Table 2j

Tertiary Tree of Primitive Pythaorean Triples

Trunk									U÷c—p	1st Tertiary Branch									U÷c—p	2nd Tertiary Branches									U÷c—p	3rd Tertiary Branches									U÷c—p	4th Tertiary Branches									U÷c—p
PPT	r	s	t	A	4A	8A	P	f		PPT	r	s	t	A	4A	8A	P	f		PPT	r	s	t	A	4A	8A	P	f		PPT	r	s	t	A	4A	8A	P	f		PPT	r	s	t	A	4A	8A	P	f	
																				7-24-25	6	1	18	84	336	672	56	17	13	9-40-41	8	1	32	180	720	1440	90	31	25	11-60-61	10	1	50		1320		132	49	41
																																								140-171-221	90	50	81		47880		532	31	41
																																								104-153-185	72	32	81		31824		442	49	41
																																								152-345-377	120	32	225		104880		874	193	137
																													88-105-137	56	32	49	4620	18480	36960	330	17	25	555-572-797	330	225	242		634920		1924	17	137
																																								203-396-445	154	49	242		160776		1044	193	137
																																								189-340-389	140	49	200		128520		918	151	109
																													60-91-109	42	18	49	2730	10920	21840	260	31	25	429-460-629	260	169	200		394680		1518	31	109
																																								96-247-265	78	18	169		47424		608	151	109
																																								120-391-409	102	18	289		93840		920	271	205
																													84-187-205	66	18	121	7854	31416	62832	476	103	73	765-868-1157	476	289	392		1328040		2790	103	205
																																								429-700-821	308	121	392		600600		1950	271	205
																																								539-1140-1261	418	121	722		1228920		2940	601	425
										5-12-13	4	1	8	30	120	240	30	7	5	48-55-73	30	18	25	1320	5280	10560	176	7	13	297-304-425	176	121	128	45144	180576	361152	1026	7	73	1748-1755-2477	1026	722	729		6135480		5980	7	425
																																								560-1161-1289	432	128	729		1300320		3010	601	425
																																								464-777-905	336	128	441		721056		2146	313	233
																													105-208-233	80	25	128	10920	43680	87360	546	103	73	884-987-1325	546	338	441		1745016		3196	103	233
																																								155-468-493	130	25	338		145080		1116	313	233
																													95-168-193	70	25	98	7980	31920	63840	456	73	53	145-408-433	120	25	288		118320		986	263	193
																																								744-817-1105	456	288	361		1215696		2666	73	193
																																								364-627-725	266	98	361		456456		1716	263	193
																																								420-851-949	322	98	529		714840		2220	431	305
																													207-224-305	126	81	98	23184	92736	185472	736	17	53	1248-1265-1777	736	512	529		3157440		4290	17	305
																																								369-800-881	288	81	512		590400		2050	431	305
																																								279-440-521	198	81	242		245520		1240	161	125
																													44-117-125	36	8	81	2574	10296	20592	286	73	53	455-528-697	286	169	242		480480		1680	73	125
																																								60-221-229	52	8	169		26520		510	161	125
																																								68-285-293	60	8	225		38760		646	217	173
																													52-165-173	44	8	121	4290	17160	34320	390	113	85	615-728-953	390	225	338		895440		2296	113	173
																																								407-624-745	286	121	338		507936		1776	217	173
																																								561-1240-1361	440	121	800		1391280		3162	679	481
																													319-360-481	198	121	162	57420	229680	459360	1160	41	85	1960-2001-2801	1160	800	841		7843920		6762	41	481
																																								684-1363-1525	522	162	841		1864584		3572	679	481
																																								612-1075-1237	450	162	625		1315800		2924	463	337
																													175-288-337	126	49	162	25200	100800	201600	800	113	85	1312-1425-1937	800	512	625		3739200		4674	113	337
																																								273-736-785	224	49	512		401856		1794	463	337
																																								315-988-1037	266	49	722		622440		2340	673	505
																													217-456-505	168	49	288	49476	197904	395808	1178	239	169	1900-2139-2861	1178	722	961		8128200		6900	239	505
																																								1032-1705-1993	744	288	961		3519120		4730	673	505
																																								1272-2665-2953	984	288	1681		6779760		6890	1393	985
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		13860	1	985
																																								1275-2668-2957	986	289	1682		6803400		6900	1393	985
																																								1037-1716-2005	748	289	968		3558984		4758	679	509
																													220-459-509	170	50	289	50490	201960	403920	1188	239	169	1917-2156-2885	1188	729	968		8266104		6958	239	509
																																								320-999-1049	270	50	729		639360		2368	679	509
																																								280-759-809	230	50	529		425040		1848	479	349
																													180-299-349	130	50	169	26910	107640	215280	828	119	89	1357-1476-2005	828	529	648		4005864		4838	119	349
																																								637-1116-1285	468	169	648		1421784		3038	479	349
																																								715-1428-1597	546	169	882		2042040		3740	713	505
																													336-377-505	208	128	169	63336	253344	506688	1218	41	89	2059-2100-2941	1218	841	882		8647800		7100	41	505
																																								592-1305-1433	464	128	841		1545120		3330	713	505
																																								432-665-793	304	128	361		574560		1890	233	185
																													57-176-185	48	9	128	5016	20064	40128	418	119	89	660-779-1021	418	242	361		1028280		2460	119	185
																																								75-308-317	66	9	242		46200		700	233	185
																																								69-260-269	60	9	200		35880		598	191	149
																													51-140-149	42	9	98	3570	14280	28560	340	89	65	540-629-829	340	200	289		679320		1998	89	149
																																								336-527-625	238	98	289		354144		1488	191	149
																																								448-975-1073	350	98	625		873600		2496	527	373
																													252-275-373	154	98	121	34650	138600	277200	900	23	65	1525-1548-2173	900	625	648		4721400		5246	23	373
																																								517-1044-1165	396	121	648		1079496		2726	527	373
																																								451-780-901	330	121	450		703560		2132	329	241
																													120-209-241	88	32	121	12540	50160	100320	570	89	65	931-1020-1381	570	361	450		1899240		3332	89	241
																																								184-513-545	152	32	361		188784		1242	329	241
																																								200-609-641	168	32	441		243600		1450	409	305
																													136-273-305	104	32	169	18564	74256	148512	714	137	97	1155-1292-1733	714	441	578		2984520		4180	137	305
																																								611-1020-1189	442	169	578		1246440		2820	409	305
																																								741-1540-1709	572	169	968		2282280		3990	799	565
																													396-403-565	234	162	169	79794	319176	638352	1364	7	97	2325-2332-3293	1364	961	968		10843800		7950	7	565
																																								720-1519-1681	558	162	961		2187360		3920	799	565
																													115-252-277	90	25	162	14490	57960	115920	644	137	97	1036-1173-1565	644	392	529		2430456		3774	137	277
																																								576-943-1105	414	162	529		1086336		2624	367	277
																																								165-532-557	140	25	392		175560		1254	367	277
																																								135-352-377	110	25	242		95040		864	217	157
																													85-132-157	60	25	72	5610	22440	44880	374	47	37	616-663-905	374	242	289		816816		2184	47	157
																																								276-493-565	204	72	289		272136		1334	217	157
																																								300-589-661	228	72	361		353400		1550	289	205
																				12-35-37	10	2	25	210	840	1680	84	23	17	133-156-205	84	49	72	10374	41496	82992	494	23	37	832-855-1193	494	338	361		1422720		2880	23	205
																																								231-520-569	182	49	338		240240		1320	289	205
																																								161-240-289	112	49	128		77280		690	79	65
																													16-63-65	14	2	49	504	2016	4032	144	47	37	225-272-353	144	81	128		122400		850	47	65
																																								20-99-101	18	2	81		39600		220	79	65

Summary

Following U/c=p:

The U/c=p defines the ***COMMON DIAGONAL*** of the ***GOLDEN TREE QUARE*** 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**.

The differences, Δ, in the ***p-values****: 4th-1stTert.

Δ 41-16= 25
Δ137-112= 25 Δ25-12=13 Δ13-8=5 Δ5-4=1
Δ109- 84= 25
~~~
Δ205-132= 73
Δ425-352= 73 Δ73-60=13 Δ13-8=5 Δ5-4=1
Δ233-160= 73
~~~
Δ193-140= 53
Δ305-252= 53 Δ53-40=13 Δ13-8=5 Δ5-4=1
Δ125- 72= 53

Δ173- 88= 85
Δ481-396= 85 Δ85-56=29 Δ29-24=5 Δ5-4=1
Δ337-252= 85
~~~
Δ505-336=169
Δ985-816=169 Δ169-140=29 Δ29-24=5 Δ5-4=1
Δ509-340=169
~~~
Δ349-260= 89
Δ505-416= 89 Δ89-60=29 Δ29-24=5 Δ5-4=1
Δ185- 96= 89
~~~

Δ 149-84= 65
Δ373-308= 65 Δ65-48=17 Δ17-12=5 Δ5-4=1
Δ241-176= 65
~~~
Δ305-208= 97
Δ565-468= 97 Δ97-80=17 Δ17-12=5 Δ5-4=1
Δ277-180= 97
~~~
Δ157-120= 37
Δ205-168= 37 Δ37-20=17 Δ17-12=5 Δ5-4=1
Δ 65-28= 37
~~~

3rd-2nd-1st Tertiary Branches

Δ 25-12=13
Δ 73-60=13 Δ13-8=5 Δ5-4=1
Δ 53-40=13
~~~
Δ 85-56=29
Δ 169-140=29 Δ29-24=5 Δ5-4=1
Δ 89-60=29
~~~
Δ 65-48=17
Δ 97-80=17 Δ17-12=5 Δ5-4=1
Δ 37-20=17

*The Δ between (the Δ in the Middle Branch Cluster) - ∑ of the (Upper + Lower Branch Cluster) = ΔP - $P_{previous}$

Example from top: (112) - (16 + 84) = 12 = Δ25-13

Table 2j

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

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