Major Design Elements of the Great Pyramid of Giza Found Imbedded in *The "Beastly 666 Magic Square"* [1]

The author has found that major external design measurements of the Great Pyramid, as recorded by W.M.F. Petrie[2], can be extracted from Patrick De Geest's 666 Magic Square. Additionally, rational values for the Golden Ratios $Phi_1(\varphi_1)$, $Phi_2(\varphi_2)$ and a value of Pi termed *Pyramid Pi* are also discovered there.

The "Beastly 666 Magic Square" that is the subject of this paper has 10 of its 36 cell numbers displayed in boldface type because they are the numbers of concern here. These boldfaced numbers have been termed trigonometric Phi function numbers because their Sine or Cosine values can be expressed in terms of the Golden ratio Phi (φ). Phi (φ) = 1.618033989. i.e. $\pm\ \varphi/2$ or $\pm\ 1/(2\varphi)$. This is accomplished by applying the following selection rule.

Phi (φ) Function Selection Rule

1. If (n) is an integer divisible by 9, and (n) ÷360 contains one decimal place, (i.e., .1, .2, .3, .4, .6, .7, .8, .9), excluding (.0 & .5), then the Cosine (n) can be expressed as a function of Phi. i.e. cos.(n) = $f(\varphi)$.
   If (n) ÷360 ends with (.0 or .5), then Cosine (n)= ±1.

2. If (n) is an integer divisible by 9, and (n) ÷360 contains two decimal places, that are an odd multiple of (.05), (i.e., .05, .15, .35, .45, .55, .65, .85, .95) excluding (.25 & .75), then Sine (n) can be expressed as a function of Phi. i.e. sin.(n) = $f(\varphi)$. If (n) ÷ 360 ends with (.25 or .75), then Sine (n) = ±1.

3. The numbers (n) that end with a 4 or 6 have a trig. function of $\pm\ \varphi/2$.
   The numbers (n) that end with a 2 or 8 have a trig. function of $\pm\ 1/(2\varphi)$.

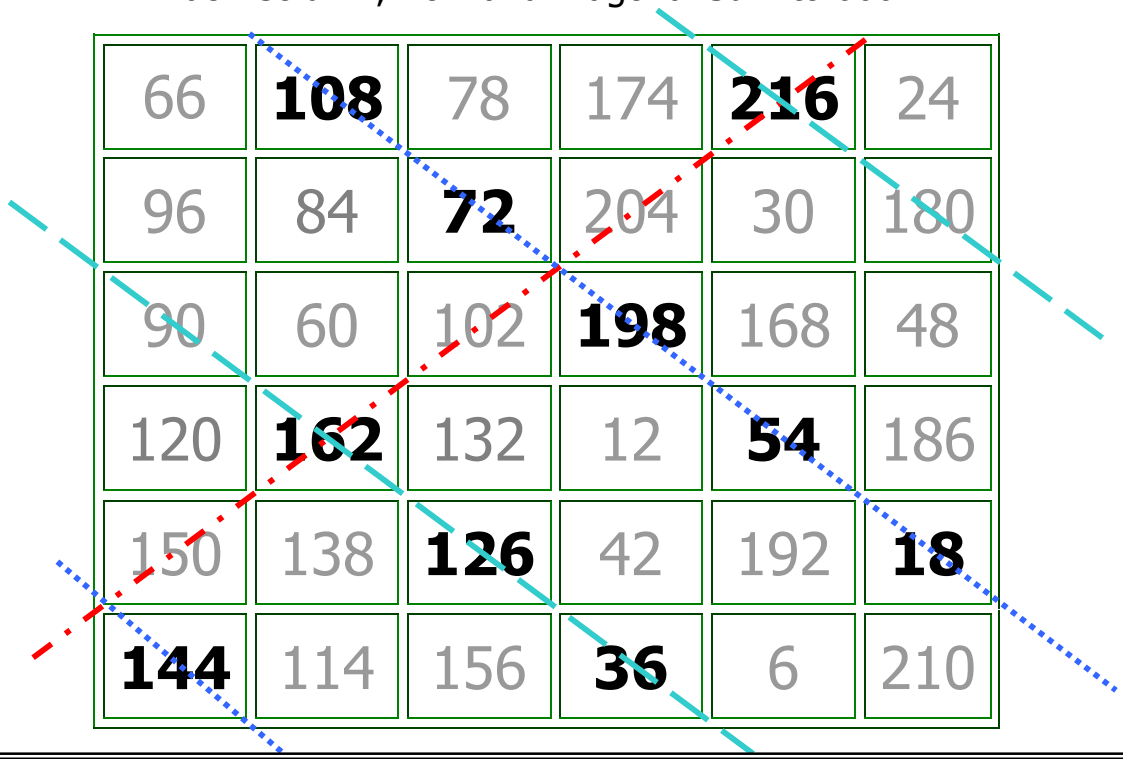
[1] Reference Patrick De Geest

[2] W.M.F. Petrie – *The Pyramids and Temples of Gizeh* – Published London 1883

e.g. Each Column, Row and Diagonal has a number sum of 666. 666/360 = 1.85, (2 decimals) ∴ Sine 666 = - 0.8090 = - φ/2.

The 3 parallel column and row sets of bold numbers, and the off-diagonal bold numbers, all have sums that are Phi(φ) function numbers.

The Beastly Magic Square.
Each Column, Row and Diagonal Sum to 666.



66	**108**	78	174	**216**	24
96	84	**72**	204	30	180
90	60	102	**198**	168	48
120	**162**	132	12	**54**	186
150	138	**126**	42	192	**18**
144	114	156	**36**	6	210

Matrix Addition of Bold Off-Diagonal
Trigonometric Phi Function Numbers

108 +72 +198 +54 +18 +144 = 594 ⇒ from blue line

216 + 162 + 126 + 36 = 540 ⇒ from green line

216 + 162 = 378 ⇒ from red line

Column & Row Sums of Bold Face Trigonometric Phi Function Numbers

Column #'s 1, 2, & 3 ⇒ 144 + 108 + 162 + 72 + 126 = 612
Column #'s 4, 5, & 6 ⇒ 198 + 36 + 216 + 54 + 18 = 522
Row #'s 1, 2, & 3 ⇒ 108 + 216 + 72 + 198 = 594
Row #'s 4, 5, & 6 ⇒ 162 + 54 +126 +18 +144 + 36 = 540

"Casting Out the 9's"
of the
666 Beastly Magic Square

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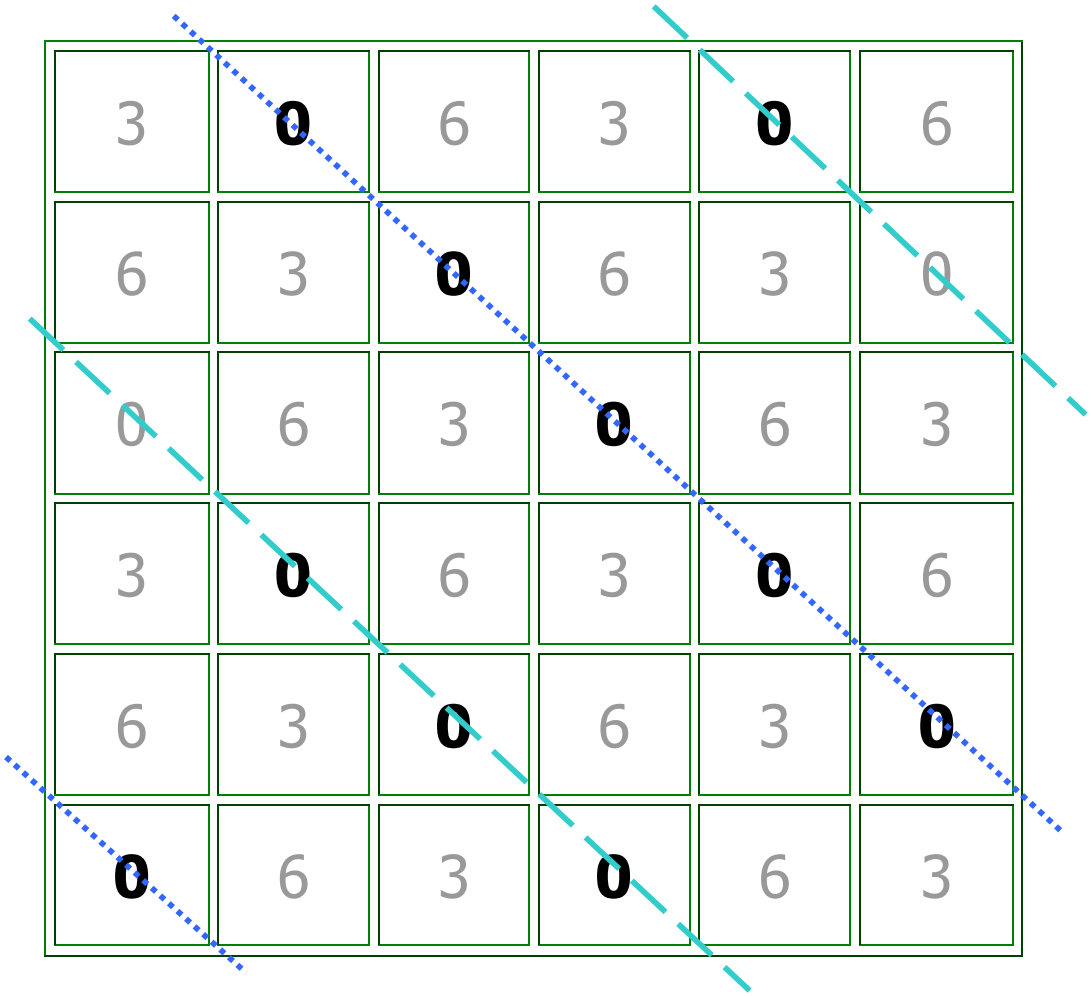
Each Column, Row and Diagonal Sums to 18

Marked Broken Off-Diagonals Sum to Zero



Only Zeros remains when the Nines have been
"*cast out*" of the Phi function numbers.
Total sum remaining = 108
108/360 = 0.3, (1 decimal place) ∴ therefore
Cosine 108 = - 0.3090 .... = -1/(2φ)
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Magic Square Number Notes

666 Magic Square
18 Magic Square

37:1 ratio

37 x 18 = 666
37 x 15 = 555
37 x 12 = 444
37 x 9 = 333
37 x 6 = 222
37 x 3 = 111

Off-Diagonal Phi Function Sums

108 +72 +198+54 +18 + 144 = 594
216 + 162 + 126 + 36 = 540
sum 1134
216 + 162 = 378
sum 1512

- Column #'s 1, 2, & 3 ⇒ 144 + 108 + 162 + 72 +126 = 612
  Column #'s 4, 5, & 6 ⇒ 198 + 36 + 216 + 54 + 18 = 522
  1134

- Row #'s 1, 2, & 3 ⇒ 108 + 216 + 72 + 198 = 594
  Row #'s 4, 5, & 6 ⇒ 162 + 54 +126 + 18 + 144 + 36 = 540
  1134

Major Design Elements of the Great Pyramid

Values for the Golden Ratio, $Phi_1(\varphi_1)$ and $Phi_2(\varphi_2)$, are found in the Great Pyramid Design, as well as the design value of Pyramid Pi (π_p).

- GP $Phi_1(\varphi_1) = (14/11)^2 = (4/\pi_p)^2 = (1.27272\cdot\cdot)^2 = 1.6198347$ error 0.11%
- GP $Slope_1$ = invtan $\sqrt{\varphi_1}$ = invtan 1.27272··· = 51° 50' 34" ≅ 51° 51'

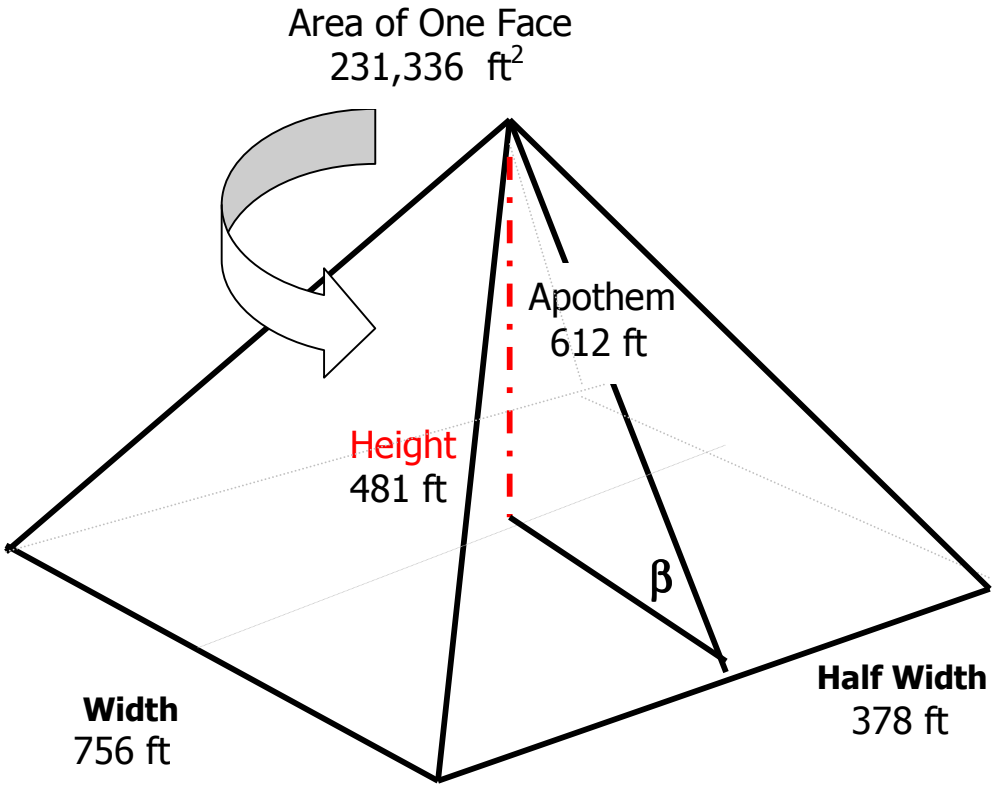
- GP $Phi_2 = \varphi_2 = 612/378 = 34/21 = (1.272418)^2 = 1.6190476$ error 0.06%
- GP $Slope_2$ = invtan $\sqrt{\varphi_2}$ = invtan 1.27241·· = 51° 50' 10" ≅ 51° 50'

- GP Half Pi = 594'/378' = $\pi_p/2$ = 11/7 = 1.5714286 ····· ∴
  GP Pi = π_p = 22/7 = 3.142857···

- GP Base Half-Width = 378 ft. ∴ Base width = 756 ft.
- GP Baseline Perimeter = 4 x 756 ft. = 2 x 1512 ft. = 3024 ft.
- GP Apothem Length (apex to baseline midpoint) = 612 ft.

- GP Height = sq.rt. of the facial area of one face of the pyramid.
  GP Height = √(612' x 378') = √(231,336) = **481** ft.

- GP Height = $\sqrt{(612^2 - 378^2)}$ = 481.3 feet ≅ 481 ft. (Pythagoras)
- GP Height = Perimeter/$2\pi_p$ = 3024′/ $2\pi_p$ = 481 ft.



Face to Base Ratio = GP Phi_2 (φ_2)

4 Face Areas: Base Area = 4(231,336 ft^2):(756 ft)^2 = 1.6190476
GP Phi_2 (φ_2) = 612/378 = 34/21 = $(1.272418)^2$ =1.6190476 error 0.06%
Inverse Cosine β = Inverse cosine (378 ft / 612 ft) = 51° 51′ 20′