Table 1

BBS-ISL Matrix: Factor Pairs Sets & Rows and Columns on the Lower Half of a 35x35

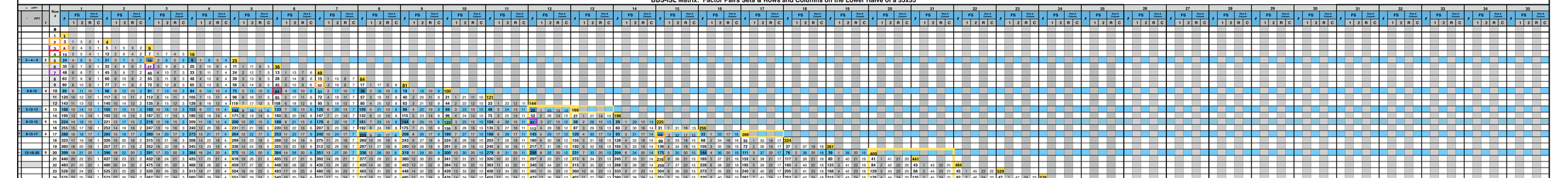

Table : This Table brings together the lower half of the the standard, symmetrical **BBS-ISL Matrix** along with one of its **sub-Matrix** expressions: that of the **Factor Pair Sets** and the **Rows** & **Columns**.

Key: **PPT= - Primitive Pythagorean Triple**, **nPPT=nonPrimitive Pythagorean Triple**. *n*=EVEN # where *n*%2=*t*. **FS=FPS=Factor Pair Set** for Inner Grid (IG) Number (#). Every # has one or more **FPSs**. **FS 1** = 1st # in **FPS**, **FS 2**= 2nd # in **FPS**. **R=Row**, **C=Column**. **Row** (vertical Axis) and **Column** (horizontal Axis) that the IG# intersects on. The BLUE horizontal color bands=**Pythagorean Triples (PTs)**. The Prime Diagonal (PD) in YELLOW, formed from the Axis (**Row**) x Axis (**Column**) is in larger **BOLD** font at the Top of the table for each **Column** header. The Numbers (#s) within the IG of the **Matrix** are in **BOLD** font along the left side of each PD #. Every IG# = **FS1 x FS2** (by **Factor Pair** definition). Every **Row** & **Column #**, and, every **FS1** & **FS2 #**, is inter-related: (**FS1 + FS2**)/2 = **Row #** and (**FS2 - FS1**)/2 = **Column #**. Any SQUARED IG# is also found on the PD, and, is one squared side of a **PT** (shown as colored cells). A **PT Row** contains another type of **Pair Set**, the *b²* and *a²* shorter sides of the triangle, with the *c²* value at the intersection of that **Row** with the PD. The **FS1** of each of those two **Pair Sets** — the *b²* and *a²* squared #s — is equal to the "*s*" & "*t*" values of the *Dickson Method* (**DM**) for algebraically calculating ALL **PT**s as: *n*=EVEN # where *n*%2=*t* is satisfied, such that side "*a*"= *r + s*, side "*b*"= *r + t*, and side "*c*" = *r + s + t*.

For example: 3—4—5 **PT**, with an *n*=2 value, has *b²*= 16 with **FS1** = 1 = *t*. The 1 and 2 values are BOTH the **FPS** values of **FS1** (one for each), and, are the *s* & *t* values of the **DM** calculation (*r*=2*st*=2*t*(2=*t*)(1)/2)). ALL **PT**s follow this same pattern. One can take the sum (Σ) of the (**FS2a + Col-a**) + (**FS2b + Col-b**) all x *r*/2 = 4A = 4 x Area of that **PT**, and that 4A # will be on THAT **PT ROW**.

For example: 3—4—5: [**FS2a + Col-a**) + (**FS2b + Col-b**)] x *r*/2 = [8 + 3) + (9 + 4)] x 2/2 = 24 = 4A = 1st # on the **Row 5**. This, too, works for all **PT**s (though the location of 4A is dependent on *f*, where *f*= *b - a = t - s* = **FS1a - FS1b**, where *f²* = 4A = *c²* in the proof of any **PT**.).

Exponentials also follow some very simple patterned sequenced steps but that requires a far larger **Matrix** Table to more fully demonstrate. In a nutshell: exponential X² is, of course, that which forms the PD. All other X^, where ^ = 3, 4, 5, ….are found on the **Parallel Diagonals** (1st, 2nd, 3rd,…diagonals parallel to the PD) starting from the left **ROW** Axis. For example: 2² = 8, 2^ = 16, 2^ = 32, ….starts at **Row #2** (YELLOW-ORANGE), and following the 2nd **Parallel Diagonal**, 8—16—32=…, ….exponentials are found. Dropping down to **Row #4** (ORANGE-RED) to find the 4^, 4^,…. exponentials, and so on (5-in GREEN, 6-in ORANGE, 7 in PURPLE before we run out of Matrix). This is the pattern "within" exponentials, i.e. X= constant # and the exponential ^ varies. A different, but fascinating pattern occurs "across" exponentials, as well. Here X varies while the exponential ^ remains constant. As noted above, the "within" exponential pattern falls on Parallel Diagonals with equal number of cell steps down from the PD. The slope of the line connecting the "across" exponentials is different (steeper). Additionally, each exponential value predicts the location of the next. See the **Exponentials Table**.

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