse:
lines AB plus AD equal eight, "8,"
as they are twice line CG
that is twice line DG.

Triangle ABD is a right triangle;
thus, line AD equals, three "3";
line BD equals four, "4"; and,
line AB equals, five "5."

Line BG equals, six "6";
line EI equals, seven "7"; and,
line EG equals, eight "8."

If line EG equals eight, "8,"
line BF that is drawn from
a focus to a midpoint equals four, "4."

From a line of *any* length
the Natural integer values
(positive 1, 2, 3, 4, ...)
of the first eight integers
are established from an ellipse
that is, heuristically,
the seminal ellipsoidal phenomenon;
of radiant energy; such that,
a value of "one" is established,
within the system of numbers,
without a predetermined "base."



To summarize:

EFGH, "𝔼," is an ellipse if
line BE plus line BG equals
line DE plus line DG equals
line AB plus line AD equals
2 times line BF equals
line EG.

BE + BG = DE + DG =
AB + AD = 2 x BF = EG.

And, if line AD is perpendicular to line BD,
line AB equals the square root of the
sum of line AD squared plus line BD squared.

Substituting the above line values:

2 + 6 = 6 + 2 =
5 + 3 = 2 x 4 = 8.

And, 5 = square root (9 + 16).

Line DI, equals the constant: one, "1; and,
line GI, "1," the key, "k," = x, any positive number;
then, line BE, "2," the perigee, "p," = k + 1;
line BF, "4," the vector, "v," equals k^2 +2k +1; or,
more simply, "v," equals p^2;
line BC, "2," the soliton. "s," equals k^2 + k;
line BD, "4," the wave, "w," equals 2s;
line AD, "3," the radius, "r," equals 2k + 1;
line AB, "5," the hypotenuse, "h," equals w + 1;
line BG, "6," the apogee, "o," equals w + p;
line EI, "7," the glyph, "g," equals o + 1;
line oP, "1," the hypotenuse radius, "Hr," equals k;
line EG, "8," the major diameter, "M," equals o + p;

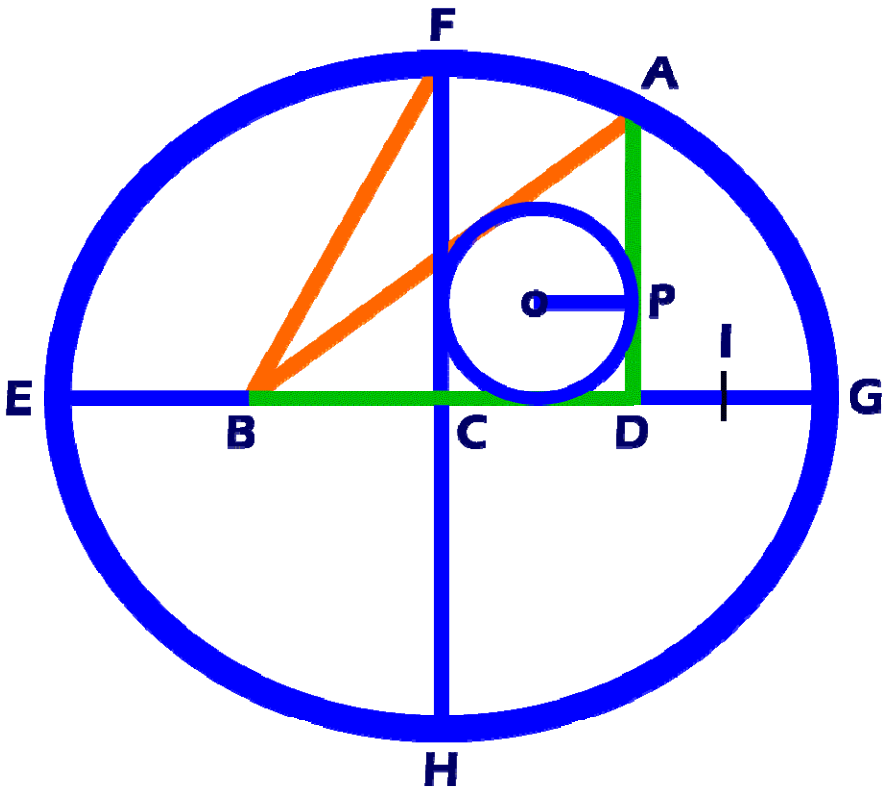
Line DI is referred to as εpsilon, "ε."

εpsilon, "ε," equals h – w = One

εpsilon, "ε," equals One is
the Elliptical Constant.

εpsilon = One.

Amazingly, when εpsilon = One;
then, all the above equations
remain true for ***any*** ellipse
and return integer values
when the key is ***any*** Natural integer.



The radius, "oP," of
a circle inscribed within
a right triangle equals
the product of the sides
that are opposite the hypotenuse
divided by the sum of all the sides.

$$oP = (AD \times BD) / (AB + AD + BD)$$

Or, more simply, the diameter of
a circle inscribed within
a right triangle equals
the sum of the two sides
that are opposite the hypotenuse
minus the hypotenuse.

$$2 \times oP = AD + BD - AB$$

Line oP, hypotenuse radius, "Hr,"
equals: (3 x 4) / (3 + 4 + 5) = 1.

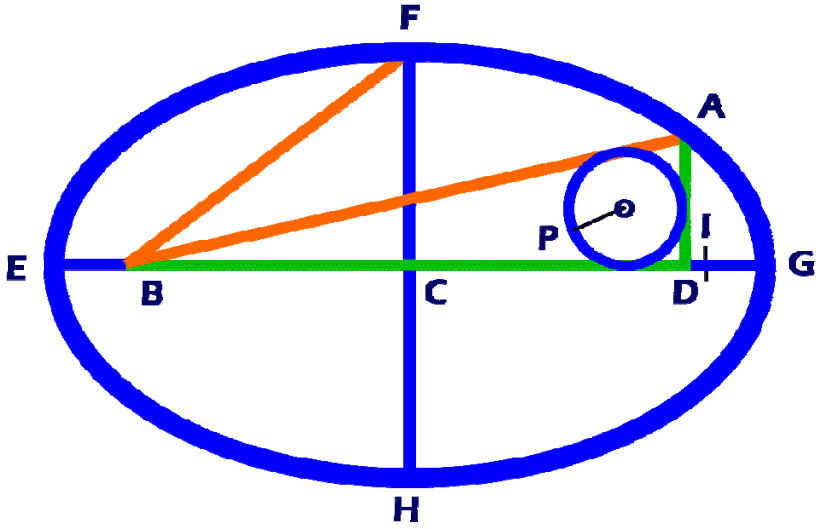
2 times Line oP, hypotenuse diameter, "Hd,"
equals: 3 + 4 – 5 = 2.

Or, most simply,
Line oP, hypotenuse radius, "Hr,"
equals the key, "k," = 1,
which is the perigee minus εpsilon.

Thus the hypotenuse radius, "Hr," is an integer,
as are the: perigee, "p,"; soliton. "s,";
vector, "v,"; apogee, "o,"; radius, "r,";
wave, "w,"; hypotenuse, "h,"; glyph, "g,";
and, major diameter, "M," when key, "k," is a
Natural integer and
εpsilon, "ε," equals One.

Amazingly, all the above equations
remain true, regardless of the shape
or "ellipticalness," for *any* ellipse,
if line DI, the difference between
the hypotenuse, "h," and the wave, "w," is
the Elliptical Constant, "ε," equals One, "1."

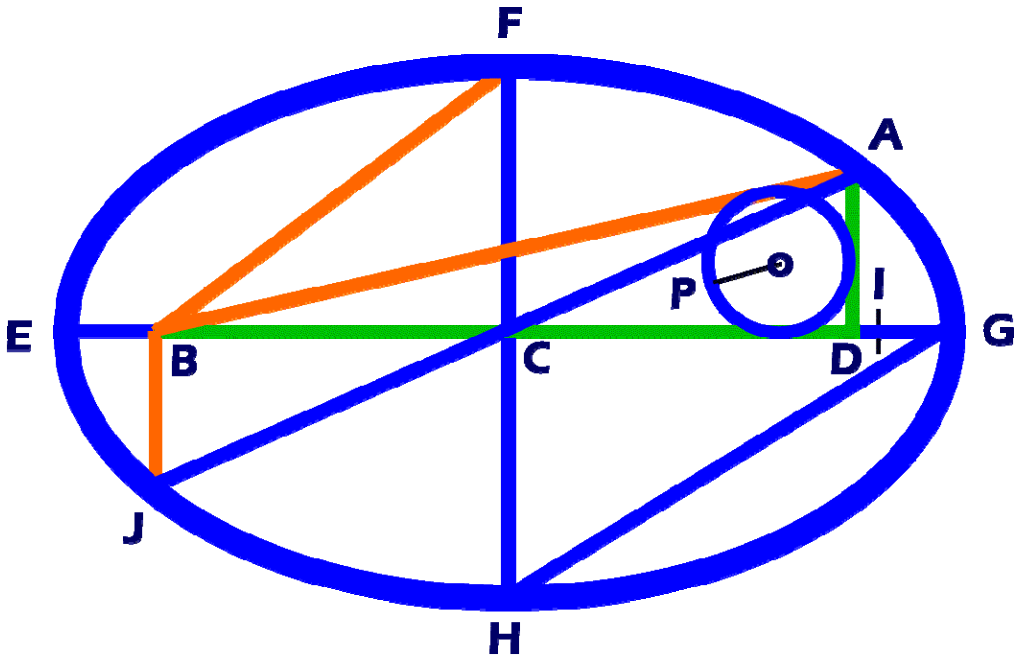
And, of great significance, for *any* ellipse,
when the Elliptical Constant is set
and the key is a Natural integer,
the salient components
are always integers.



Line FC, is the amplitude, "a."

When the ellipse is a Brunardot Ellipse (BE)*,
and the amplitude is an integer; then,
ellipse EFGH is a Pulsoidal Ellipse (PE).
* See page 21 for a definition.

The following are some Pulsoidal Ellipse
integer values if key, "k," equals 4;
the perigee, "p," equals $k + \varepsilon = 5$;
the vector, "v," equals $p^2 = 25$;
the soliton, "s," equals $k^2 + k = 20$;
the wave, "w," equals $2s = 40$;
the hypotenuse, "h," equals $w + \varepsilon = 41$;
the radius, "r," equals $2k + \varepsilon = 9$;
the amplitude, "a," equals
p x the square root of r = 15;
the apogee, "o," equals $p + w = 45$;
the glyph, "g," equals $o + \varepsilon = 46$;
the hypotenuse radius, "Hr," equals $k = 4$;
the major diameter, "M," equals $2v = 50$.



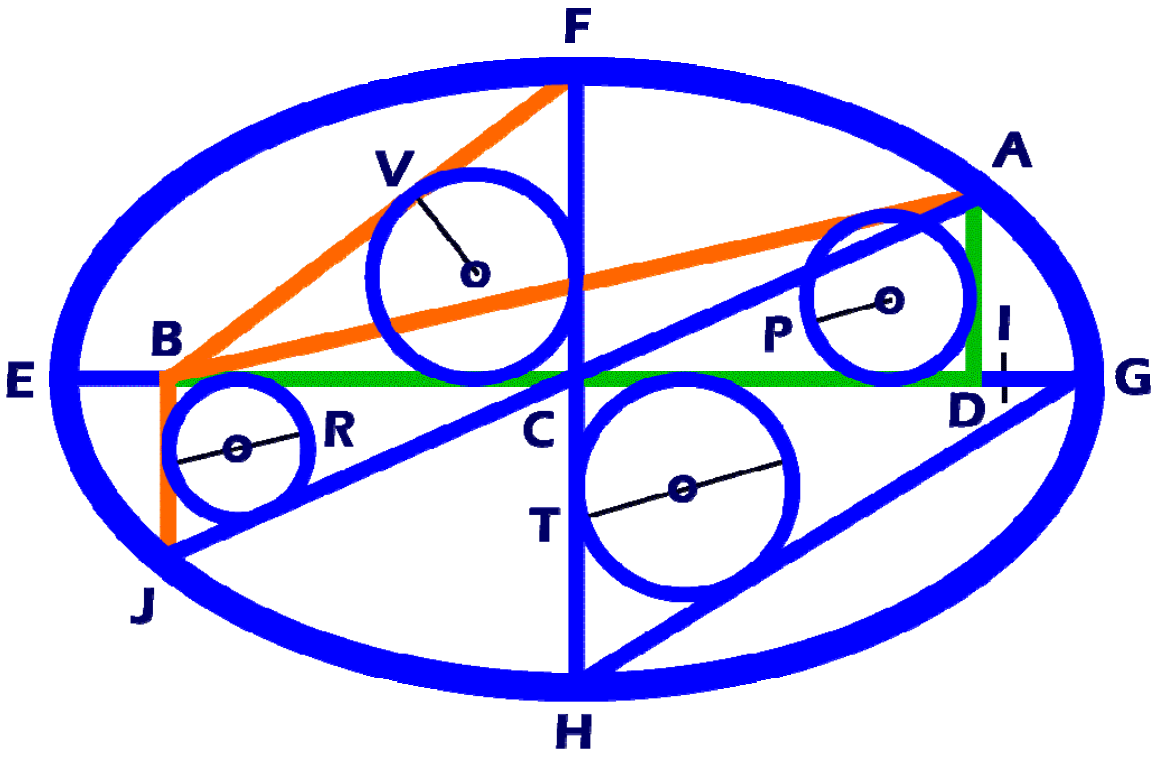
Draw line GH.

At focus B,
draw line BJ perpendicular to line BD;
Line BJ intersects ellipse EFGH at point J.

Draw line AJ.

Line FH is the minor diameter, "A,"
which equals $2a = 30$;
Line BJ equals line AD the radius, "r";
Line AC or CJ is the diagonal radial, "d,"
which quickly converges to $s + 2\varepsilon = 22$;
Line AJ is the diagonal, "D,"
which quickly converges to $2d = 44$.

Line GH is the diameter chord, "c."



If the ellipse is a Brunardot Ellipse
and, key, "k," = 4; then,
line oP, the hypotenuse radius, "Hr,"
equals an integer, k = 4.

If the ellipse is a Pulsoidal Ellipse,
with key, "k," = 4, integer values for
the other inscribed circles are:

Line oV, the vector radius, "Vr,"
equals an integer, (a – p) / 2 = 5.

2 times line oR, the radial diameter, "Rd,"
converges to an integer, 2k – ε = 7.

2 times line oT, the chord diameter, "Cd,"
converges to an integer, 2Vr + ε = 11.

All Brunardot Ellipses generate Pulsoidal Ellipses.

The Elliptical Constant,
epsilon, "ε," equals One, "1,"
has, for ***any*** ellipse, many forms;
a few equations are:

$\varepsilon = h - w;\ \ \varepsilon = 2p - r;$
$\varepsilon = 2h - r^2;\ \ \varepsilon = p - Hr.$

For any ellipse,
when any of the above differences
equal one, or are set to one, which is the
Elliptical Constant, epsilon, "ε," equals One, "1,"
then, all the relationships or equations that
relate the different parts of ***any*** ellipse
are always the same set of equations that are
referred to as the Natural set of equations.

As the key value increases
beyond a single digit
the following equation
quickly converges to
the Elliptical Constant,
epsilon, "ε," equals One, "1":

$\varepsilon = (d - s)/2;$

It can be seen that the difference between
the diagonal, "d," and the soliton, "s,"
quickly converges to twice the Elliptical Constant.

Thus, as the key increases to
a value beyond small integers,
the right triangle ACD has all sides as
integers with the difference
between the base and hypotenuse
equal to two, "2"; or,
equal to twice the Elliptical Constant.

Right triangle ACD is comparable to
right triangle ABD; as, it has all
integer sides; however, the difference
between the base and hypotenuse
equals the Elliptical Constant.

Also, as the key value increases
beyond a single digit for ***any*** ellipse
the following equations:

$\varepsilon = Hd - Rd;\ \ \varepsilon = Cd - Vd;$

quickly converge to
the Elliptical Constant,
epsilon, "ε," equals One, "1":

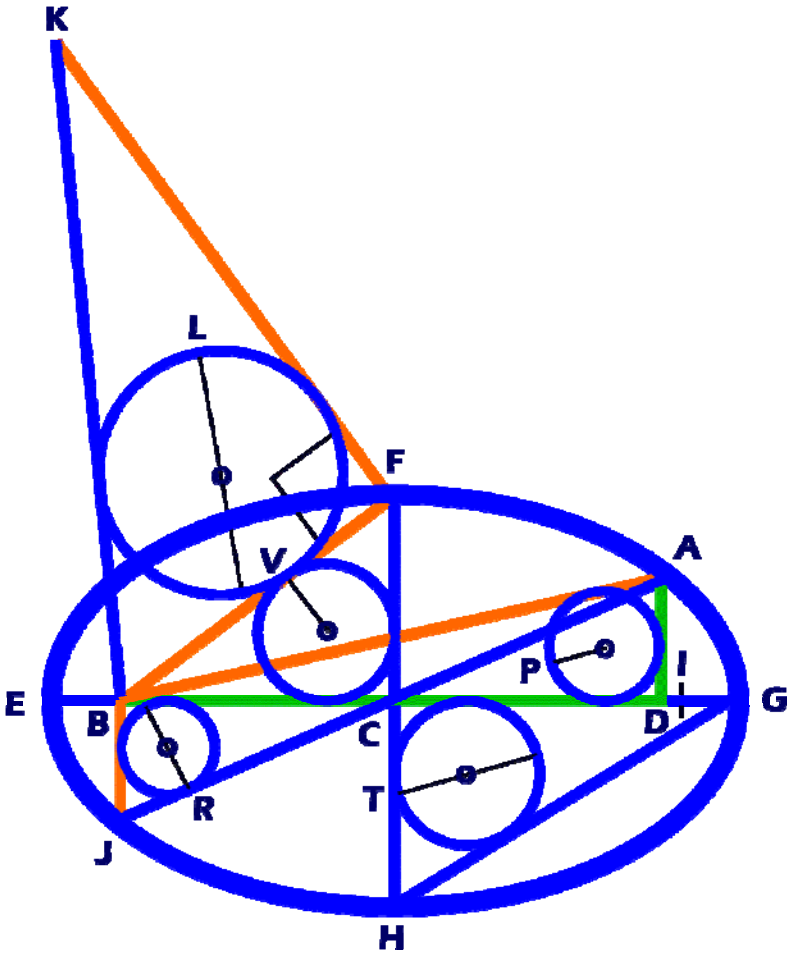
Virtually, the difference, epsilon, "ε,"
between the hypotenuse diameter, "Hd,"
and the Radial diameter, "Rd,"
is minuscule;
the same is true for the difference, epsilon, "ε,"
between the chord diameter, "Cd,"
and the Vector diameter, "Rd."

These convergence differences for even
the smallest key values are on the order of
much less than 10^{-12}.

Ultron Ellipses (UE), are Pulsoidal Ellipses with the chord, "c" as an integer.

Lemma Ellipses (LE) are Ultron Ellipses with the lemma, "l," as an integer.

These and other complex ellipses are associated with elliptical bonding, which is, heuristically, analogous to subatomic and chemical bonding.

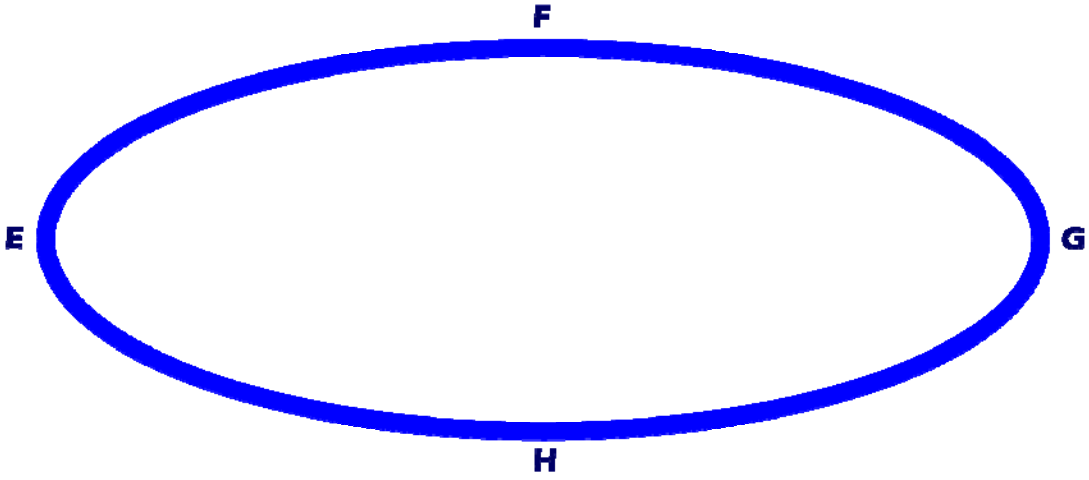


Line FK equals Line AB.

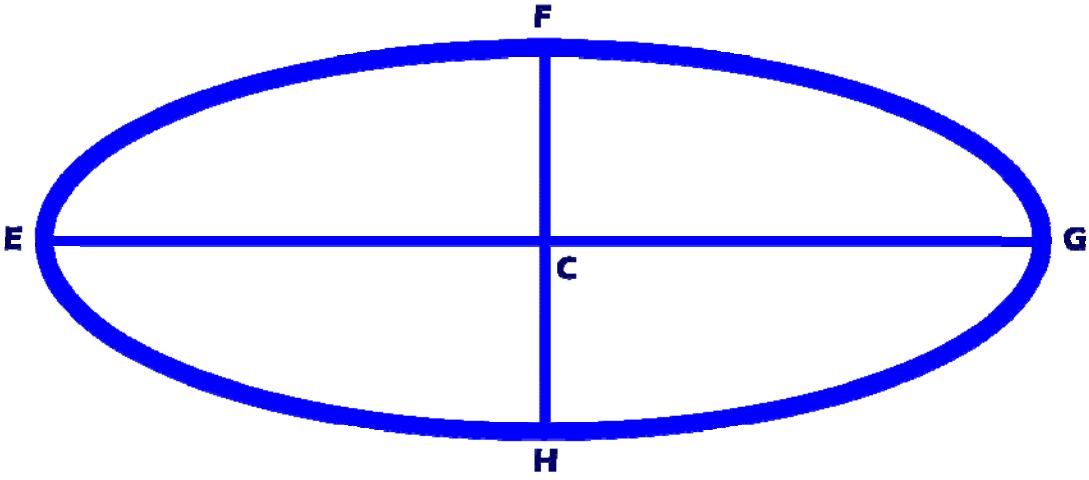
Line BK, is referred to as the lemma, "l," which is an integer; thus, 2 times radius oL, the lemma diameter, "Ld," is an integer.

The Elliptical Constant can also be constructed from *any* ellipse.

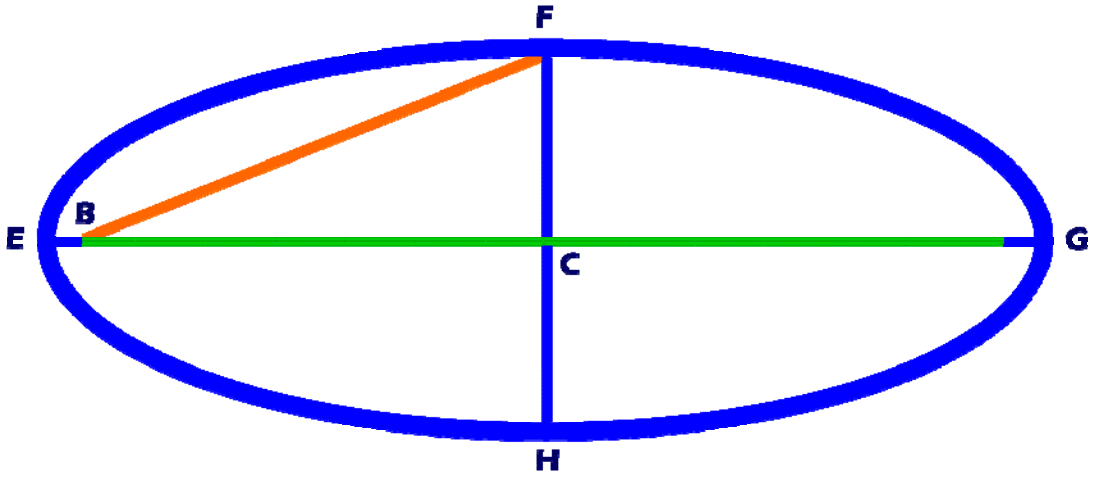
Or, a line of *any* length. (See: page 2).



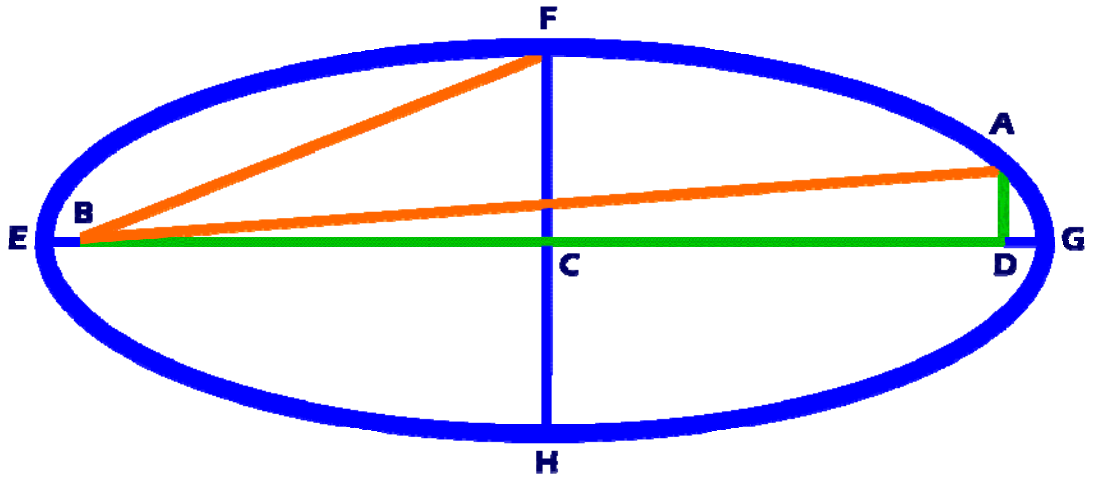
Begin with *any* ellipse, EFGH.



Bisect line EG, the major diameter, "M," with a perpendicular line FH, the minor diameter, "m."



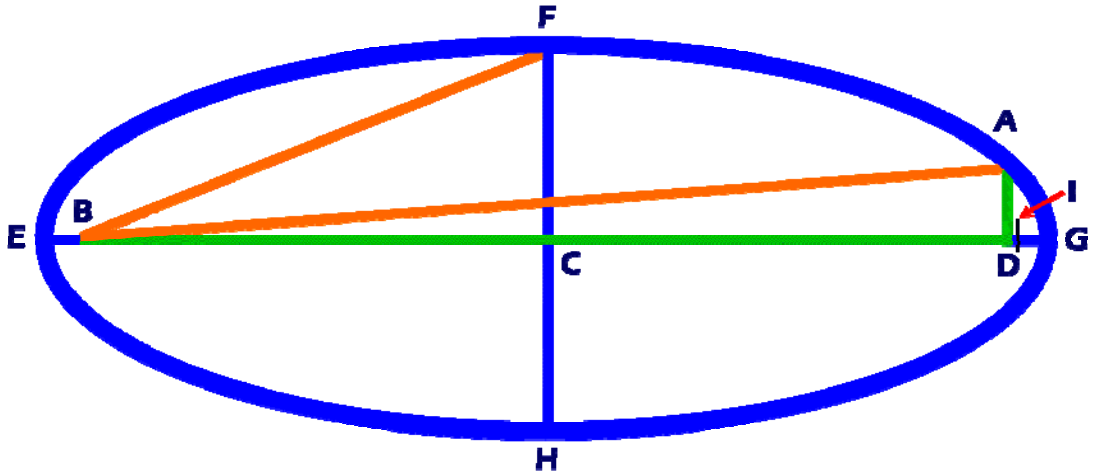
Draw line BF equals line CE or CG
from point F to point B in line EG.



Line DG equals line EB.

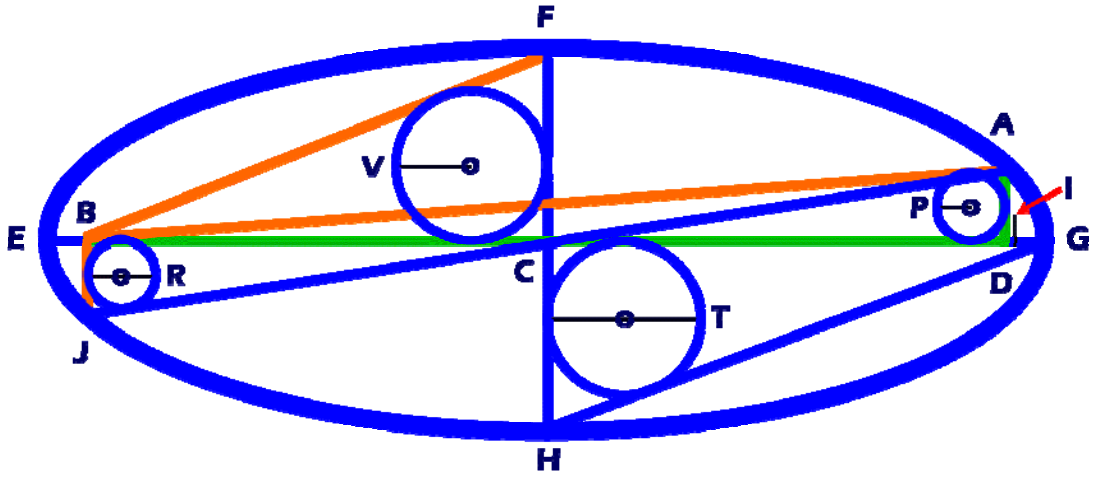
From point D draw line AD,
perpendicular to line EG,
to ellipse EFGH at point A.

Draw line AB.



The Elliptical Constant, line DI,
equals line AB minus line BD.

The key, line IG, equals line DG minus line DI.



Draw line HG.

From point B draw line BJ,
perpendicular to line EG,
to ellipse EFGH at point J.

Draw line AJ.

Inscribe four circles in right triangles
ABD, BCF, BCJ, and CGH.

If line DI, εpsilon, "ε," = 1; and,
line GI, the key, "k," = 12;
lines BE and DG, the perigee, "p," = k + ε = 13;
lines BC and CD, the soliton, "s," $k^2 + k = 156$;
line BD, the wave, "w," = 2s = 312;
lines BG and DE, the apogee, "o," = w + p = 325;
line EI, the glyph, "g," = o + ε = 326;
lines AD and BJ, the radius, "r," = 2k + ε = 25
lines CF and CH, the amplitude, "a,"
= p x square root of r = 65;
line BF, the vector, "v," = p^2 = 169;
line AB, the hypotenuse, "h," = w + ε = 313;
lines AC and CJ, the diagonal radial, "d,"
quickly converge to s + 2ε = 158;
line GH, the diameter chord, "c,"
quickly converges to s + r = 181;
line AJ, the diagonal, "D," = 2d,
which quickly converges to 316;
line EG, the major diameter, "M," = 2v = 338;
line FH, the minor diameter, "A," = 2a = 130.

Inscribed circle ABD is the hypotenuse circle.
Inscribed circle BCF is the vector circle.
Inscribed circle BCJ is the radial circle.
Inscribed circle CGH is the chord circle.

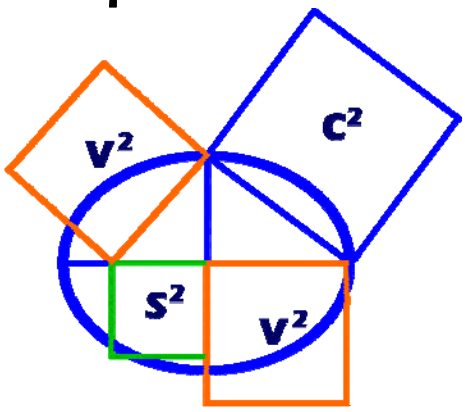
Line oP, hypotenuse radius, "Hr," = k = 12;
line oV, the vector radius, "Vr," = (a – p)/2 = 26;
2 x line oR, the radial diameter, "Rd,"
quickly converges to 2k – ε = 23;
2 x line oT, the chord diameter, "Cd,"
quickly converges to 2Vr + ε = 53;

If εpsilon, "ε," = One;
then, for ***any*** ellipse
key, "k," equals ***any*** number;
perigee, "p," equals k + ε;
soliton, "s," equals k^2 + k,
which is the Natural function;
vector, "v," equals p^2;
apogee, "o," equals s + v;
radius, "r," equals 2k + ε;
wave, "w," equals 2s;
hypotenuse, "h," equals w + ε or (r^2 + ε) / 2;
glyph, "g," equals o + ε;
diagonal radial, "d," converges quickly to s + 2ε;
diagonal, "D," converges quickly to 2d
amplitude, "a," equals p x square root of r;
minor diameter, "A," equals 2a;
major diameter, "M," equals 2v;
diameter chord, "c," converges quickly to s + r;
hypotenuse radius, "Hr," equals k;
vector radius, "Vr," equals (a – p) / 2;
radial diameter, "Rd," converges quickly to 2k – ε;
chord diameter, "Cd," converges quickly to 2Vr + ε.

If the key, "k," equals zero,"0";
the ellipse is a circle; and,
p, s, v, o are the first terms of
the ***revised*** Fibonacci sequence:
1, 0, 1, 1, ...

If the soliton, "s," equals "ε"; then,
the perigee, "p," equals
the Golden Ratio, "Φ."

The Brunardot Theorem (BT)
states that for any ellipse:
the square of the diameter chord, "c,"
equals two times the square of the vector, "v,"
minus the square of the soliton, "s."



$$c^2 = 2v^2 - s^2$$

A Conceptual Ellipse (CE)
is *any* ellipse when
epsilon, "ε," equals One.

A Brunardot Ellipse (BE) is
a Conceptual Ellipse (CE) with the
key, "k," equal to any Natural integer.

A Pulsoidal Ellipse (PE) is
a Brunardot Ellipse (BE) with an
amplitude, "a," equal to a Natural integer.

An Ultron Ellipse (UE) is
a Pulsoidal Ellipse (PE) with a
diameter chord, "c," equal to a Natural integer.

Conceptual Ellipses (CE) can be generated by *any* two positive numbers that are referred to as Time, "T," and Cycle, "C."

Circles and straight lines are special ellipses where the Time, "T," and/or Cycle, "C," have infinite or infinitesimal values.

Brunardot Ellipses (BE) can be generated by *any* two Natural integers for the Time, "T," and Cycle, "C."

Pulsoidal Ellipses (PE) can be generated by *any* Brunardot Ellipse.

Ultron Ellipses (UE), Lemma Ellipses (LE), and other complex ellipses are generated by predictable factors that comprise the values for the Time, "T," and Cycle, "C."

The significance of ellipses lies in:

1.) The manner in which they are generated in Nature from Triquametric motion; and,

2.) The salient structural parts, for *any* ellipse, are integers if the key is predictable Natural integer factors and epsilon, "ε," = One, "1"; and,

3.) The values of said integers are simple arithmetical and algebraic ratios and differences that rely only upon mathematical manipulations without roots and powers that are beyond squares; and,

4.) A number system is established, wihin a closed system, that establishes its own unit value that is based only upon the Elliptical Constant; and,

5.) The manner in which their Natural generation establishes the Inverse Square Law and orthogonal dimensions.

There are many equations that apply to *any* ellipse, and *any* circles inscribed in right triangles, that can be used to check values; such as:

The Brunardot Theorem

$$c^2 = 2v^2 - s^2.$$

The Pythagorean Theorem

$$a^2 + b^2 = c^2.$$

The Inverse Square Law

$$v = p^2.$$

Circles inscribed in right triangles

radius = (a x b) / (a + b + c)
diameter = a + b – c.

Radial lines from a focus to the circumference

2v = M
h + r = M
p + o = M.

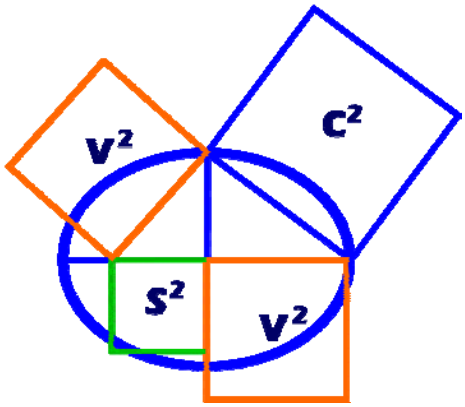
A Fibonacci-like additive sequence

p,
s,
p + s = v,
s + v = o.

Of additional interest:

The Elliptical Constant,
εpsilon, "ε," = One, "1,"
easily, makes possible
the construction of
the square root or
the square of *any* line.

Salient Natural set of Equations derived from



The Brunardot Theorem

$$c^2 = 2v^2 - s^2$$

and

The Elliptical Constant,

εpsilon, "ε," = One, "1," are:

T= Time = *any* Natural Integer;
C= Cycle phase = *any* Natural Integer.

$$k = TC - \varepsilon;$$

$$p = k + \varepsilon;$$

$$v = p^2$$

$$s = k^2 + k;$$

$$w = 2s;$$

$$h = w + \varepsilon;$$

$$r = 2k + \varepsilon.$$

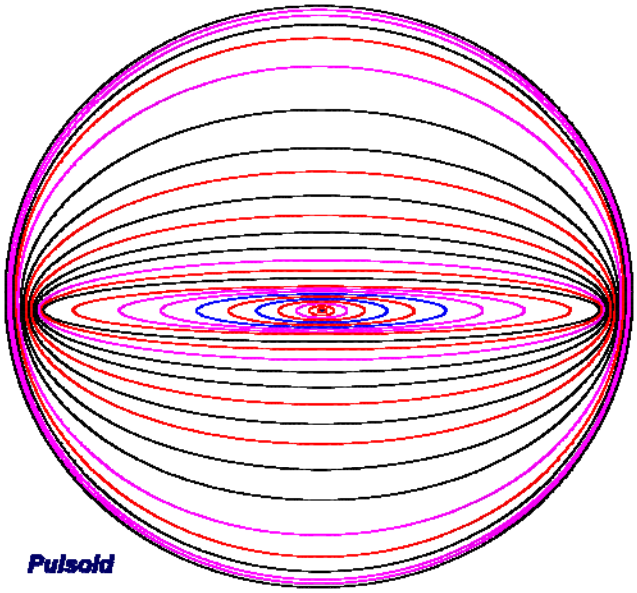
And, for Pulsoidal Ellipses:

Ellipticalness = TC;

$2TC - \varepsilon$ = Pulsoidal factor, "F,";

$$r = F^2;$$

$$a = Fp.$$



There is one Universe.
It is perpetual, in equilibrium; and,
a manifestation of the . . . Unified Concept;

also,

Science, Theology, and Philosophy
are a single discipline, which proclaims the
perpetuity and nexus of Life; such is

. . . Conceptualism.

The whole of science is nothing more than a refinement of everyday thinking.

Albert Einstein [1878-1955

Imagination is more important than knowledge.

Albert Einstein [1878-1955]