BBS-ISL Matrix

To find the Row/Column placement of any Inner Grid (IG) number (#):

STEPS:

1. find Factors
2. add Factors, divide by 2 = Row #
3. confirm by determining Col #
    - a. divide IG # by larger Factor (or simply take the smaller Factor)
    - b. subtract the resulting quotient from the Row # = Col #
    - c. verify by finding the Δ between the two PD #s

Ex: 33 (Two Factor Sets, example for Factor Set: 3,11 only*)

1. Factors: 3, 11—(1,33)
2. Row: 3 + 11 = 14, 14 ÷ 2 = 7 = Row 7
3. Column - confirm & verify:
    - a. Divide: 33 ÷ 11 = 3
    - b. Subtract: 7 - 3 = 4 = Col 4
    - c. verify: $7^2 - 4^2 = 49 - 16 = 33$

Therefore: IG# 33 appears 2 times on the IG at:

- Row 7, Col 4
- Row 17, Col 16 (* see note @ bottom)

Ex: 96 (Five Factor Sets, example for four Factor Sets only)

1. Factors: 2,48—3,32—4,24—8,12—(1,96)
2. Row:
   - 2 + 48 = 50, 50 ÷ 2 = 25 = Row 25
   - 3 + 32 = 35, 35 ÷ 2 = 17.5 = RowXXXX (Is NOT whole integer #)
   - 4 + 24 = 28, 28 ÷ 2 = 14 = Row 14
   - 8 + 12 = 20, 20 ÷ 2 = 10 = Row 10
3. Column - confirm & verify:
   - a. Divide:
     - 96 ÷ 48 = 2
     - xxx skip because not whole integer #
     - 96 ÷ 24 = 4
     - 96 ÷ 12 = 8
   - b. Subtract:
     - 25 - 2 = 23 = Col 23
     - xxx
     - 14 - 4 = 10 = Col 10
     - 10 - 8 = 2 = Col 2
   - c. verify:
     - $25^2 - 23^2 = 625 - 529 = 96$
     - xxx
     - $14^2 - 10^2 = 196 - 100 = 96$
     - $10^2 - 2^2 = 100 - 4 = 96$

Therefore: IG# 96 appears 4 times on the IG. The three examples at:

- Row 25, Col 23
- Row/Col XXX (skip because not whole integer #)
- Row 14, Col 10
- Row 10, Col 2
- (*see note @ bottom re: 1,96)

SIMPLIFICATION

SIMPLIFICATION:

1. ∑ Factors ÷ 2 = Row #
2. Row # - Factor # = Col #
3. verify PD - PD = IG #

Ex: 96 (Factors: 1,96—2,48—3,32—4,24—8,12)

Factors: 2,48

1. ∑ Factors ÷ 2 = Row #:
   - (2 + 48) ÷ 2= Row 25
2. Row # - Factor # = Col #:
   - 25 - 2 = Column 23
3. verify PD - PD = IG#:
   - $25^2 - 23^2 = 625 - 529 = 96$

Therefore: IG# 96 Appears on the IG at:

- Row 25, Col 23

Factors: 3,32

1. ∑ Factors ÷ 2 = Row #:
    - xxx (no IG# with this Factor Set)

Factors: 4,24

1. ∑ Factors ÷ 2 = Row #:
   - (4 + 24) ÷ 2= Row 14
2. Row # - Factor # = Col #:
   - 14 - 4 = Column 10
3. verify PD - PD = IG#:
   - $14^2 - 10^2 = 196 - 100 = 96$

Therefore: IG# 96 appears on the IG at:

- Row 14, Col 10

Factors: 8,12

1. ∑ Factors ÷ 2 = Row #:
   - (8 + 12) ÷ 2= Row 10
2. Row # - Factor # = Col #:
   - 10 - 8 = Column 2
3. verify PD - PD = IG#:
   - $10^2 - 2^2 = 100 - 4 = 96$ on the IG at:
4. Row 10, Col 2

Ex: 1125

Factors: (1, 1125)

Factors: (3, 375)

Factors: (5, 225)

Factors: (9, 125)

Factors: (15, 75)

Factors: (25, 45)

1. ∑ Factors ÷ 2 = Row #:
   - (1 + 1125) ÷ 2 = Row 563
   - (3 + 375) ÷ 2 = Row 189
   - (5 + 225) ÷ 2 = Row 115
   - (9 + 125) ÷ 2 = Row 67
   - (15 + 75) ÷ 2 = Row 45
   - (25 + 45) ÷ 2 = Row 35
2. Row # - Factor # = Col #:
   - Row 563 - 1 = Col 562
   - Row 189 - 3= Col 186
   - Row 115 - 5 = Col 110
   - Row 67 - 9 = Col 58
   - Row 45 - 15 = Col 30
   - Row 35 - 25 = Col 10
3. verify by PD - PD = IG#:
   - $563^2 - 562^2$ = 316,969 - 315,844 = 1125
   - $189^2 - 186^2$ = 35,721 - 34,596 = 1125
   - $115^2 - 110^2$ = 13,225 - 12,100 = 1125
   - $67^2 - 58^2$ = 4,489 - 3,364 = 1125
   - $45^2 - 30^2$ = 2,025 - 900 = 1125
   - $35^2 - 10^2$ = 1,225 - 100 = 1125

Therefore: IG# 1125 appears 6 times on the IG at:

- Row 563, Col 562
- Row 189, Col 186

- Row 115, Col 110
- Row 67, Col 58
- Row 45, Col 30
- Row 35, Col 10

*The Factor Set that includes 1,X where X = the IG#,
ALWAYS lies on the 1st Parallel Diagonal (3,5,7,..) if ODD;
and,if X=EVEN IG#, it will NOT be on the matrix grid, as 1+EVEN # = ODD #,
e.i. IG# 33, using Factor Set 1,33, resolves to Row 17 Col 16,
while IG# 8 does NOT have a Row/Col presence with Factor Set 1,8 as it does NOT resolve to a whole number.

FURTHUR INSIGHTS

In the *Dickson Method* for calculating ALL **Pythagorean Triples (PTs)**, factors, as Paired Factor Sets (*s, t*), come into play as:

- letting *r*=EVEN #, such that $r^2 = 2st$ is satisfied,
- gives $a = r + s$, $b = r + t$, and $c = r + s + t$
- and ALL PTs can be found.

In **Exponentials**, factors also come into play as Factor Sets (s,t) — useful for finding the Axis Row and Column locations for any given exponential X^z value on the IG, where X = 1—2–3—… and z = 1—2—3—….

The SIMPLIFICATION method shown above is really:

- (s + t) / 2* = Row #
- Row # - *s* = Col. # = (*t* - *s*) / 2

Ex: 96 (Factors:4,24)

- *(s + t) / 2* = Row # = (4 + 24) / 2 = 14
- *(t - s) / 2* = Col. # = (24 - 4) / 2 = 10

Therefore: IG# 96 appears on the IG at:

- Row 14, Col 10

Furthermore, you can work back in REVERSE, if you know the IG exponential value,:

- divide *t* / *s*, until it reaches the *s* value,
- add the # of divisions + 1 (for the *s* value itself), and
- the ∑ will equal the exponential z-value of X, where X = *s* value.

This ONLY works for Exponential IG #s.

Ex: 96 (Factors: 4,24) Does not work— NOT an exponential

Ex: 32 (Factors: 2, 16)

- 16 /2 — 8 /2—4 /2—2 /2—2 = 4 + 1 divisions = 5 = z
- X = *s* = 2
- $X^z = 2^5 = 32$

Therefore: IG# 32 = 2^5

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
1	**1**	3	8	15	24	35	48	63	80	99	120	143	168	195	224	255	288	323	360	399	440	483	528	575	624	675	728	783	840	899	960	1023	1088	1155	1224	1
2	3	**4**	5	12	21	32	45	60	77	96	117	140	165	192	221	252	285	320	357	396	437	480	525	572	621	672	725	780	837	896	957	1020	1085	1152	1221	2
3	8	5	**9**	7	16	27	40	55	72	91	112	135	160	187	216	247	280	315	352	391	432	475	520	567	616	667	720	775	832	891	952	1015	1080	1147	1216	3
4	15	12	7	**16**	9	20	33	48	65	84	105	128	153	180	209	240	273	308	345	384	425	468	513	560	609	660	713	768	825	884	945	1008	1073	1140	1209	4
5	24	21	16	9	**25**	11	24	39	56	75	96	119	144	171	200	231	264	299	336	375	416	459	504	551	600	651	704	759	816	875	936	999	1064	1131	1200	5
6	35	32	27	20	11	**36**	13	28	45	64	85	108	133	160	189	220	253	288	325	364	405	448	493	540	589	640	693	748	805	864	925	988	1053	1120	1189	6
7	48	45	40	33	24	13	**49**	15	32	51	72	95	120	147	176	207	240	275	312	351	392	435	480	527	576	627	680	735	792	851	912	975	1040	1107	1176	7
8	63	60	55	48	39	28	15	**64**	17	36	57	80	105	132	161	192	225	260	297	336	377	420	465	512	561	612	665	720	777	836	897	960	1025	1092	1161	8
9	80	77	72	65	56	45	32	17	**81**	19	40	63	88	115	144	175	208	243	280	319	360	403	448	495	544	595	648	703	760	819	880	943	1008	1075	1144	9
10	99	96	91	84	75	64	51	36	19	**100**	21	44	69	96	125	156	189	224	261	300	341	384	429	476	525	576	629	684	741	800	861	924	989	1056	1125	10
11	120	117	112	105	96	85	72	57	40	21	**121**	23	48	75	104	135	168	203	240	279	320	363	408	455	504	555	608	663	720	779	840	903	968	1035	1104	11
12	143	140	135	128	119	108	95	80	63	44	23	**144**	25	52	81	112	145	180	217	256	297	340	385	432	481	532	585	640	697	756	817	880	945	1012	1081	12
13	168	165	160	153	144	133	120	105	88	69	48	25	**169**	27	56	87	120	155	192	231	272	315	360	407	456	507	560	615	672	731	792	855	920	987	1056	13
14	195	192	187	180	171	160	147	132	115	96	75	52	27	**196**	29	60	93	128	165	204	245	288	333	380	429	480	533	588	645	704	765	828	893	960	1029	14
15	224	221	216	209	200	189	176	161	144	125	104	81	56	29	**225**	31	64	99	136	175	216	259	304	351	400	451	504	559	616	675	736	799	864	931	1000	15
16	255	252	247	240	231	220	207	192	175	156	135	112	87	60	31	**256**	33	68	105	144	185	228	273	320	369	420	473	528	585	644	705	768	833	900	969	16
17	288	285	280	273	264	253	240	225	208	189	168	145	120	93	64	33	**289**	35	72	111	152	195	240	287	336	387	440	495	552	611	672	735	800	867	936	17
18	323	320	315	308	299	288	275	260	243	224	203	180	155	128	99	68	35	**324**	37	76	117	160	205	252	301	352	405	460	517	576	637	700	765	832	901	18
19	360	357	352	345	336	325	312	297	280	261	240	217	192	165	136	105	72	37	**361**	39	80	123	168	215	264	315	368	423	480	539	600	663	728	795	864	19
20	399	396	391	384	375	364	351	336	319	300	279	256	231	204	175	144	111	76	39	**400**	41	84	129	176	225	276	329	384	441	500	561	624	689	756	825	20
21	440	437	432	425	416	405	392	377	360	341	320	297	272	245	216	185	152	117	80	41	**441**	43	88	135	184	235	288	343	400	459	520	583	648	715	784	21
22	483	480	475	468	459	448	435	420	403	384	363	340	315	288	259	228	195	160	123	84	43	**484**	45	92	141	192	245	300	357	416	477	540	605	672	741	22
23	528	525	520	513	504	493	480	465	448	429	408	385	360	333	304	273	240	205	168	129	88	45	**529**	47	96	147	200	255	312	371	432	495	560	627	696	23
24	575	572	567	560	551	540	527	512	495	476	455	432	407	380	351	320	287	252	215	176	135	92	47	**576**	49	100	153	208	265	324	385	448	513	580	649	24
25	624	621	616	609	600	589	576	561	544	525	504	481	456	429	400	369	336	301	264	225	184	141	96	49	**625**	51	104	159	216	275	336	399	464	531	600	25
26	675	672	667	660	651	640	627	612	595	576	555	532	507	480	451	420	387	352	315	276	235	192	147	100	51	**676**	53	108	165	224	285	348	413	480	549	26
27	728	725	720	713	704	693	680	665	648	629	608	585	560	533	504	473	440	405	368	329	288	245	200	153	104	53	**729**	55	112	171	232	295	360	427	496	27
28	783	780	775	768	759	748	735	720	703	684	663	640	615	588	559	528	495	460	423	384	343	300	255	208	159	108	55	**784**	57	116	177	240	305	372	441	28
29	840	837	832	825	816	805	792	777	760	741	720	697	672	645	616	585	552	517	480	441	400	357	312	265	216	165	112	57	**841**	59	120	183	248	315	384	29
30	899	896	891	884	875	864	851	836	819	800	779	756	731	704	675	644	611	576	539	500	459	416	371	324	275	224	171	116	59	**900**	61	124	189	256	325	30
31	960	957	952	945	936	925	912	897	880	861	840	817	792	765	736	705	672	637	600	561	520	477	432	385	336	285	232	177	120	61	**961**	63	128	195	264	31
32	1023	1020	1015	1008	999	988	975	960	943	924	903	880	855	828	799	768	735	700	663	624	583	540	495	448	399	348	295	240	183	124	63	**1024**	65	132	201	32
33	1088	1085	1080	1073	1064	1053	1040	1025	1008	989	968	945	920	893	864	833	800	765	728	689	648	605	560	513	464	413	360	305	248	189	128	65	**1089**	67	136	33
34	1155	1152	1147	1140	1131	1120	1107	1092	1075	1056	1035	1012	987	960	931	900	867	832	795	756	715	672	627	580	531	480	427	372	315	256	195	132	67	**1156**	69	34
35	1224	1221	1216	1209	1200	1189	1176	1161	1144	1125	1104	1081	1056	1029	1000	969	936	901	864	825	784	741	696	649	600	549	496	441	384	325	264	201	136	69	**1225**	35

BROOKS (BASE) SQUARE: BBS-ISL MATRIX 35x35 *All numbers are related...even the ones that are not*

BBS-ISL Matrix: 35x35