

### Tertiary Tree of Primitive Pythaorean Triples

Trunk										1st Tertiary Branch										2nd Tertiary Branches										3rd Tertiary Branches										4th Tertiary Branches															
PPT	r	s	t	A	4A	8A	P	f	U+c-p	PPT	r	s	t	A	4A	8A	P	f	U+c-p	PPT	r	s	t	A	4A	8A	P	f	U+c-p	PPT	r	s	t	A	4A	8A	P	f	U+c-p	PPT	r	s	t	A	4A	8A	P	f	U+c-p						
3-4-5	2	1	2	6	24	48	12	1	1	20-21-29	12	8	9	210	840	1680	70	1	5	119-120-169	70	49	50	7140	28560	57120	408	1	29	696-697-985	408	288	289	242556	970224	1940448	2378	1	169	4059-4060-5741	2378	1681	1682	32959080	138860	1	985	1275-2668-2957	985	289	1682	6803400	6900	1393	985

**Summary**

Following U/c=p:  
 The U/c=p defines the COMMON DIAGONAL of the GOLDEN TREE SQUARE to its AXIS.  
 $U = s^2 + t^2 = cp$   
 $p = U/c$

Each Tertiary Branch cluster segment has the SAME p-value-AND-equals the previous c-value of the Branch from which it came.  
 That p-value relates back to the previous, larger Branch from which it came by multiples of 4.

**Table 2k**

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

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 PPTs - 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 PPT 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. Table 2g-h follows Table 2f and p. In Table 2i-j, the 4th Tertiary Branch is added.

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