Table 2d

Tertiary Tree of Primitive Pythagorean Triples

Trunk								A÷7	1st Tertiary Branch								A÷7	2nd Tertiary Branches								A÷7	3rd Tertiary Branches								A÷7
PPT	*r*	*s*	*t*	A	4A	8A	*f*		PPT	*r*	*s*	*t*	A	4A	8A	*f*		PPT	*r*	*s*	*t*	A	4A	8A	*f*		PPT	*r*	*s*	*t*	A	4A	8A	*f*	
									5-12-13	4	1	8	30	120	240	7		7-24-25	6	1	18	84	336	672	17	✓									
																		48-55-73	30	18	25	1320	5280	10560	7									
																		28-45-53	20	8	25	630	2520	5040	17	✓								
																		39-80-89	30	9	50	1560	6240	12480	41									
3-4-5	2	1	2	6	24	48	1		20-21-29	12	8	9	210	840	1680	1	✓	119-120-169	70	49	50	7140	28560	57120	1	✓	696-697-985	408	288	289	242556	970224	1940448	1	
																		36-77-85	28	8	49	1386	5544	11088	41	✓								
																		33-56-65	24	9	32	924	3696	7392	23	✓								
									8-15-17	6	2	9	60	240	480	7		65-72-97	40	25	32	2340	9360	18720	7									
																		12-35-37	10	2	25	210	840	1680	23	✓								

Making the "2nd" -Tertiary Branches

The sum, ∑, of **5-12-13** = 30 and becomes the *r*-value of **MIDDLE BLUE**

The sum, ∑, of **20-21-29** = 70 and becomes the *r*-value of **MIDDLE RED**

The sum, ∑, of **8-15-17** = 40 and becomes the *r*-value of **MIDDLE BLUE**

The Factor Pairs of 4A become r-values

The larger *s* or *t* of the **PURPLE** becomes the *s,t* values of the **MIDDLE BLUE**

The larger *s* or *t* of the **YELLOW** becomes the *s,t* values of the **MIDDLE RED**

The larger *s* or *t* of the **GREEN** becomes the *s,t* values of the **MIDDLE BLUE**

The *f*-value as $f = b - a$, remains constant within a given color, e.i. RED=1, BLUE=7, PURPLE=17, GREEN=23, YELLOW=41,…

Table 2d

Key: PPT=Primitive Pythagorean Triple; *r*=even # such that $r^2/2=st$ where *s,t* are Factor Pairs; A=Area; 4A=4Area; 8A=8Area; $f=b-a$ & $f^2=(b-a)^2$, as $a^2 + b^2 = c^2 = 4A + f^2 = (8A + f^2) - 4A$

The Tree of Pythagorean Triples branches from the **3-4-5 PPT** trunk first into a 3-part main branch, each of which further branches into 2nd, 3rd, 4th, …, tertiary branches. Each tertiary follows the lead *f*-value of its predecessor, but is actually formed as an intermediary to the upper and lower branches of which it is a part. All **PPT**s — with no repeats — are to be found. ***Pythagoras*** first discovered the UPPER branch sequence, ***Plato*** (a century later) discovered the LOWER branch sequence. The MIDDLE branch sequence follows as an intermediary, hybrid sequence of the UPPER and LOWER.

Using the *Expanded Dickson Method* on the **BBS-ISL Matrix**, every **PPT** branch is accounted for by the previous branch. This is done by enlisting the *r,s,t*,A,4A,8A,*f* associated values. All these values are derived directly from the respective **PTT** by both algebra and geometry. In **Table 2a** we looked at the overall. In **Table 2b**, we examine how the UPPER and LOWER branches (blue) are made from the trunk (red). In **Table 2c**, we see how the MIDDLE branch (red) is formed from the UPPER and LOWER (blue) branches and the trunk (red). As a fractal, this ***Number Pattern Sequence*** that defines the first branchings, continues through the entire tree. **Table 2d** shows BLUE branching to **2nd Tertiary Branches**. **Table 2e** reveals the power of *f*. **Table 2f** tells all.