

2569 Joys of Childhood



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Instructions

Thank you for choosing Golden Kite products!
We hope you will have lots of fun with this cross-stitch pattern!

Fabric

Press the fabric with an iron if needed. A good thing to prevent the fabric from fraying is to machine zigzag the edges.

On large patterns, it is easiest to start from the upper left corner of the design. Make sure you have the proper margins before starting and that the fabric piece is of the correct size. The best way to verify this is to count all stitch positions on the fabric from the upper left corner downwards and to the right to make sure there is enough space for the design.

Some prefer to start in the center of the design instead. To locate the center of the fabric, fold the fabric in half both vertically and horizontally. The center is located where these two folds meet.

Stitches

Each length of DMC tread consists of six strands.

Use two of these strands for all stitches.

Note that some colors may be mixes (or blends) between two different pure colors. In that case take one strand of the two colors each and thread the two strands into the needle at the same time for stitching.

All stitches are full cross-stitches. No half-stitching and no back-stitching is necessary in this pattern.

All cross-stitches will be worked into the holes in the fabric from left to right. Always use the larger holes in the fabric for the stitches. Adjacent stitches should meet in the same hole. Make sure all stitches cross in the same direction.

Please be careful when washing the finished embroidery! The cotton thread may bleed when washed. Only hand wash it in lukewarm water. Remove excess water by roll it in a towel and lay it flat to air dry. Natural fabrics may shrink slightly when washed. We do not recommend washing the embroidery if not absolutely necessary and we take no responsibility for any damage that may occur.

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Joys of Childhood

Stitch Count	
Horizontal:	400
Vertical:	518

Recommended Fabric Color
Antique White.

This table tells the size of the pattern (without any margins) and the size of the fabric required to stitch the pattern (including recommended margins). 3 inch margins have been added on each side in the 'Including Margins' row.

The sizes are given for 14, 16 and 18 stitches per inch fabrics.

Make sure to use the 'Including Margins' row when cutting the piece of fabric to be used. Also make sure that 3 inch margins are enough for your stitching technique and add more margin areas if necessary.

	14				16				18			
	Width		Height		Width		Height		Width		Height	
	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch
Pattern:	73	28.44	94	36.96	64	24.89	83	32.34	57	22.125	74	28.75
Including Margins:	89	35	110	43	80	31	99	39	73	29	90	35
	10				12				24			
	Width		Height		Width		Height		Width		Height	
	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch
Pattern:	102	39.81	131	51.74	85	33.18	109	43.12	42	16.59	54	21.56
Including Margins:	118	46	147	58	101	40	125	50	58	23	70	28
	25				26				27			
	Width		Height		Width		Height		Width		Height	
	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch
Pattern:	40	15.92	52	20.69	39	15.31	50	19.9	37	14.74	48	19.16
Including Margins:	56	22	68	27	55	22	66	26	53	21	64	26
	28				30				32			
	Width		Height		Width		Height		Width		Height	
	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch
Pattern:	36	14.22	47	18.48	34	13.27	43	17.24	31	12.44	41	16.17
Including Margins:	52	21	63	25	50	20	59	24	47	19	57	23

Solid Color Stitches. Use two strands of the specified color for these stitches.		
Symbol	DMC	Name
5	224	Shell Pink-VY LT
■	310	Black
▣	312	Baby Blue-VY DK
⬇	317	Pewter Gray
↷	371	Mustard
	372	Mustard-LT
■	413	Pewter Gray-DK
⊕	414	Steel Gray-DK
◇	415	Pearl Gray
z	420	Hazelnut Brown-DK
▣	422	Hazelnut Brown-LT
✱	436	Tan
√	437	Tan-LT
⊕	451	Shell Gray-DK
m	452	Shell Gray-MD
↶	453	Shell Gray-LT
⌚	522	Fern Green
::	523	Fern Green-LT
=	535	Ash Gray-VY LT
⇒	543	Beige Brown-UL VY LT
⌘	611	Drab Brown
..	612	Drab Brown-LT
δ	613	Drab Brown-VY LT
◀	640	Beige Gray-VY DK
c	644	Beige Gray-MD
◆	645	Beaver Gray-VY DK
▣	646	Beaver Gray-DK
◇	647	Beaver Gray-MD
⌚	648	Beaver Gray-LT
∞	712	Cream
L	739	Tan-UL VY LT
1	746	Off White
⬆	754	Peach-LT
▷	762	Pearl Gray-VY LT
♡	775	Baby Blue-VY LT
✕	780	Topaz-UL VY DK
✧	822	Beige Gray-LT
／	831	Golden Olive-MD
=	841	Beige Brown-LT
9	842	Beige Brown-VY LT
+	844	Beaver Brown-UL DK
▣	869	Hazelnut Brown-VY DK
∨	922	Copper-LT
♣	924	Gray Green--VY DK
⊕	926	Gray Green-MD
□	927	Gray Green-LT
▣	928	Gray Green-VY LT
⊕	930	Antique Blue-DK
↑	932	Antique Blue-LT
✕	938	Coffee Brown-UL DK
↓	948	Peach-VY LT
6	950	Desert Sand-LT
)	951	Tawny-LT

◎	992	Aquamarine-MD
●	3021	Brown Gray-VY DK
⦿	3022	Brown Gray-MD
⊖	3024	Brown Gray-VY LT
<	3047	Yellow Beige-LT
⋈	3064	Desert Sand
∨	3072	Beaver Gray-VY LT
■	3371	Black Brown
⚭	3740	Antique Violet-DK
ⓔ	3752	Antique Blue-VY LT
:	3753	Antique Blue-UL VY LT
◦	3756	Baby Blue-UL VY LT
*	3768	Gray Green-DK
⦿	3772	Desert Sand-VY DK
○	3774	Desert Sand-VY LT
4	3779	Terra Cotta-UL VY LT
—	3782	Mocha Brown-LT
⋈	3787	Brown Gray-DK
L	3790	Beige Gray-UL DK
➔	3799	Pewter Gray-VY DK
▼	3809	Turquoise-VY DK
^	3823	Yellow-UL Pale
⦿	3826	Golden Brown
⓪	3828	Hazelnut Brown
⋈	3830	Terra Cotta-MD
#	3861	Cocoa-LT
Ⓢ	3864	Mocha Beige-LT
U	3865	Winter White
↑	Ecu	Ecu

Blend Stitches. Use one strand of each of DMC1 and DMC2 for these stitches.				
Symbol	DMC1	Name1	DMC2	Name2
‡	223	Shell Pink-LT	3772	Desert Sand-VY DK
●	310	Black	500	Blue Green-VY DK
●	310	Black	934	Black Avocado Green
♥	310	Black	935	Avocado Green-DK
◆	310	Black	3021	Brown Gray-VY DK
△	318	Steel Gray-LT	927	Gray Green-LT
τ	356	Terra Cotta-MD	371	Mustard
≡	356	Terra Cotta-MD	3064	Desert Sand
×	356	Terra Cotta-MD	3776	Mahogany-LT
2	372	Mustard-LT	612	Drab Brown-LT
+	372	Mustard-LT	3864	Mocha Beige-LT
◀	413	Pewter Gray-DK	501	Blue Green-DK
✕	413	Pewter Gray-DK	535	Ash Gray-VY LT
▲	413	Pewter Gray-DK	645	Beaver Gray-VY DK
×	414	Steel Gray-DK	452	Shell Gray-MD
⋈	414	Steel Gray-DK	3849	Teal Green-LT
☆	415	Pearl Gray	932	Antique Blue-LT
▲	420	Hazelnut Brown-DK	632	Desert Sand-UL VY DK
⋈	435	Brown-VY LT	3772	Desert Sand-VY DK
⓪	451	Shell Gray-DK	3861	Cocoa-LT
7	452	Shell Gray-MD	524	Fern Green-VY LT

◁	452	Shell Gray-MD	648	Beaver Gray-LT
⦿	452	Shell Gray-MD	927	Gray Green-LT
◁◁	452	Shell Gray-MD	928	Gray Green-VY LT
●	500	Blue Green-VY DK	3799	Pewter Gray-VY DK
◆	501	Blue Green-DK	645	Beaver Gray-VY DK
⦿	501	Blue Green-DK	844	Beaver Brown-UL DK
◐	501	Blue Green-DK	3768	Gray Green-DK
▼	501	Blue Green-DK	3799	Pewter Gray-VY DK
◎	502	Blue Green	535	Ash Gray-VY LT
	503	Blue Green-MD	927	Gray Green-LT
●	503	Blue Green-MD	931	Antique Blue-MD
◻	503	Blue Green-MD	3041	Antique Violet-MD
†	520	Fern Green-DK	3799	Pewter Gray-VY DK
◊	524	Fern Green-VY LT	644	Beige Gray-MD
⦿	535	Ash Gray-VY LT	645	Beaver Gray-VY DK
■	535	Ash Gray-VY LT	844	Beaver Brown-UL DK
★	535	Ash Gray-VY LT	926	Gray Green-MD
●	610	Drab Brown-DK	839	Beige Brown-DK
○	610	Drab Brown-DK	3781	Mocha Brown-DK
✱	611	Drab Brown	838	Beige Brown-VY DK
☾	611	Drab Brown	839	Beige Brown-DK
✕	611	Drab Brown	3787	Brown Gray-DK
∩	611	Drab Brown	3828	Hazelnut Brown
✕	612	Drab Brown-LT	640	Beige Gray-VY DK
∪	612	Drab Brown-LT	3064	Desert Sand
α	613	Drab Brown-VY LT	738	Tan-VY LT
△	613	Drab Brown-VY LT	739	Tan-UL VY LT
∩	613	Drab Brown-VY LT	3864	Mocha Beige-LT
☾	632	Desert Sand-UL VY DK	801	Coffee Brown-DK
◻	632	Desert Sand-UL VY DK	838	Beige Brown-VY DK
✱	632	Desert Sand-UL VY DK	3830	Terra Cotta-MD
✱	640	Beige Gray-VY DK	645	Beaver Gray-VY DK
✱	640	Beige Gray-VY DK	840	Beige Brown-MD
☾	640	Beige Gray-VY DK	3032	Mocha Brown-MD
☾	640	Beige Gray-VY DK	3740	Antique Violet-DK
☾	640	Beige Gray-VY DK	3790	Beige Gray-UL DK
☾	645	Beaver Gray-VY DK	926	Gray Green-MD
☾	645	Beaver Gray-VY DK	3768	Gray Green-DK
//	645	Beaver Gray-VY DK	3860	Cocoa
⊆	646	Beaver Gray-DK	647	Beaver Gray-MD
⊆	646	Beaver Gray-DK	926	Gray Green-MD
⊆	647	Beaver Gray-MD	926	Gray Green-MD
⊆	647	Beaver Gray-MD	3023	Brown Gray-LT
⊆	712	Cream	3072	Beaver Gray-VY LT
∩	746	Off White	3078	Golden Yellow-VY LT
∩	746	Off White	3823	Yellow-UL Pale
∩	747	Sky Blue-VY LT	3865	Winter White
?	758	Terra Cotta-VY LT	3864	Mocha Beige-LT
•	762	Pearl Gray-VY LT	3756	Baby Blue-UL VY LT
▶	801	Coffee Brown-DK	830	Golden Olive-DK
↓	801	Coffee Brown-DK	898	Coffee Brown-VY DK
↑	838	Beige Brown-VY DK	938	Coffee Brown-UL DK
☾	838	Beige Brown-VY DK	3781	Mocha Brown-DK
☾	838	Beige Brown-VY DK	3857	Rosewood-DK
☾	839	Beige Brown-DK	844	Beaver Brown-UL DK
☾	839	Beige Brown-DK	3781	Mocha Brown-DK
☾	839	Beige Brown-DK	3858	Rosewood-MD
☾	840	Beige Brown-MD	841	Beige Brown-LT
☾	840	Beige Brown-MD	3032	Mocha Brown-MD

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○	841	Beige Brown-LT	3864	Mocha Beige-LT
☼	844	Beaver Brown-UL DK	924	Gray Green--VY DK
■	924	Gray Green--VY DK	3799	Pewter Gray-VY DK
⌂	926	Gray Green-MD	3768	Gray Green-DK
⋈	927	Gray Green-LT	928	Gray Green-VY LT
田	927	Gray Green-LT	931	Antique Blue-MD
✓	927	Gray Green-LT	3849	Teal Green-LT
/	928	Gray Green-VY LT	3024	Brown Gray-VY LT
⌘	931	Antique Blue-MD	3849	Teal Green-LT
⬆	932	Antique Blue-LT	993	Aquamarine-LT
⌘	934	Black Avocado Green	3021	Brown Gray-VY DK
Ⓢ	934	Black Avocado Green	3371	Black Brown
↓	934	Black Avocado Green	3799	Pewter Gray-VY DK
☼	935	Avocado Green-DK	938	Coffee Brown-UL DK
☼	935	Avocado Green-DK	3021	Brown Gray-VY DK
☼	938	Coffee Brown-UL DK	3371	Black Brown
☼	938	Coffee Brown-UL DK	3781	Mocha Brown-DK
l	948	Peach-VY LT	3823	Yellow-UL Pale
□	951	Tawny-LT	3823	Yellow-UL Pale
▲	975	Golden Brown-DK	3857	Rosewood-DK
Ⓢ	3021	Brown Gray-VY DK	3031	Mocha Brown-VY DK
Ⓢ	3021	Brown Gray-VY DK	3051	Green Gray-DK
⌘	3021	Brown Gray-VY DK	3787	Brown Gray-DK
▲	3022	Brown Gray-MD	3032	Mocha Brown-MD
Ⓢ	3024	Brown Gray-VY LT	3072	Beaver Gray-VY LT
Ⓢ	3051	Green Gray-DK	3781	Mocha Brown-DK
h	3064	Desert Sand	3828	Hazelnut Brown
⌘	3064	Desert Sand	3864	Mocha Beige-LT
(3078	Golden Yellow-VY LT	3823	Yellow-UL Pale
⌘	3362	Pine Green-DK	3799	Pewter Gray-VY DK
Ⓢ	3371	Black Brown	3857	Rosewood-DK
h	3721	Shell Pink-DK	3863	Mocha Beige-MD
«	3756	Baby Blue-UL VY LT	3865	Winter White
▲	3768	Gray Green-DK	3815	Celadon Green-DK
Ⓢ	3772	Desert Sand-VY DK	3828	Hazelnut Brown
⬆	3772	Desert Sand-VY DK	3859	Rosewood-LT
❖	3787	Brown Gray-DK	3862	Mocha Beige-DK
∨	3859	Rosewood-LT	3864	Mocha Beige-LT

This table specifies how much thread of each color is required to stitch this pattern. It is good to know that one complete DMC skein contains 313 inches (795 cm) thread.

DMC	Name	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)
		14		16		18	
223	Shell Pink-LT	44	17	41	16	37	14
224	Shell Pink-VY LT	48	18	46	18	42	16
310	Black	2598	1022	2475	974	2227	876
312	Baby Blue-VY DK	2	1	2	1	2	1
317	Pewter Gray	101	39	96	37	87	34
318	Steel Gray-LT	65	25	62	24	56	22
356	Terra Cotta-MD	102	40	97	38	88	34
371	Mustard	137	53	130	51	117	46
372	Mustard-LT	256	100	244	96	220	86
413	Pewter Gray-DK	623	245	594	233	534	210
414	Steel Gray-DK	410	161	390	153	351	138
415	Pearl Gray	209	82	199	78	179	70
420	Hazelnut Brown-DK	282	111	269	105	242	95
422	Hazelnut Brown-LT	41	16	39	15	35	13
435	Brown-VY LT	119	46	113	44	102	40
436	Tan	126	49	120	47	108	42
437	Tan-LT	19	7	19	7	17	6
451	Shell Gray-DK	364	143	347	136	312	122
452	Shell Gray-MD	1382	544	1316	518	1185	466
453	Shell Gray-LT	815	320	776	305	699	275
500	Blue Green-VY DK	1093	430	1041	409	937	368
501	Blue Green-DK	634	249	604	237	543	213
502	Blue Green	157	61	150	59	135	53
503	Blue Green-MD	498	196	474	186	427	168
520	Fern Green-DK	134	52	128	50	115	45
522	Fern Green	13	5	12	4	11	4
523	Fern Green-LT	37	14	35	13	31	12
524	Fern Green-VY LT	512	201	488	192	439	172
535	Ash Gray-VY LT	1264	497	1204	474	1084	426
543	Beige Brown-UL VY LT	571	224	543	213	489	192
610	Drab Brown-DK	239	94	227	89	205	80
611	Drab Brown	786	309	749	294	674	265
612	Drab Brown-LT	628	247	598	235	538	211
613	Drab Brown-VY LT	1075	423	1024	403	922	362
632	Desert Sand-UL VY DK	333	131	317	124	285	112
640	Beige Gray-VY DK	1681	661	1601	630	1441	567
644	Beige Gray-MD	854	336	813	320	732	288
645	Beaver Gray-VY DK	2264	891	2156	848	1940	763
646	Beaver Gray-DK	767	301	731	287	658	259
647	Beaver Gray-MD	1325	521	1262	496	1136	447
648	Beaver Gray-LT	879	346	837	329	754	296
712	Cream	217	85	206	81	186	73
738	Tan-VY LT	132	51	126	49	113	44
739	Tan-UL VY LT	860	338	819	322	737	290
746	Off White	834	328	794	312	715	281
747	Sky Blue-VY LT	51	20	49	19	44	17
754	Peach-LT	27	10	26	10	23	9
758	Terra Cotta-VY LT	111	43	106	41	95	37
762	Pearl Gray-VY LT	164	64	156	61	141	55
775	Baby Blue-VY LT	36	14	35	13	31	12
780	Topaz-UL VY DK	13	5	13	5	12	4
801	Coffee Brown-DK	212	83	202	79	182	71
822	Beige Gray-LT	705	277	672	264	605	238

830	Golden Olive-DK	63	24	60	23	54	21
831	Golden Olive-MD	26	10	25	9	23	9
838	Beige Brown-VY DK	681	268	648	255	584	229
839	Beige Brown-DK	773	304	736	289	663	261
840	Beige Brown-MD	425	167	405	159	365	143
841	Beige Brown-LT	1468	577	1398	550	1259	495
842	Beige Brown-VY LT	574	225	547	215	492	193
844	Beaver Brown-UL DK	1081	425	1030	405	927	364
869	Hazelnut Brown-VY DK	43	16	41	16	37	14
898	Coffee Brown-VY DK	83	32	79	31	71	27
922	Copper-LT	15	5	14	5	13	5
924	Gray Green--VY DK	410	161	390	153	351	138
926	Gray Green-MD	2127	837	2026	797	1823	717
927	Gray Green-LT	1353	532	1289	507	1160	456
928	Gray Green-VY LT	946	372	901	354	811	319
930	Antique Blue-DK	14	5	14	5	12	4
931	Antique Blue-MD	189	74	180	70	162	63
932	Antique Blue-LT	165	64	157	61	141	55
934	Black Avocado Green	498	196	474	186	427	168
935	Avocado Green-DK	531	209	506	199	455	179
938	Coffee Brown-UL DK	602	237	573	225	516	203
948	Peach-VY LT	399	157	380	149	342	134
950	Desert Sand-LT	139	54	132	51	119	46
951	Tawny-LT	657	258	626	246	563	221
975	Golden Brown-DK	18	7	17	6	15	5
992	Aquamarine-MD	5	1	5	1	4	1
993	Aquamarine-LT	41	16	39	15	35	13
3021	Brown Gray-VY DK	1600	629	1524	600	1371	539
3022	Brown Gray-MD	367	144	349	137	314	123
3023	Brown Gray-LT	324	127	309	121	278	109
3024	Brown Gray-VY LT	952	374	907	357	816	321
3031	Mocha Brown-VY DK	205	80	195	76	176	69
3032	Mocha Brown-MD	581	228	553	217	498	196
3041	Antique Violet-MD	209	82	199	78	179	70
3047	Yellow Beige-LT	630	248	600	236	540	212
3051	Green Gray-DK	277	109	264	103	237	93
3064	Desert Sand	453	178	432	170	389	153
3072	Beaver Gray-VY LT	621	244	592	233	533	209
3078	Golden Yellow-VY LT	386	151	368	144	331	130
3362	Pine Green-DK	99	38	95	37	85	33
3371	Black Brown	360	141	343	135	308	121
3721	Shell Pink-DK	77	30	73	28	66	25
3740	Antique Violet-DK	164	64	157	61	141	55
3752	Antique Blue-VY LT	113	44	107	42	97	38
3753	Antique Blue-UL VY LT	92	36	87	34	79	31
3756	Baby Blue-UL VY LT	162	63	154	60	139	54
3768	Gray Green-DK	547	215	521	205	469	184
3772	Desert Sand-VY DK	551	216	525	206	472	185
3774	Desert Sand-VY LT	371	146	353	138	318	125
3776	Mahogany-LT	12	4	12	4	11	4
3779	Terra Cotta-UL VY LT	36	14	34	13	31	12
3781	Mocha Brown-DK	700	275	667	262	600	236
3782	Mocha Brown-LT	667	262	635	250	572	225
3787	Brown Gray-DK	1250	492	1190	468	1071	421
3790	Beige Gray-UL DK	505	198	481	189	433	170
3799	Pewter Gray-VY DK	1060	417	1010	397	909	357
3809	Turquoise-VY DK	12	4	12	4	11	4
3815	Celadon Green-DK	20	7	19	7	17	6
3823	Yellow-UL Pale	1430	562	1362	536	1226	482

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3826	Golden Brown	57	22	54	21	49	19
3828	Hazelnut Brown	344	135	328	129	295	116
3830	Terra Cotta-MD	17	6	16	6	15	5
3849	Teal Green-LT	92	36	88	34	79	31
3857	Rosewood-DK	162	63	154	60	139	54
3858	Rosewood-MD	116	45	110	43	99	38
3859	Rosewood-LT	108	42	103	40	93	36
3860	Cocoa	134	52	128	50	115	45
3861	Cocoa-LT	293	115	279	109	251	98
3862	Mocha Beige-DK	139	54	132	51	119	46
3863	Mocha Beige-MD	77	30	73	28	66	25
3864	Mocha Beige-LT	1327	522	1264	497	1138	448
3865	Winter White	438	172	417	164	376	148
Ecru	Ecru	225	88	214	84	193	75

Extended thread usage table.							
DMC	Name	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)
		10		12		24	
223	Shell Pink-LT	67	25	56	21	28	11
224	Shell Pink-VY LT	76	29	63	24	32	12
310	Black	4009	1577	3341	1314	1670	657
312	Baby Blue-VY DK	4	2	3	2	2	1
317	Pewter Gray	157	61	131	51	65	26
318	Steel Gray-LT	101	40	84	33	42	17
356	Terra Cotta-MD	158	61	132	51	66	26
371	Mustard	211	83	176	69	88	35
372	Mustard-LT	396	155	330	129	165	65
413	Pewter Gray-DK	961	378	801	315	401	158
414	Steel Gray-DK	632	248	527	207	263	104
415	Pearl Gray	322	126	269	105	134	53
420	Hazelnut Brown-DK	436	171	363	143	182	71
422	Hazelnut Brown-LT	63	23	53	20	26	10
435	Brown-VY LT	184	72	153	60	77	30
436	Tan	194	76	162	63	81	32
437	Tan-LT	31	11	26	9	13	5
451	Shell Gray-DK	562	220	468	183	234	92
452	Shell Gray-MD	2133	839	1778	699	889	350
453	Shell Gray-LT	1258	495	1049	413	524	206
500	Blue Green-VY DK	1687	662	1406	552	703	276
501	Blue Green-DK	977	383	815	320	407	160
502	Blue Green	243	95	203	80	101	40
503	Blue Green-MD	769	302	641	252	320	126
520	Fern Green-DK	207	81	173	68	86	34
522	Fern Green	20	7	17	6	8	3
523	Fern Green-LT	56	22	47	18	23	9
524	Fern Green-VY LT	790	310	659	258	329	129
535	Ash Gray-VY LT	1951	767	1626	639	813	320
543	Beige Brown-UL VY LT	880	346	734	288	367	144
610	Drab Brown-DK	369	144	308	120	154	60
611	Drab Brown	1213	477	1011	398	506	199
612	Drab Brown-LT	968	380	807	317	404	158
613	Drab Brown-VY LT	1660	652	1383	543	692	272
632	Desert Sand-UL VY DK	513	202	428	168	214	84
640	Beige Gray-VY DK	2594	1021	2162	851	1081	425
644	Beige Gray-MD	1318	518	1098	432	549	216
645	Beaver Gray-VY DK	3492	1373	2910	1145	1455	572

646	Beaver Gray-DK	1184	466	987	389	494	194
647	Beaver Gray-MD	2045	805	1704	671	852	335
648	Beaver Gray-LT	1357	533	1131	444	566	222
712	Cream	335	131	279	110	140	55
738	Tan-VY LT	203	79	170	66	85	33
739	Tan-UL VY LT	1327	522	1106	435	553	218
746	Off White	1287	506	1073	422	536	211
747	Sky Blue-VY LT	79	31	66	26	33	13
754	Peach-LT	41	16	35	14	17	7
758	Terra Cotta-VY LT	171	67	143	56	71	28
762	Pearl Gray-VY LT	254	99	212	83	106	41
775	Baby Blue-VY LT	56	22	47	18	23	9
780	Topaz-UL VY DK	22	7	18	6	9	3
801	Coffee Brown-DK	328	128	273	107	137	53
822	Beige Gray-LT	1089	428	908	357	454	179
830	Golden Olive-DK	97	38	81	32	41	16
831	Golden Olive-MD	41	16	35	14	17	7
838	Beige Brown-VY DK	1051	412	876	344	438	172
839	Beige Brown-DK	1193	470	995	392	497	196
840	Beige Brown-MD	657	257	548	215	274	107
841	Beige Brown-LT	2266	891	1889	743	944	371
842	Beige Brown-VY LT	886	347	738	290	369	145
844	Beaver Brown-UL DK	1669	655	1391	546	695	273
869	Hazelnut Brown-VY DK	67	25	56	21	28	11
898	Coffee Brown-VY DK	128	49	107	41	53	20
922	Copper-LT	23	9	20	8	10	4
924	Gray Green--VY DK	632	248	527	207	263	104
926	Gray Green-MD	3281	1291	2735	1076	1367	538
927	Gray Green-LT	2088	821	1740	684	870	342
928	Gray Green-VY LT	1460	574	1217	479	608	239
930	Antique Blue-DK	22	7	18	6	9	3
931	Antique Blue-MD	292	113	243	95	122	47
932	Antique Blue-LT	254	99	212	83	106	41
934	Black Avocado Green	769	302	641	252	320	126
935	Avocado Green-DK	819	322	683	269	341	134
938	Coffee Brown-UL DK	929	365	774	305	387	152
948	Peach-VY LT	616	241	513	201	257	101
950	Desert Sand-LT	214	83	179	69	89	35
951	Tawny-LT	1013	398	845	332	422	166
975	Golden Brown-DK	27	9	23	8	11	4
992	Aquamarine-MD	7	2	6	2	3	1
993	Aquamarine-LT	63	23	53	20	26	10
3021	Brown Gray-VY DK	2468	970	2057	809	1028	404
3022	Brown Gray-MD	565	221	471	185	236	92
3023	Brown Gray-LT	500	196	417	164	209	82
3024	Brown Gray-VY LT	1469	578	1224	482	612	241
3031	Mocha Brown-VY DK	317	124	264	104	132	52
3032	Mocha Brown-MD	896	353	747	294	374	147
3041	Antique Violet-MD	322	126	269	105	134	53
3047	Yellow Beige-LT	972	382	810	318	405	159
3051	Green Gray-DK	427	167	356	140	178	70
3064	Desert Sand	700	275	584	230	292	115
3072	Beaver Gray-VY LT	959	376	800	314	400	157
3078	Golden Yellow-VY LT	596	234	497	195	248	98
3362	Pine Green-DK	153	59	128	50	64	25
3371	Black Brown	554	218	462	182	231	91
3721	Shell Pink-DK	119	45	99	38	50	19
3740	Antique Violet-DK	254	99	212	83	106	41
3752	Antique Blue-VY LT	175	68	146	57	73	29

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3753	Antique Blue-UL VY LT	142	56	119	47	59	23
3756	Baby Blue-UL VY LT	250	97	209	81	104	41
3768	Gray Green-DK	844	331	704	276	352	138
3772	Desert Sand-VY DK	850	333	708	278	354	139
3774	Desert Sand-VY LT	572	225	477	188	239	94
3776	Mahogany-LT	20	7	17	6	8	3
3779	Terra Cotta-UL VY LT	56	22	47	18	23	9
3781	Mocha Brown-DK	1080	425	900	354	450	177
3782	Mocha Brown-LT	1030	405	858	338	429	169
3787	Brown Gray-DK	1928	758	1607	632	803	316
3790	Beige Gray-UL DK	779	306	650	255	325	128
3799	Pewter Gray-VY DK	1636	643	1364	536	682	268
3809	Turquoise-VY DK	20	7	17	6	8	3
3815	Celadon Green-DK	31	11	26	9	13	5
3823	Yellow-UL Pale	2207	868	1839	723	920	362
3826	Golden Brown	88	34	74	29	37	14
3828	Hazelnut Brown	531	209	443	174	221	87
3830	Terra Cotta-MD	27	9	23	8	11	4
3849	Teal Green-LT	142	56	119	47	59	23
3857	Rosewood-DK	250	97	209	81	104	41
3858	Rosewood-MD	178	68	149	57	74	29
3859	Rosewood-LT	167	65	140	54	70	27
3860	Cocoa	207	81	173	68	86	34
3861	Cocoa-LT	452	176	377	147	188	74
3862	Mocha Beige-DK	214	83	179	69	89	35
3863	Mocha Beige-MD	119	45	99	38	50	19
3864	Mocha Beige-LT	2048	806	1707	672	854	336
3865	Winter White	677	266	564	222	282	111
Ecru	Ecru	347	135	290	113	145	56

Extended thread usage table.							
DMC	Name	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)
		25		26		27	
223	Shell Pink-LT	27	10	26	10	25	9
224	Shell Pink-VY LT	30	12	29	11	28	11
310	Black	1603	631	1542	606	1485	584
312	Baby Blue-VY DK	1	1	1	1	1	1
317	Pewter Gray	63	24	60	24	58	23
318	Steel Gray-LT	40	16	39	15	37	15
356	Terra Cotta-MD	63	24	61	24	59	23
371	Mustard	84	33	81	32	78	31
372	Mustard-LT	158	62	152	60	147	57
413	Pewter Gray-DK	384	151	370	145	356	140
414	Steel Gray-DK	253	99	243	96	234	92
415	Pearl Gray	129	50	124	48	119	47
420	Hazelnut Brown-DK	174	68	168	66	161	63
422	Hazelnut Brown-LT	25	9	24	9	23	9
435	Brown-VY LT	73	29	71	28	68	27
436	Tan	78	30	75	29	72	28
437	Tan-LT	12	4	12	4	11	4
451	Shell Gray-DK	225	88	216	84	208	81
452	Shell Gray-MD	853	336	820	323	790	311
453	Shell Gray-LT	503	198	484	190	466	183
500	Blue Green-VY DK	675	265	649	255	625	245
501	Blue Green-DK	391	153	376	147	362	142
502	Blue Green	97	38	93	37	90	35

503	Blue Green-MD	307	121	296	116	285	112
520	Fern Green-DK	83	32	80	31	77	30
522	Fern Green	8	3	8	3	7	3
523	Fern Green-LT	22	9	21	8	21	8
524	Fern Green-VY LT	316	124	304	119	293	115
535	Ash Gray-VY LT	780	307	750	295	723	284
543	Beige Brown-UL VY LT	352	138	339	133	326	128
610	Drab Brown-DK	148	58	142	55	137	53
611	Drab Brown	485	191	467	183	449	177
612	Drab Brown-LT	387	152	372	146	359	141
613	Drab Brown-VY LT	664	261	638	251	615	241
632	Desert Sand-UL VY DK	205	81	197	78	190	75
640	Beige Gray-VY DK	1038	408	998	393	961	378
644	Beige Gray-MD	527	207	507	199	488	192
645	Beaver Gray-VY DK	1397	549	1343	528	1293	509
646	Beaver Gray-DK	474	186	456	179	439	173
647	Beaver Gray-MD	818	322	786	309	757	298
648	Beaver Gray-LT	543	213	522	205	503	197
712	Cream	134	53	129	51	124	49
738	Tan-VY LT	81	32	78	30	75	29
739	Tan-UL VY LT	531	209	510	201	491	193
746	Off White	515	202	495	195	477	187
747	Sky Blue-VY LT	32	12	30	12	29	11
754	Peach-LT	17	6	16	6	15	6
758	Terra Cotta-VY LT	68	27	66	26	63	25
762	Pearl Gray-VY LT	102	40	98	38	94	37
775	Baby Blue-VY LT	22	9	21	8	21	8
780	Topaz-UL VY DK	9	3	8	3	8	3
801	Coffee Brown-DK	131	51	126	49	121	47
822	Beige Gray-LT	436	171	419	165	403	159
830	Golden Olive-DK	39	15	37	15	36	14
831	Golden Olive-MD	17	6	16	6	15	6
838	Beige Brown-VY DK	420	165	404	159	389	153
839	Beige Brown-DK	477	188	459	181	442	174
840	Beige Brown-MD	263	103	253	99	243	95
841	Beige Brown-LT	906	356	872	343	839	330
842	Beige Brown-VY LT	354	139	341	134	328	129
844	Beaver Brown-UL DK	667	262	642	252	618	243
869	Hazelnut Brown-VY DK	27	10	26	10	25	9
898	Coffee Brown-VY DK	51	19	49	19	47	18
922	Copper-LT	9	4	9	3	9	3
924	Gray Green--VY DK	253	99	243	96	234	92
926	Gray Green-MD	1313	516	1262	496	1215	478
927	Gray Green-LT	835	328	803	316	773	304
928	Gray Green-VY LT	584	230	561	221	541	213
930	Antique Blue-DK	9	3	8	3	8	3
931	Antique Blue-MD	117	45	112	44	108	42
932	Antique Blue-LT	102	40	98	38	94	37
934	Black Avocado Green	307	121	296	116	285	112
935	Avocado Green-DK	328	129	315	124	303	119
938	Coffee Brown-UL DK	372	146	357	141	344	135
948	Peach-VY LT	246	96	237	93	228	89
950	Desert Sand-LT	86	33	82	32	79	31
951	Tawny-LT	405	159	390	153	375	147
975	Golden Brown-DK	11	4	10	3	10	3
992	Aquamarine-MD	3	1	3	1	3	1
993	Aquamarine-LT	25	9	24	9	23	9
3021	Brown Gray-VY DK	987	388	949	373	914	359
3022	Brown Gray-MD	226	89	217	85	209	82

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3023	Brown Gray-LT	200	78	192	75	185	73
3024	Brown Gray-VY LT	588	231	565	222	544	214
3031	Mocha Brown-VY DK	127	50	122	48	117	46
3032	Mocha Brown-MD	359	141	345	136	332	131
3041	Antique Violet-MD	129	50	124	48	119	47
3047	Yellow Beige-LT	389	153	374	147	360	141
3051	Green Gray-DK	171	67	164	64	158	62
3064	Desert Sand	280	110	269	106	259	102
3072	Beaver Gray-VY LT	384	150	369	145	355	139
3078	Golden Yellow-VY LT	238	94	229	90	221	87
3362	Pine Green-DK	61	24	59	23	57	22
3371	Black Brown	222	87	213	84	205	81
3721	Shell Pink-DK	48	18	46	17	44	17
3740	Antique Violet-DK	102	40	98	38	94	37
3752	Antique Blue-VY LT	70	27	67	26	65	25
3753	Antique Blue-UL VY LT	57	22	55	21	53	21
3756	Baby Blue-UL VY LT	100	39	96	37	93	36
3768	Gray Green-DK	338	132	325	127	313	123
3772	Desert Sand-VY DK	340	133	327	128	315	123
3774	Desert Sand-VY LT	229	90	220	87	212	83
3776	Mahogany-LT	8	3	8	3	7	3
3779	Terra Cotta-UL VY LT	22	9	21	8	21	8
3781	Mocha Brown-DK	432	170	415	163	400	157
3782	Mocha Brown-LT	412	162	396	156	381	150
3787	Brown Gray-DK	771	303	741	291	714	281
3790	Beige Gray-UL DK	312	122	300	118	289	113
3799	Pewter Gray-VY DK	654	257	629	247	606	238
3809	Turquoise-VY DK	8	3	8	3	7	3
3815	Celadon Green-DK	12	4	12	4	11	4
3823	Yellow-UL Pale	883	347	849	334	817	321
3826	Golden Brown	35	14	34	13	33	13
3828	Hazelnut Brown	212	84	204	80	197	77
3830	Terra Cotta-MD	11	4	10	3	10	3
3849	Teal Green-LT	57	22	55	21	53	21
3857	Rosewood-DK	100	39	96	37	93	36
3858	Rosewood-MD	71	27	69	26	66	25
3859	Rosewood-LT	67	26	64	25	62	24
3860	Cocoa	83	32	80	31	77	30
3861	Cocoa-LT	181	71	174	68	167	65
3862	Mocha Beige-DK	86	33	82	32	79	31
3863	Mocha Beige-MD	48	18	46	17	44	17
3864	Mocha Beige-LT	819	323	788	310	759	299
3865	Winter White	271	107	260	102	251	99
Ecru	Ecru	139	54	134	52	129	50

Extended thread usage table.							
DMC	Name	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)
		28		30		32	
223	Shell Pink-LT	24	9	22	8	21	8
224	Shell Pink-VY LT	27	10	25	10	24	9
310	Black	1432	563	1336	526	1253	493
312	Baby Blue-VY DK	1	1	1	1	1	1
317	Pewter Gray	56	22	52	20	49	19
318	Steel Gray-LT	36	14	34	13	32	12
356	Terra Cotta-MD	57	22	53	20	50	19
371	Mustard	75	30	70	28	66	26
372	Mustard-LT	141	55	132	52	124	48

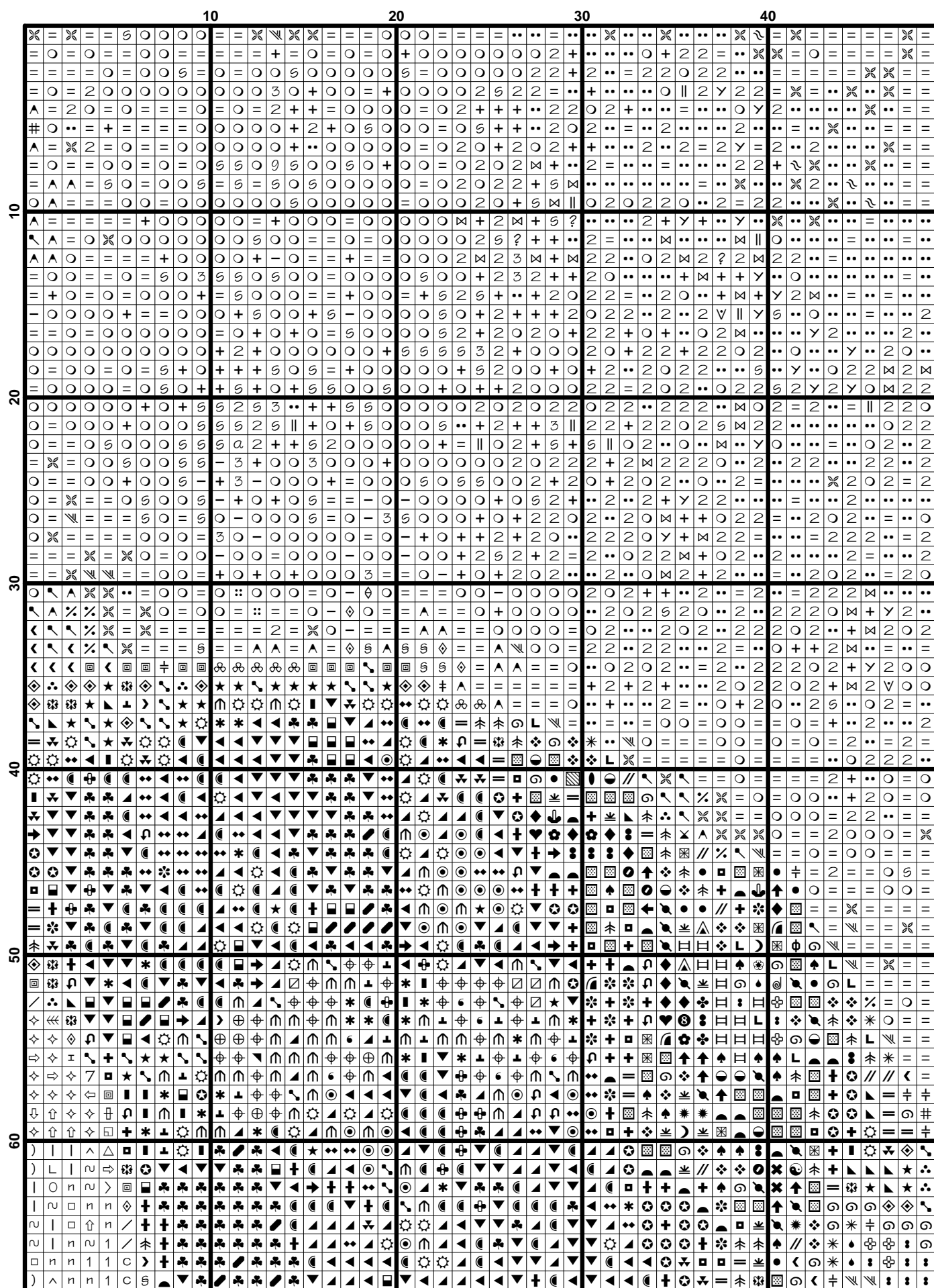
413	Pewter Gray-DK	343	135	320	126	300	118
414	Steel Gray-DK	226	89	211	83	197	78
415	Pearl Gray	115	45	107	42	101	39
420	Hazelnut Brown-DK	156	61	145	57	136	53
422	Hazelnut Brown-LT	23	8	21	8	20	7
435	Brown-VY LT	66	26	61	24	57	23
436	Tan	69	27	65	25	61	24
437	Tan-LT	11	4	10	4	10	3
451	Shell Gray-DK	201	78	187	73	176	69
452	Shell Gray-MD	762	300	711	280	667	262
453	Shell Gray-LT	449	177	419	165	393	155
500	Blue Green-VY DK	602	237	562	221	527	207
501	Blue Green-DK	349	137	326	128	305	120
502	Blue Green	87	34	81	32	76	30
503	Blue Green-MD	275	108	256	101	240	95
520	Fern Green-DK	74	29	69	27	65	25
522	Fern Green	7	3	7	2	6	2
523	Fern Green-LT	20	8	19	7	17	7
524	Fern Green-VY LT	282	111	263	103	247	97
535	Ash Gray-VY LT	697	274	650	256	610	240
543	Beige Brown-UL VY LT	314	123	293	115	275	108
610	Drab Brown-DK	132	51	123	48	115	45
611	Drab Brown	433	170	404	159	379	149
612	Drab Brown-LT	346	136	323	127	303	119
613	Drab Brown-VY LT	593	233	553	217	519	204
632	Desert Sand-UL VY DK	183	72	171	67	160	63
640	Beige Gray-VY DK	926	365	865	340	811	319
644	Beige Gray-MD	471	185	439	173	412	162
645	Beaver Gray-VY DK	1247	491	1164	458	1091	429
646	Beaver Gray-DK	423	167	395	155	370	146
647	Beaver Gray-MD	730	287	682	268	639	251
648	Beaver Gray-LT	485	190	452	178	424	167
712	Cream	120	47	112	44	105	41
738	Tan-VY LT	73	28	68	26	64	25
739	Tan-UL VY LT	474	186	442	174	415	163
746	Off White	460	181	429	169	402	158
747	Sky Blue-VY LT	28	11	26	10	25	10
754	Peach-LT	15	6	14	5	13	5
758	Terra Cotta-VY LT	61	24	57	22	53	21
762	Pearl Gray-VY LT	91	35	85	33	79	31
775	Baby Blue-VY LT	20	8	19	7	17	7
780	Topaz-UL VY DK	8	3	7	2	7	2
801	Coffee Brown-DK	117	46	109	43	102	40
822	Beige Gray-LT	389	153	363	143	340	134
830	Golden Olive-DK	35	14	32	13	30	12
831	Golden Olive-MD	15	6	14	5	13	5
838	Beige Brown-VY DK	375	147	350	137	329	129
839	Beige Brown-DK	426	168	398	157	373	147
840	Beige Brown-MD	235	92	219	86	205	80
841	Beige Brown-LT	809	318	755	297	708	278
842	Beige Brown-VY LT	316	124	295	116	277	109
844	Beaver Brown-UL DK	596	234	556	218	521	205
869	Hazelnut Brown-VY DK	24	9	22	8	21	8
898	Coffee Brown-VY DK	46	17	43	16	40	15
922	Copper-LT	8	3	8	3	7	3
924	Gray Green--VY DK	226	89	211	83	197	78
926	Gray Green-MD	1172	461	1094	430	1025	403
927	Gray Green-LT	746	293	696	274	653	257
928	Gray Green-VY LT	521	205	487	191	456	179

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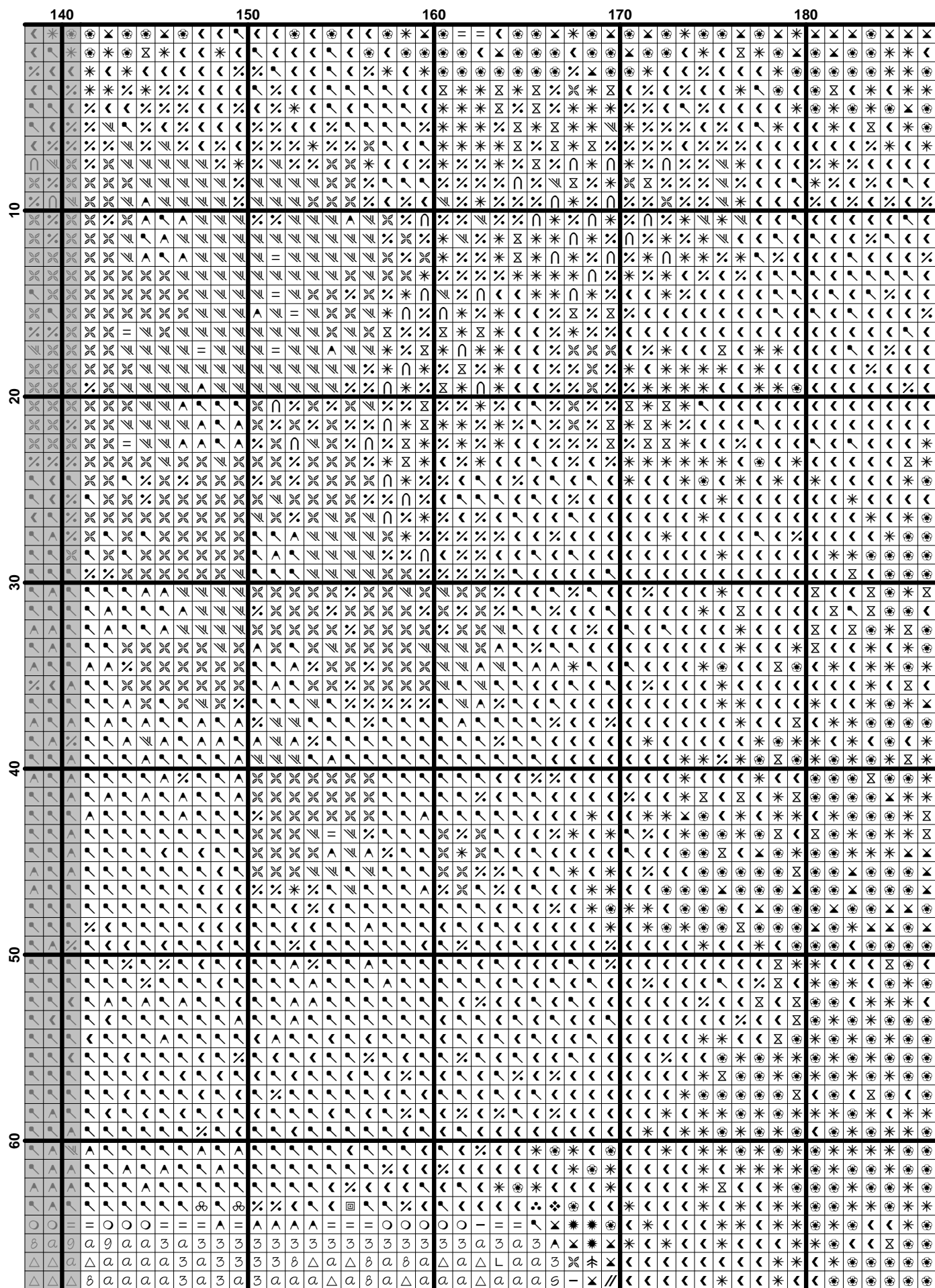
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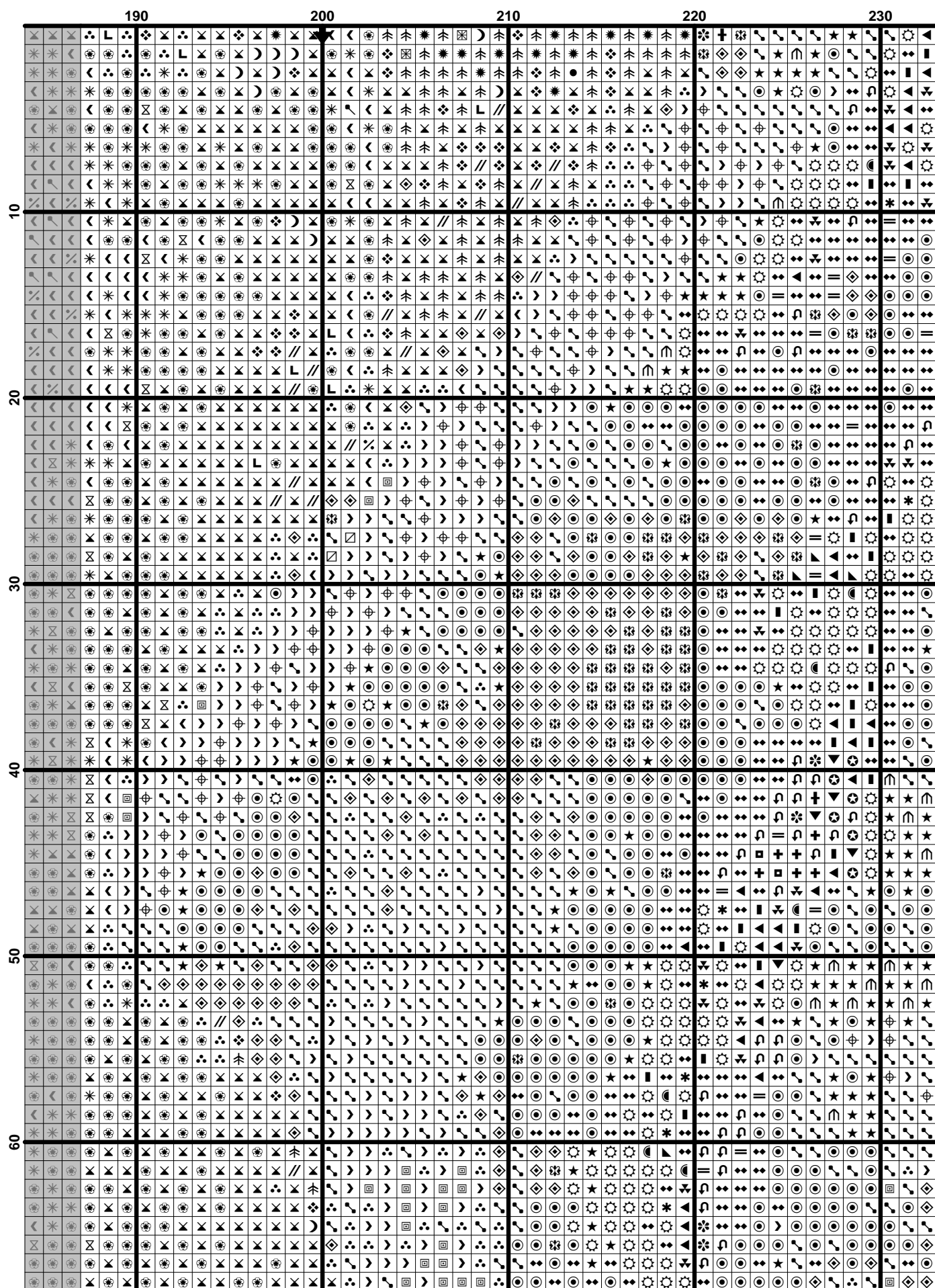
930	Antique Blue-DK	8	3	7	2	7	2
931	Antique Blue-MD	104	41	97	38	91	35
932	Antique Blue-LT	91	35	85	33	79	31
934	Black Avocado Green	275	108	256	101	240	95
935	Avocado Green-DK	293	115	273	107	256	101
938	Coffee Brown-UL DK	332	131	310	122	290	114
948	Peach-VY LT	220	86	205	80	192	75
950	Desert Sand-LT	77	30	71	28	67	26
951	Tawny-LT	362	142	338	133	317	124
975	Golden Brown-DK	10	3	9	3	8	3
992	Aquamarine-MD	3	1	2	1	2	1
993	Aquamarine-LT	23	8	21	8	20	7
3021	Brown Gray-VY DK	881	347	823	323	771	303
3022	Brown Gray-MD	202	79	188	74	177	69
3023	Brown Gray-LT	179	70	167	65	156	61
3024	Brown Gray-VY LT	525	206	490	193	459	181
3031	Mocha Brown-VY DK	113	44	106	41	99	39
3032	Mocha Brown-MD	320	126	299	118	280	110
3041	Antique Violet-MD	115	45	107	42	101	39
3047	Yellow Beige-LT	347	136	324	127	304	119
3051	Green Gray-DK	152	60	142	56	133	52
3064	Desert Sand	250	98	233	92	219	86
3072	Beaver Gray-VY LT	343	134	320	125	300	118
3078	Golden Yellow-VY LT	213	84	199	78	186	73
3362	Pine Green-DK	55	21	51	20	48	19
3371	Black Brown	198	78	185	73	173	68
3721	Shell Pink-DK	42	16	40	15	37	14
3740	Antique Violet-DK	91	35	85	33	79	31
3752	Antique Blue-VY LT	62	24	58	23	55	21
3753	Antique Blue-UL VY LT	51	20	47	19	44	17
3756	Baby Blue-UL VY LT	89	35	83	32	78	30
3768	Gray Green-DK	302	118	281	110	264	104
3772	Desert Sand-VY DK	303	119	283	111	266	104
3774	Desert Sand-VY LT	204	80	191	75	179	70
3776	Mahogany-LT	7	3	7	2	6	2
3779	Terra Cotta-UL VY LT	20	8	19	7	17	7
3781	Mocha Brown-DK	386	152	360	142	338	133
3782	Mocha Brown-LT	368	145	343	135	322	127
3787	Brown Gray-DK	689	271	643	253	602	237
3790	Beige Gray-UL DK	278	109	260	102	244	96
3799	Pewter Gray-VY DK	584	230	545	214	511	201
3809	Turquoise-VY DK	7	3	7	2	6	2
3815	Celadon Green-DK	11	4	10	4	10	3
3823	Yellow-UL Pale	788	310	736	289	690	271
3826	Golden Brown	32	12	29	11	28	11
3828	Hazelnut Brown	190	75	177	70	166	65
3830	Terra Cotta-MD	10	3	9	3	8	3
3849	Teal Green-LT	51	20	47	19	44	17
3857	Rosewood-DK	89	35	83	32	78	30
3858	Rosewood-MD	64	24	59	23	56	21
3859	Rosewood-LT	60	23	56	22	52	20
3860	Cocoa	74	29	69	27	65	25
3861	Cocoa-LT	161	63	151	59	141	55
3862	Mocha Beige-DK	77	30	71	28	67	26
3863	Mocha Beige-MD	42	16	40	15	37	14
3864	Mocha Beige-LT	732	288	683	269	640	252
3865	Winter White	242	95	226	89	212	83
Ecru	Ecru	124	48	116	45	109	42

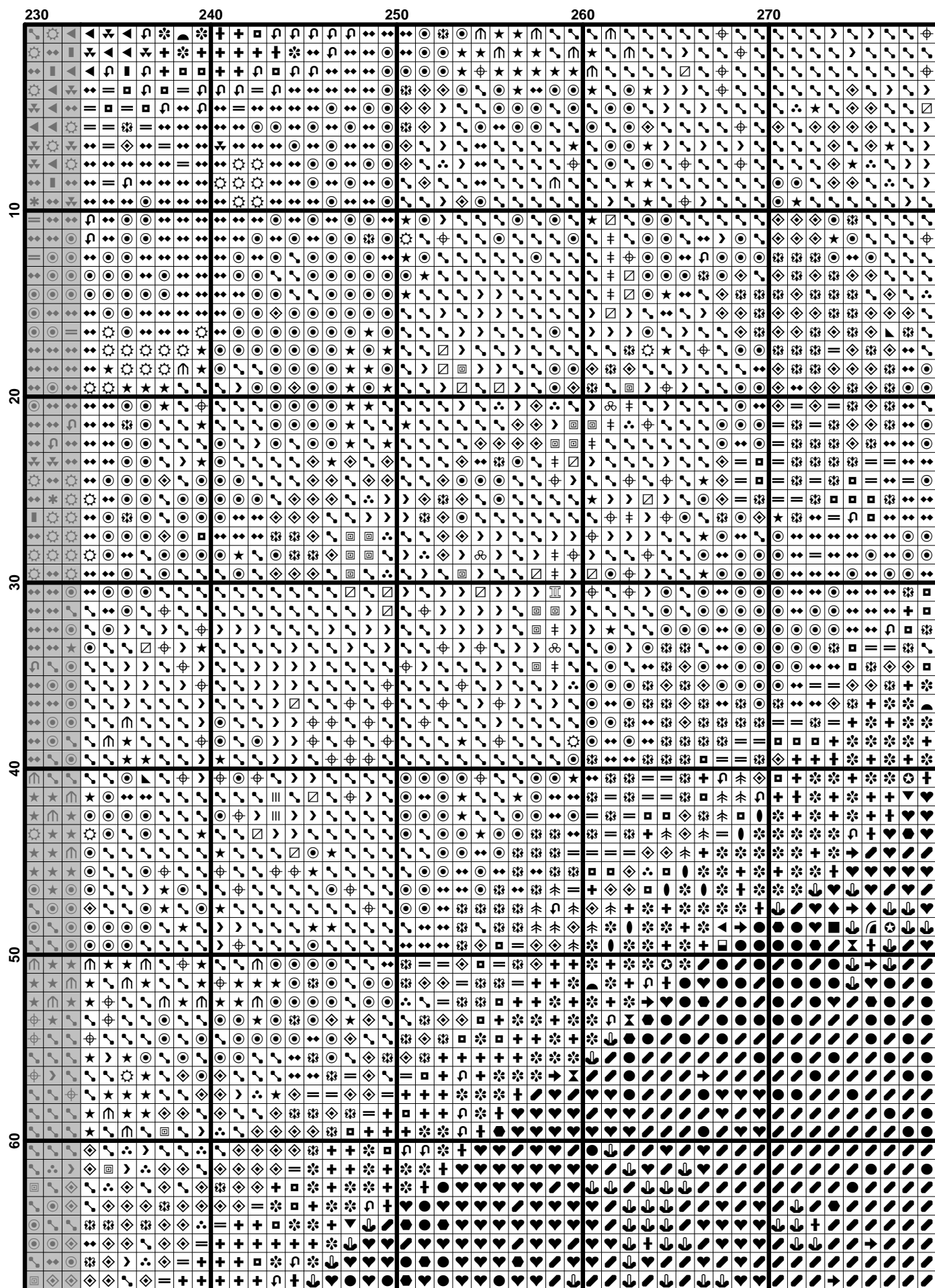


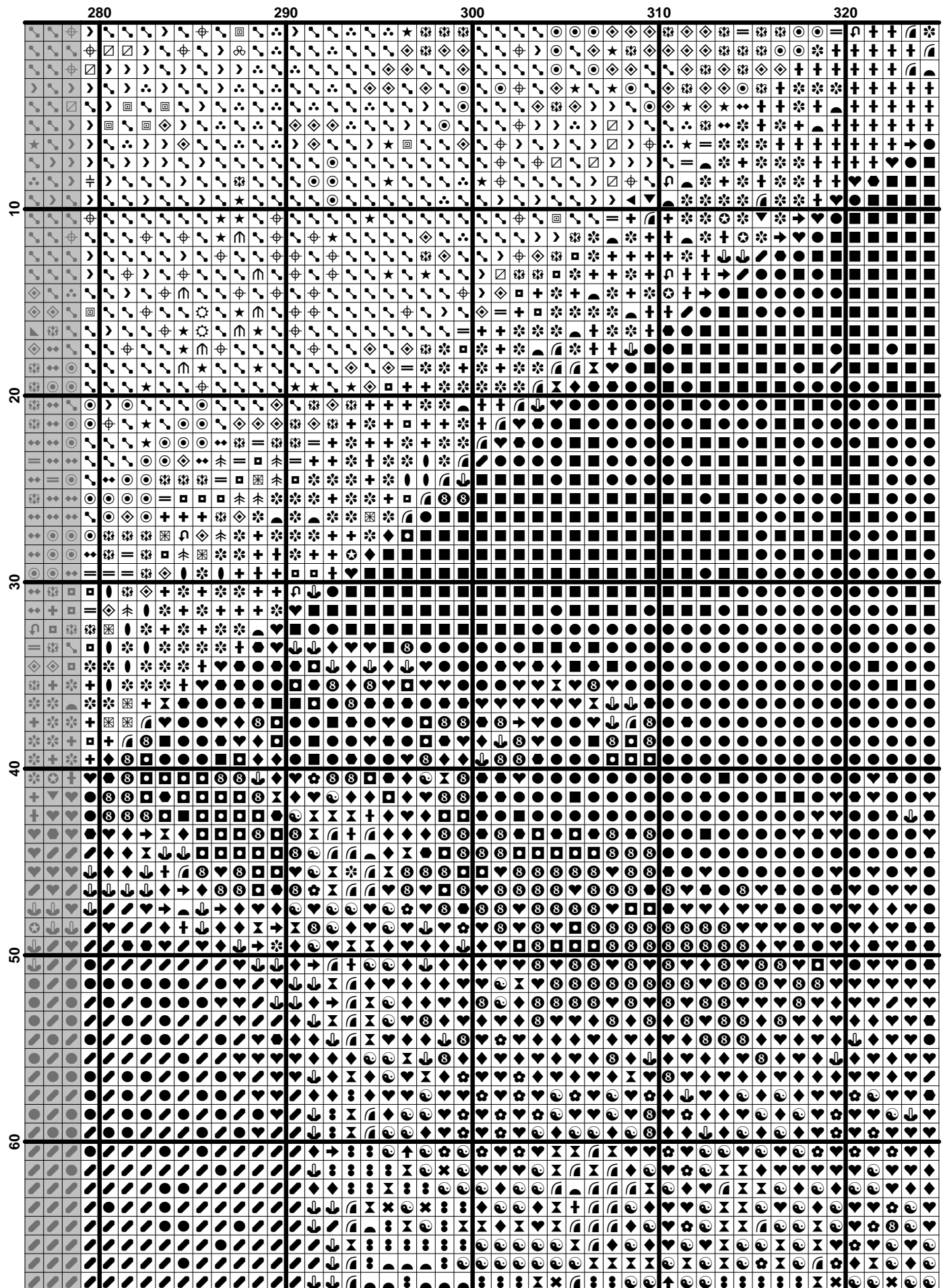
$$(11) \quad \mathcal{L}(\mathcal{A}) = \mathcal{L}(\mathcal{B}) \quad (12)$$

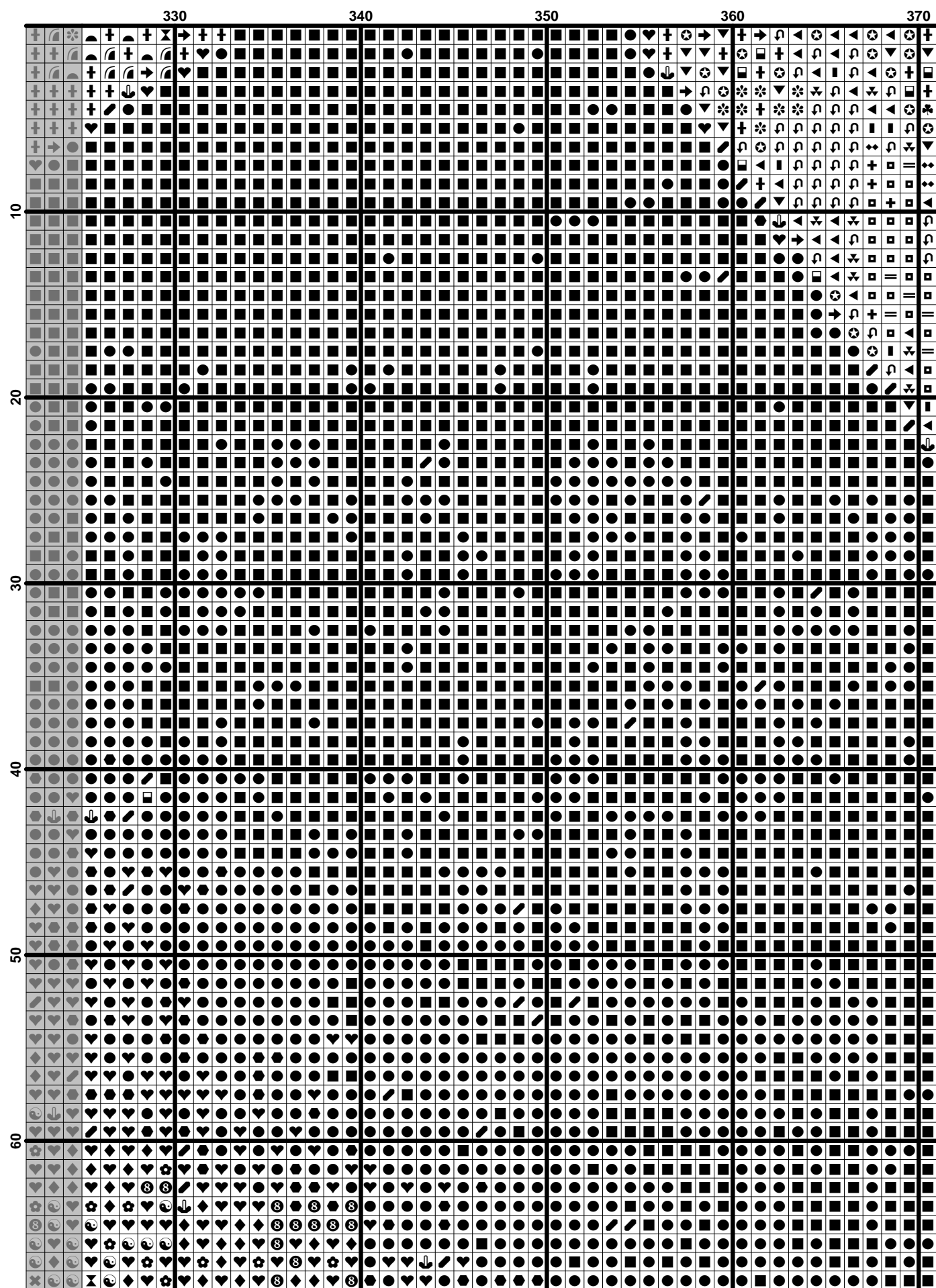
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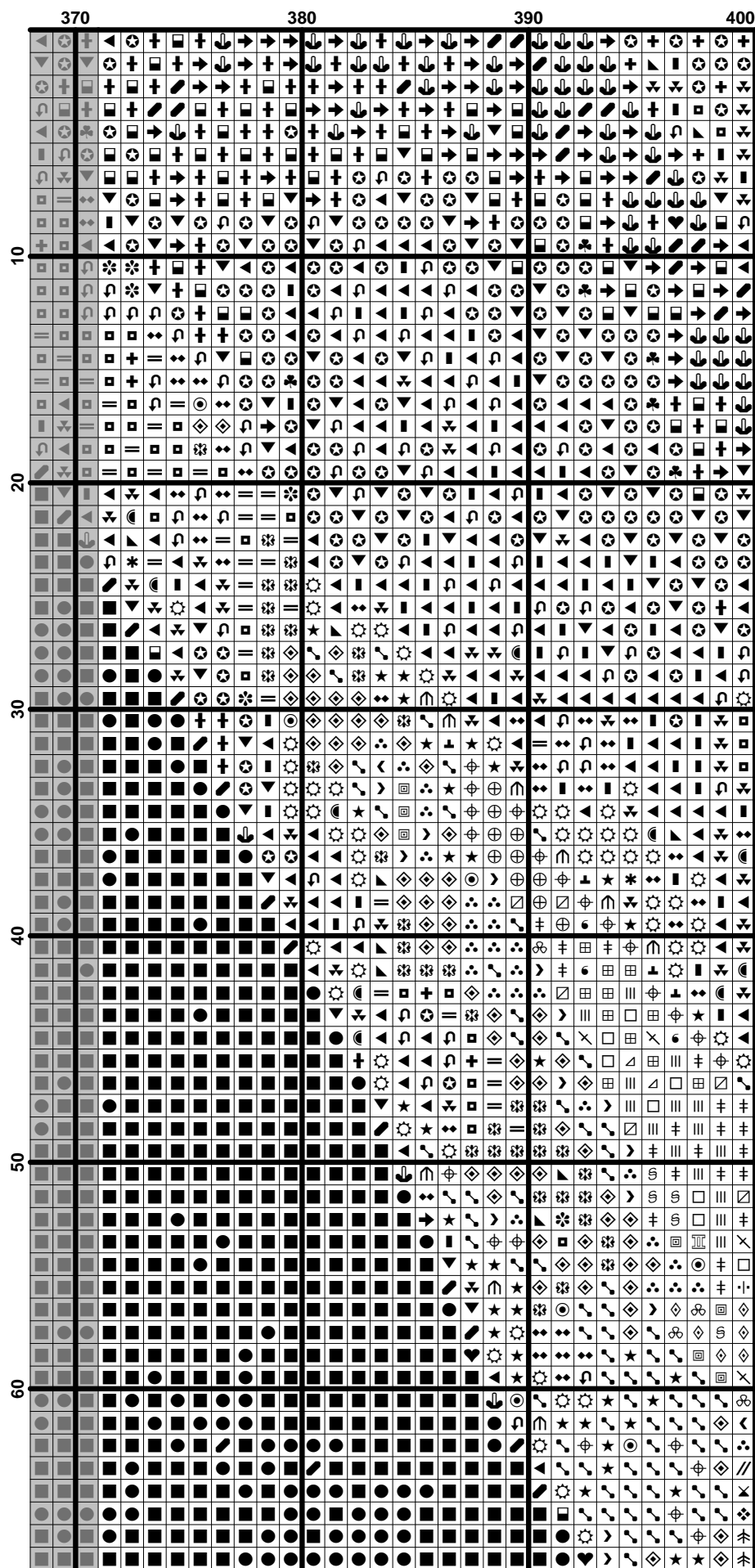






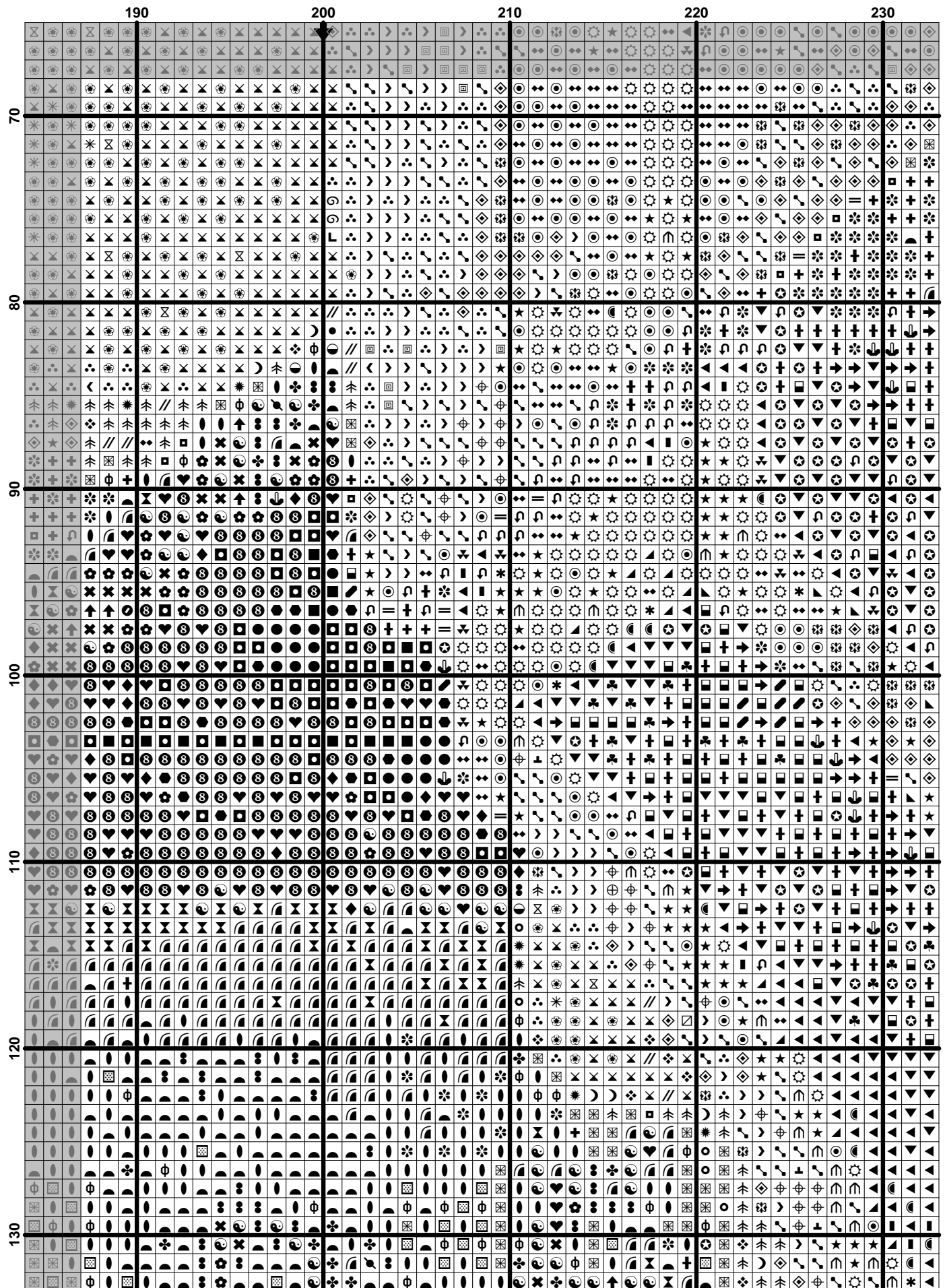


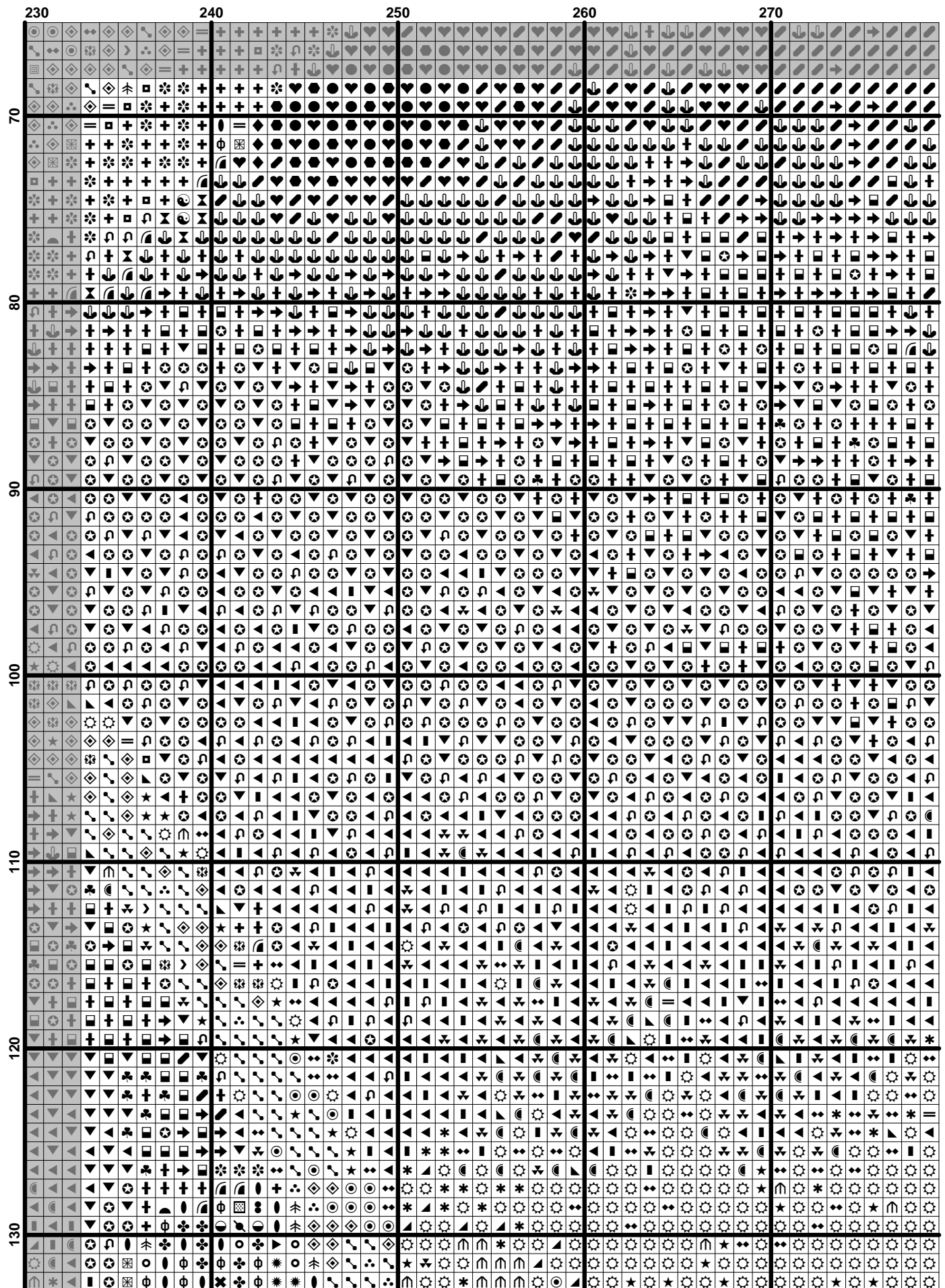


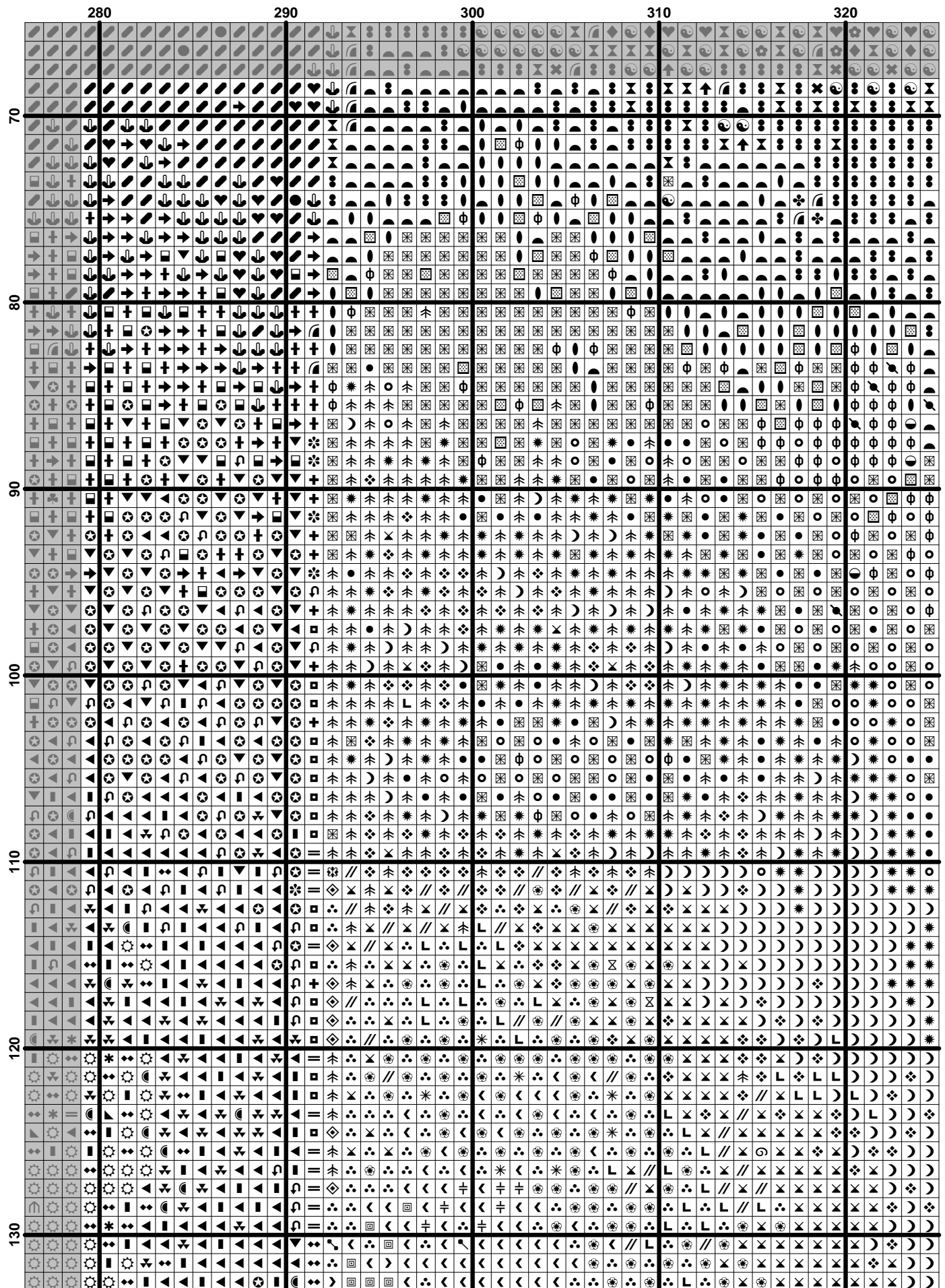


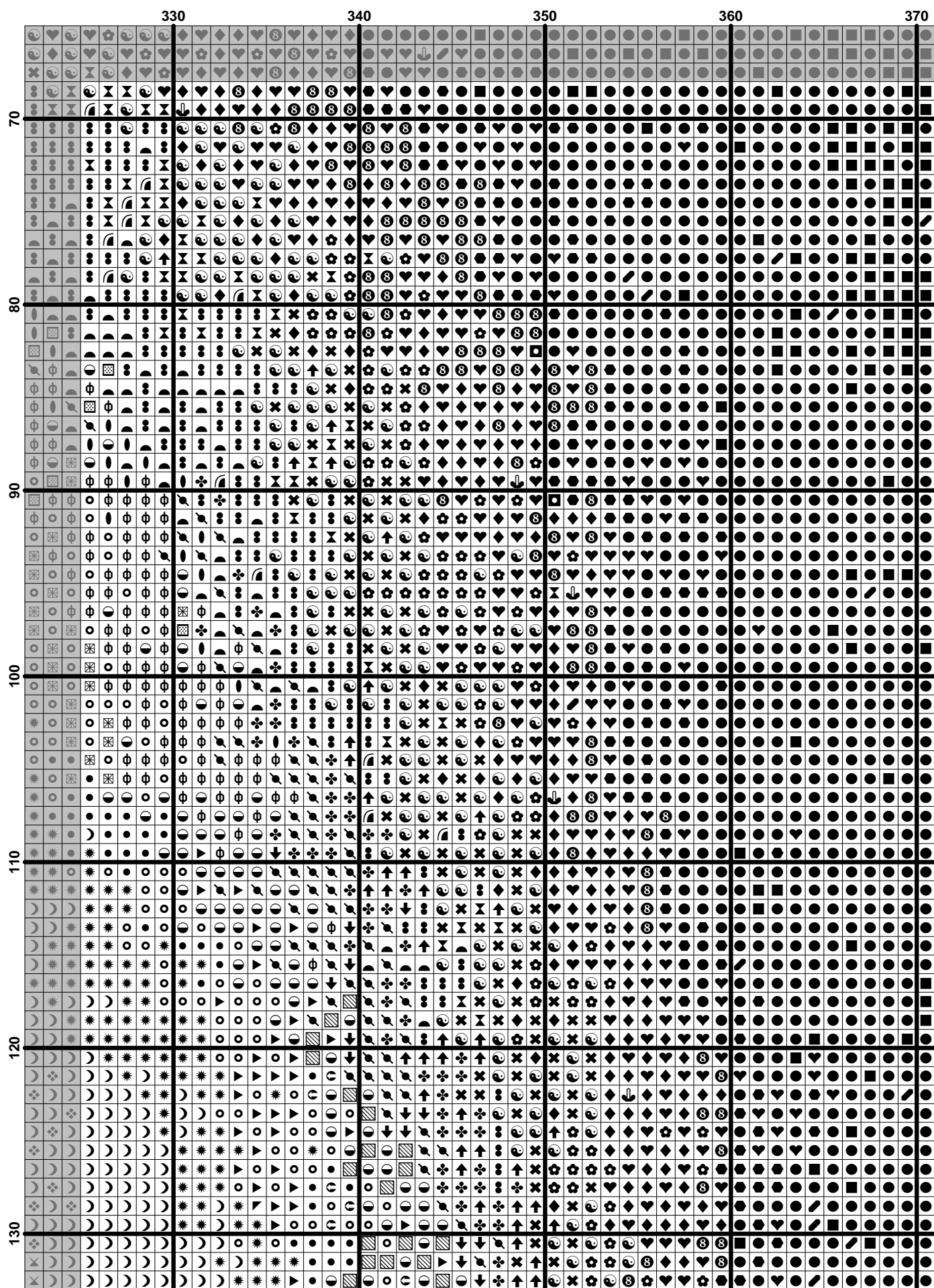
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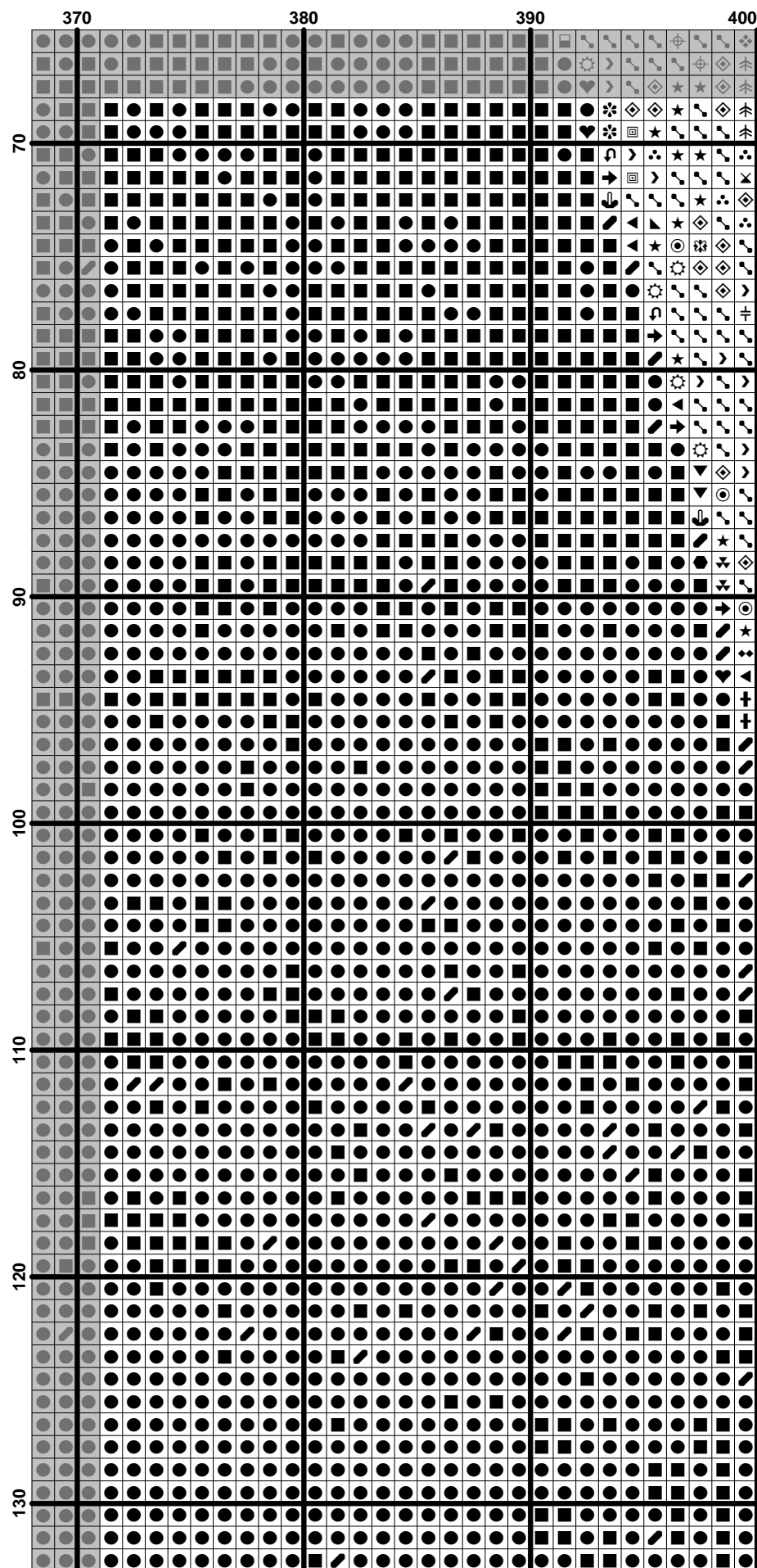
$$(21) \quad \mathcal{L}(\mathcal{A}) = \mathcal{L}(\mathcal{B}) \quad (22)$$



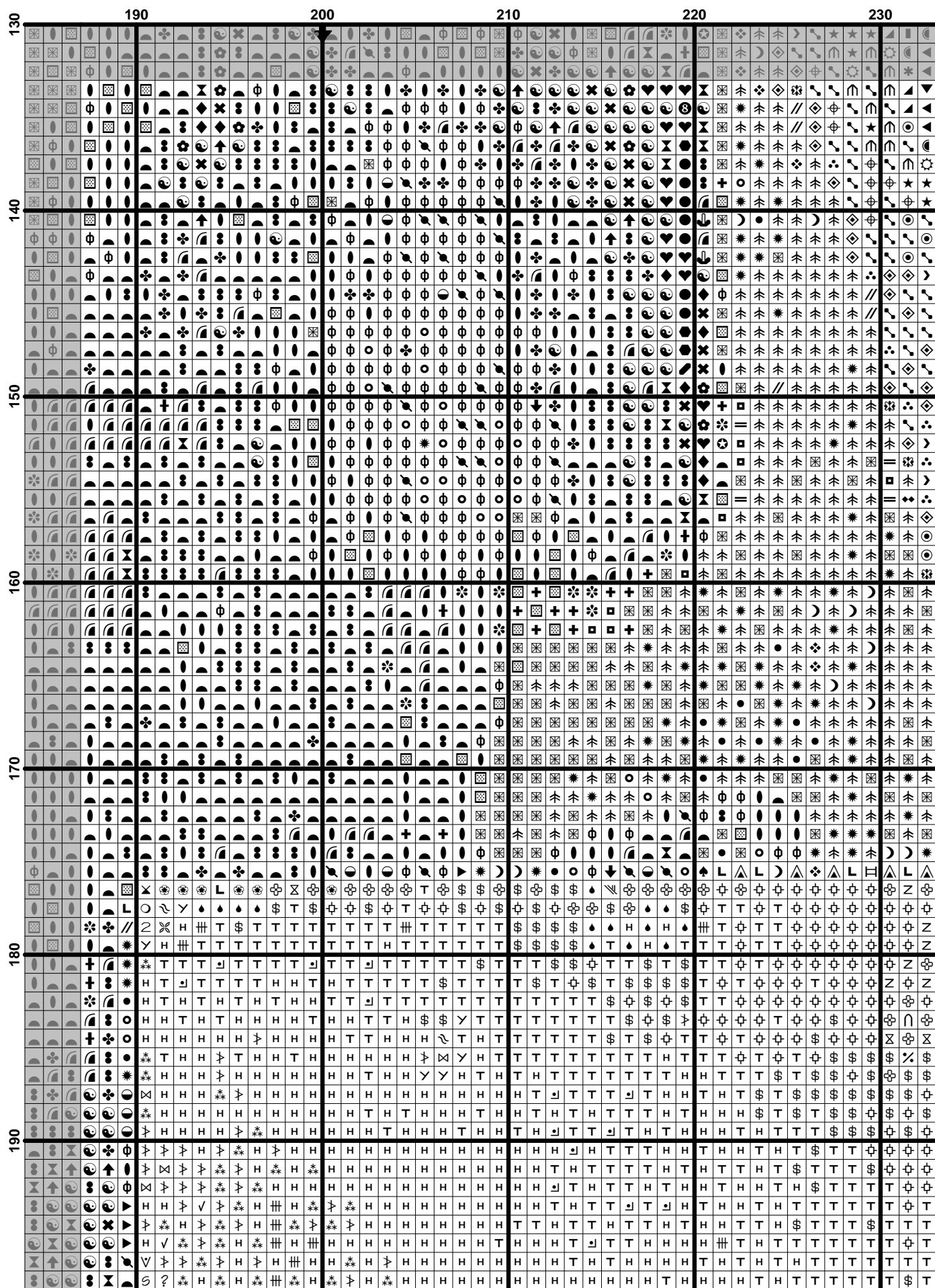


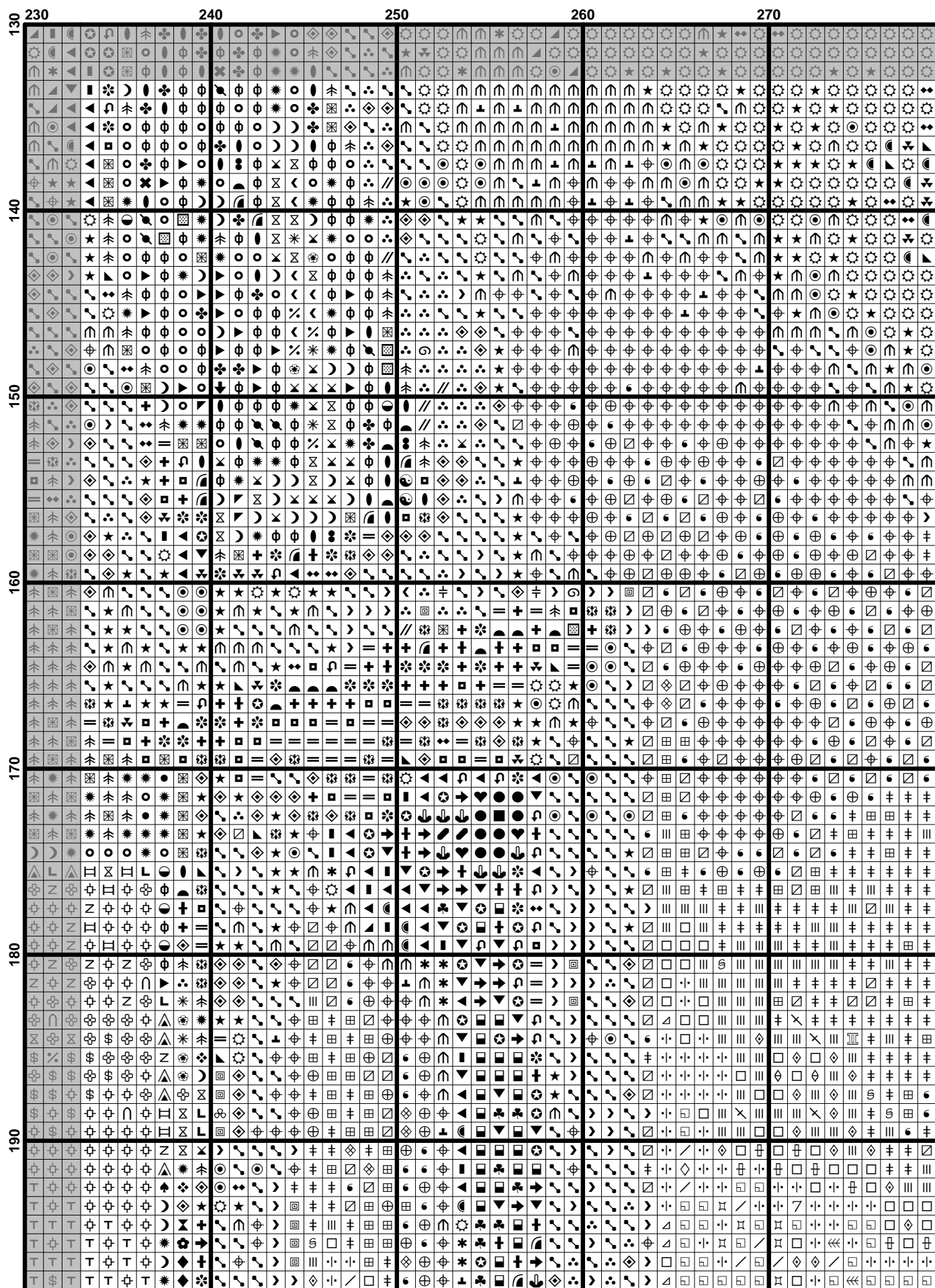


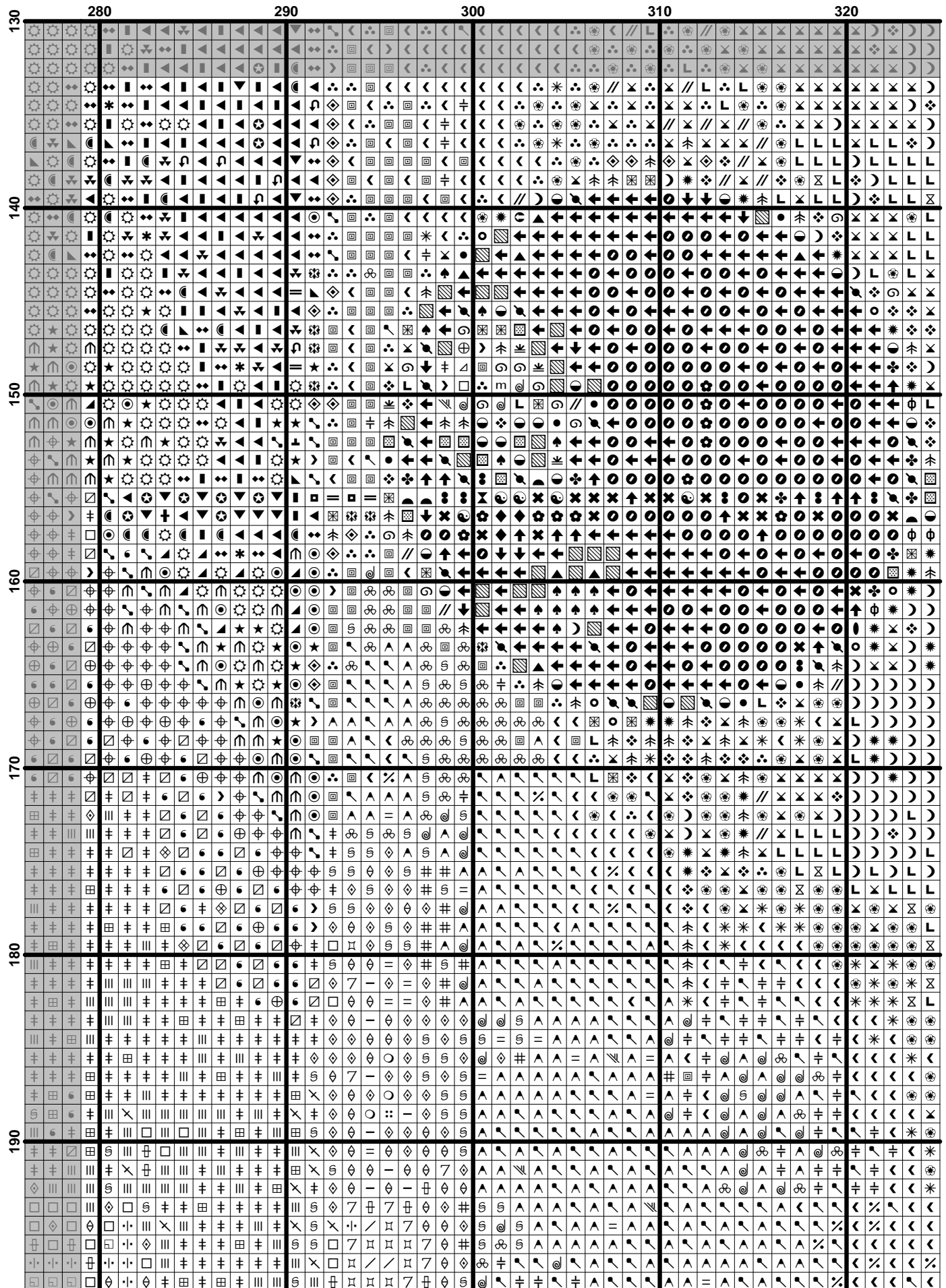


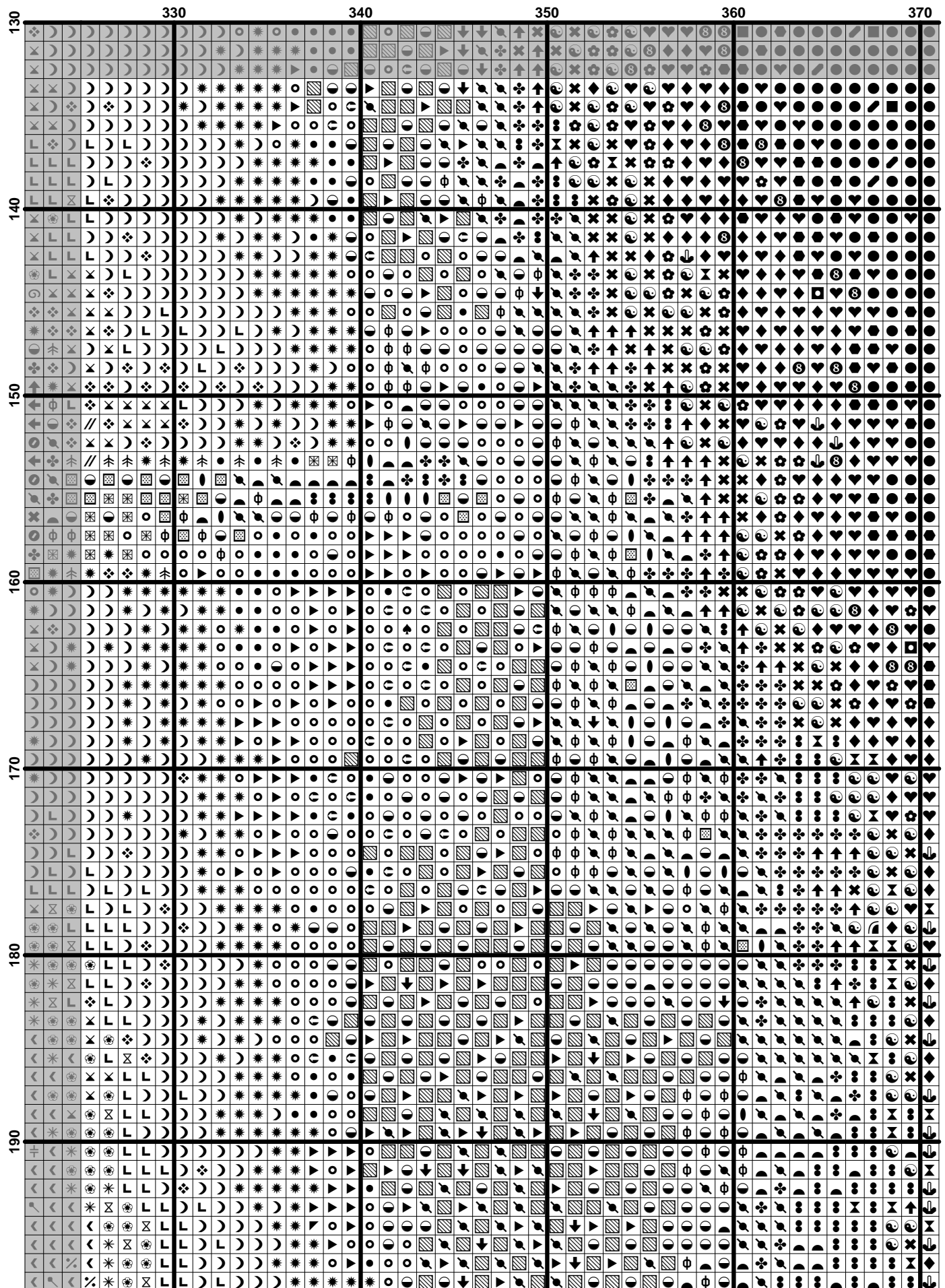


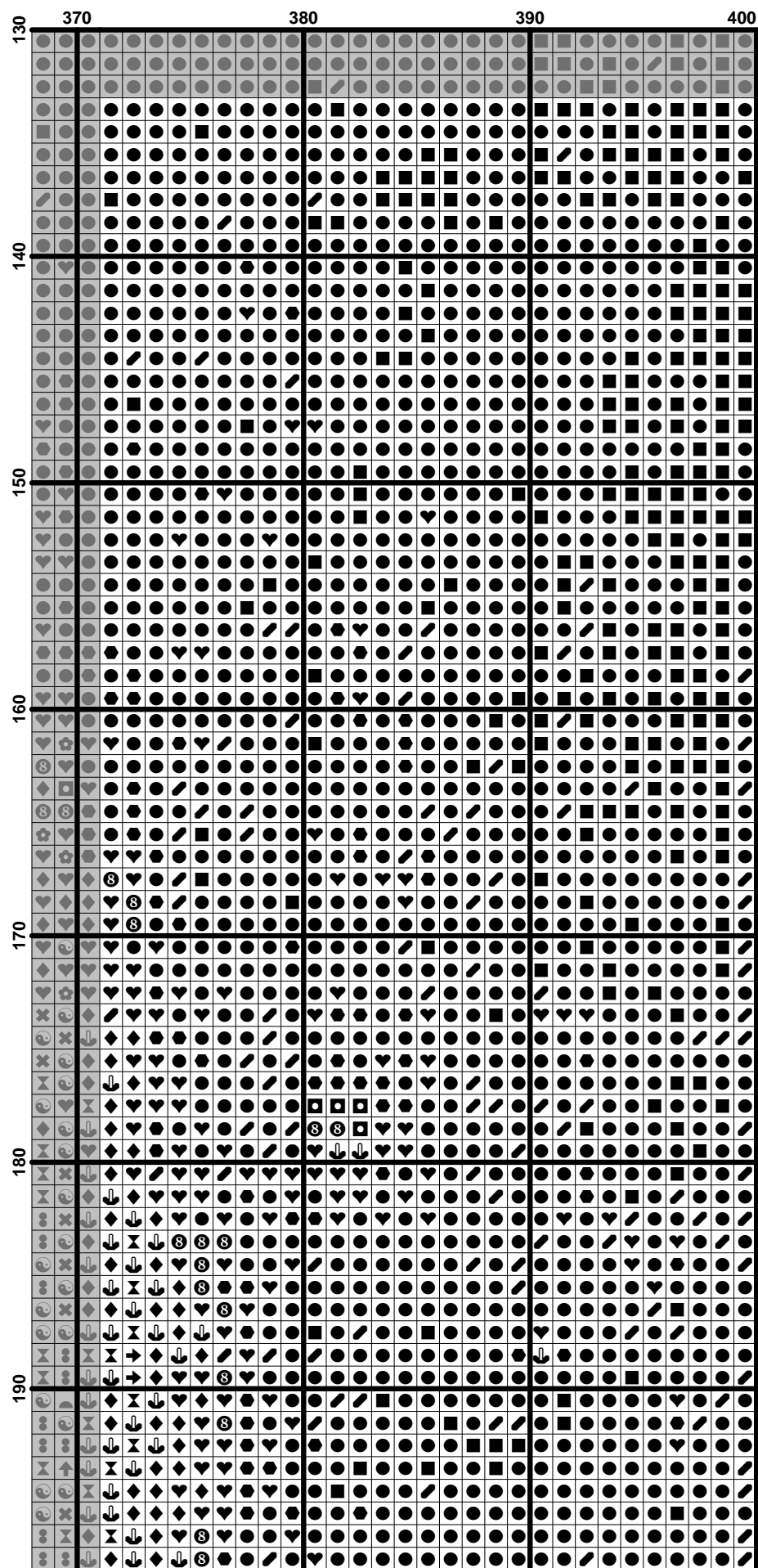
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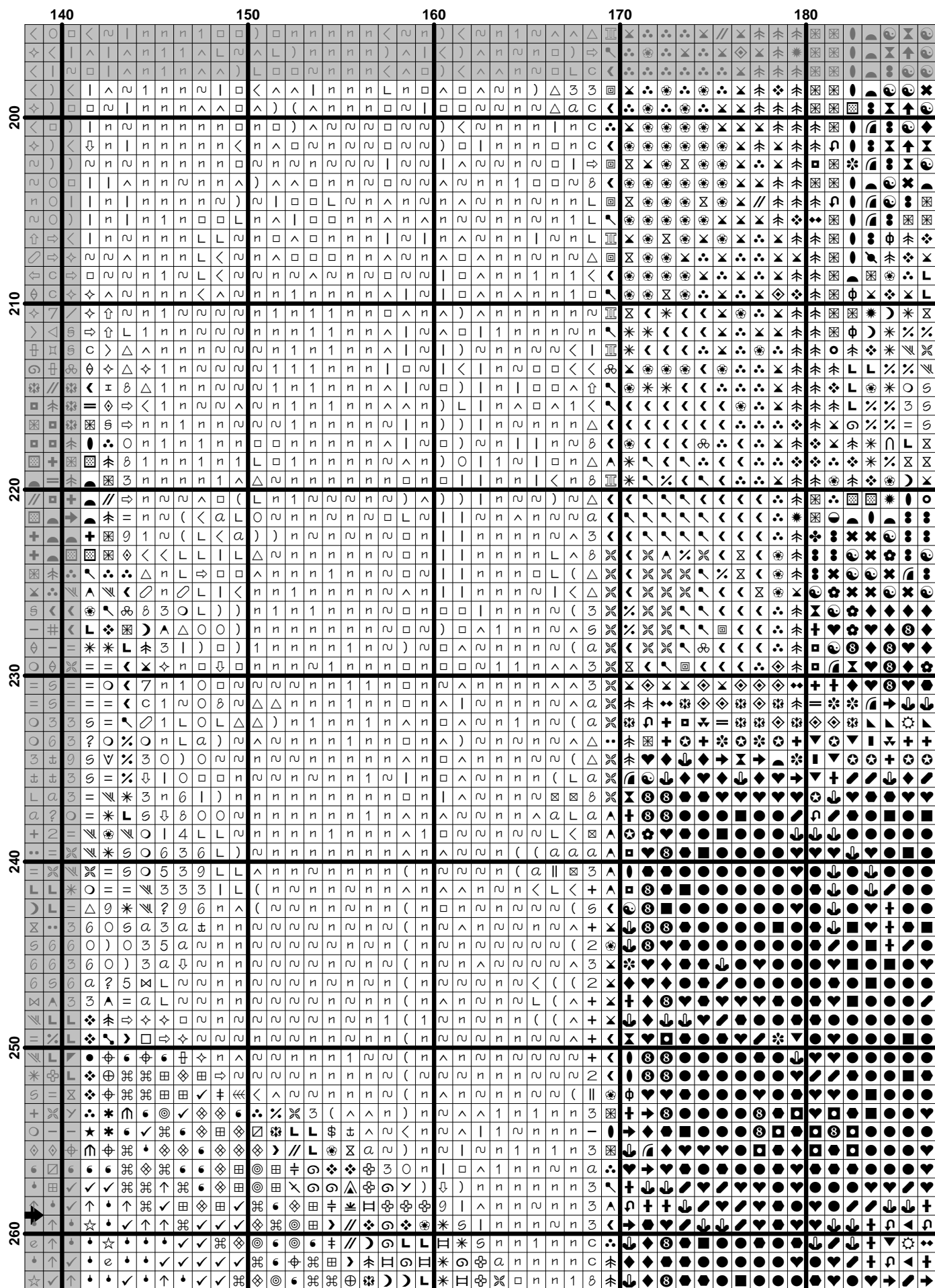


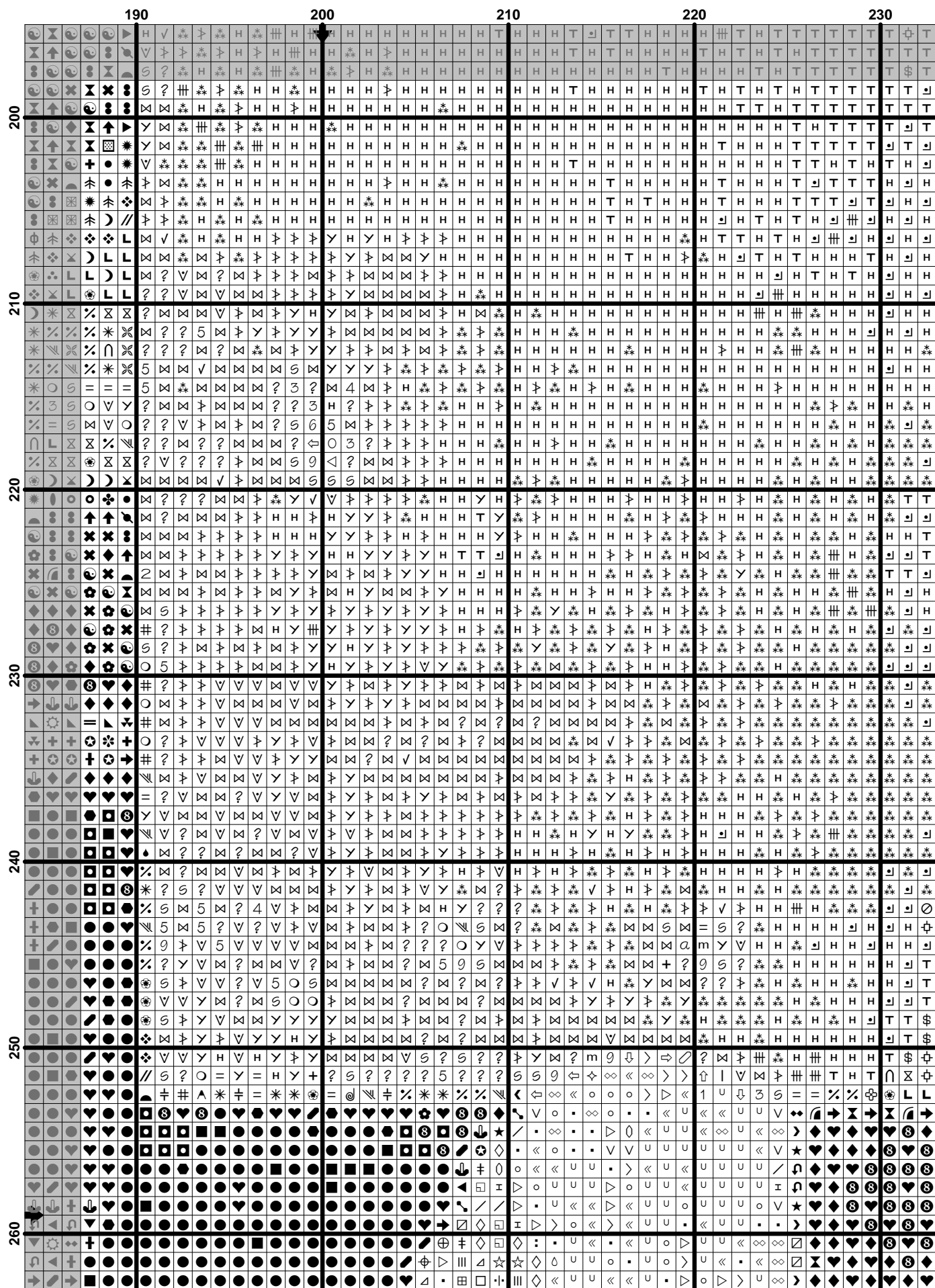


	10										20										30										40									
200	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
210	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
220	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
230	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
240	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z				
250	0	1																																						

	50	60	70	80	90
	0	0	0	0	0
	1	1	1	1	1
	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
	6	6	6	6	6
	7	7	7	7	7
	8	8	8	8	8
	9	9	9	9	9
200	0	0	0	0	0
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	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
	6	6	6	6	6
	7	7	7	7	7
	8	8	8	8	8
	9	9	9	9	9
210	0	0	0	0	0
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	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
	6	6	6	6	6
	7	7	7	7	7
	8	8	8	8	8
	9	9	9	9	9
220	0	0	0	0	0
	1	1	1	1	1
	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
	6	6	6	6	6
	7	7	7	7	7
	8	8	8	8	8
	9	9	9	9	9
230	0	0	0	0	0
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	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
	6	6	6	6	6
	7	7	7	7	7
	8	8	8	8	8
	9	9	9	9	9
240	0	0	0	0	0
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	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
	6	6	6	6	6
	7	7	7	7	7
	8	8	8	8	8
	9	9	9	9	9
250	0	0	0	0	0
	1	1	1	1	1
	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
	6	6	6	6	6
	7	7	7	7	7
	8	8	8	8	8
	9	9	9	9	9
260	0	0	0	0	0
	1	1	1	1	1
	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
	6	6	6	6	6
	7	7	7	7	7
	8	8	8	8	8
	9	9	9	9	9

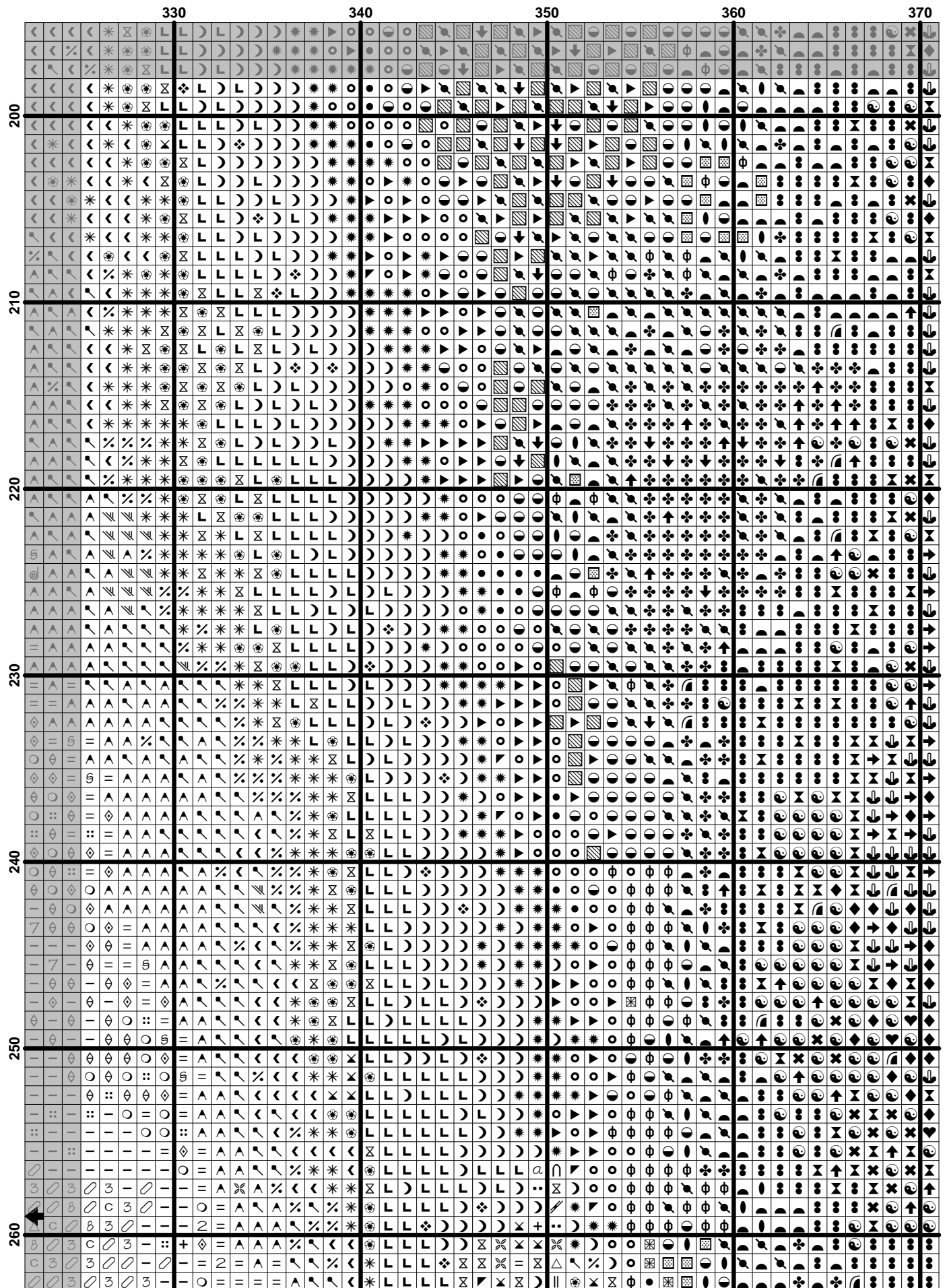
	100	110	120	130	140
200					
210					
220					
230					
240					
250					
260					

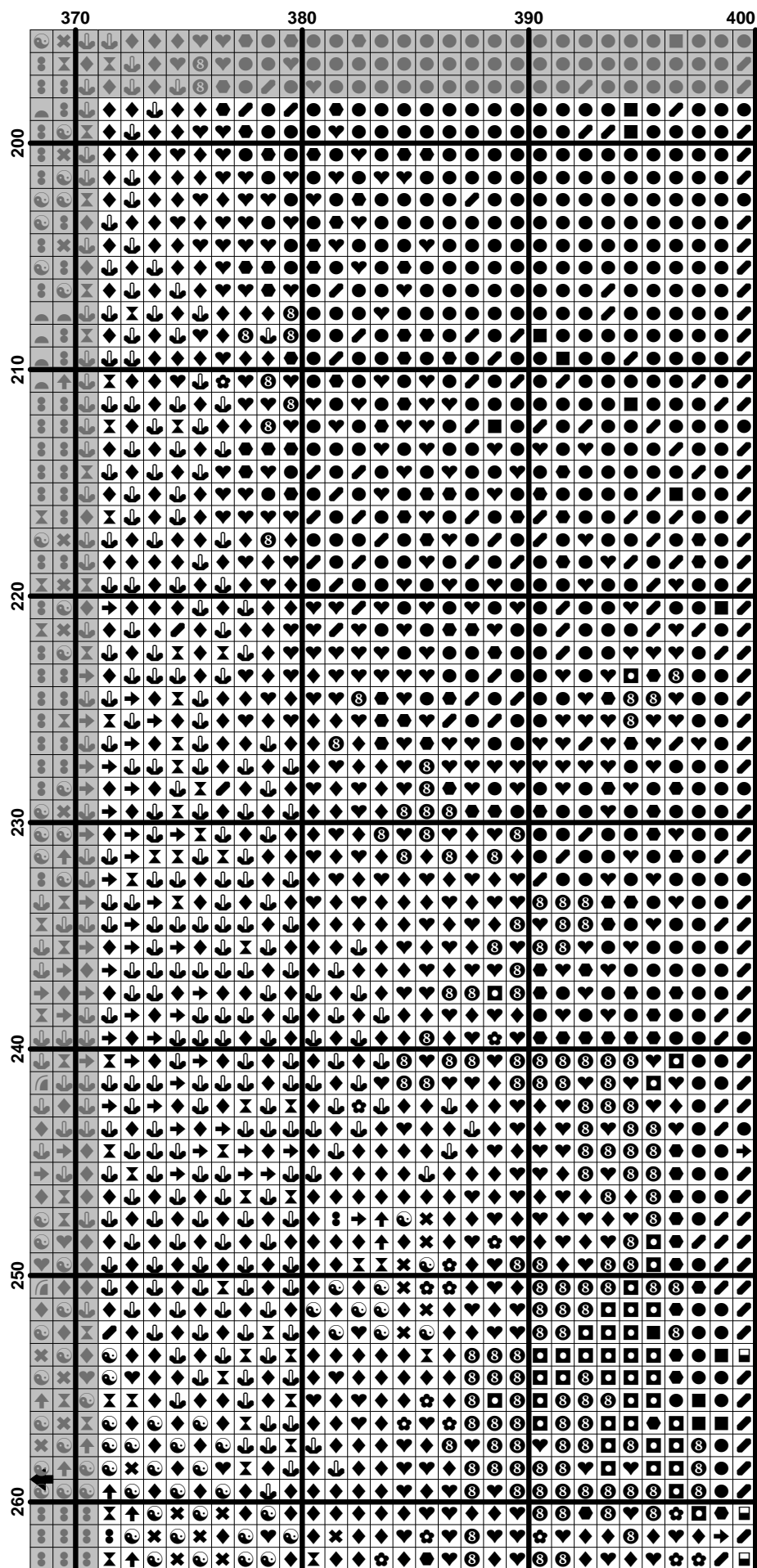




$$(42) \quad \mathcal{L}(\mathcal{A}) \subseteq \mathcal{L}(\mathcal{B}) \iff \mathcal{A} \subseteq \mathcal{B} \text{ and } \mathcal{A} \text{ is } \mathcal{L}(\mathcal{A})\text{-closed.} \quad (43)$$

	280	290	300	310	320
200
210
220
230
240
250
260

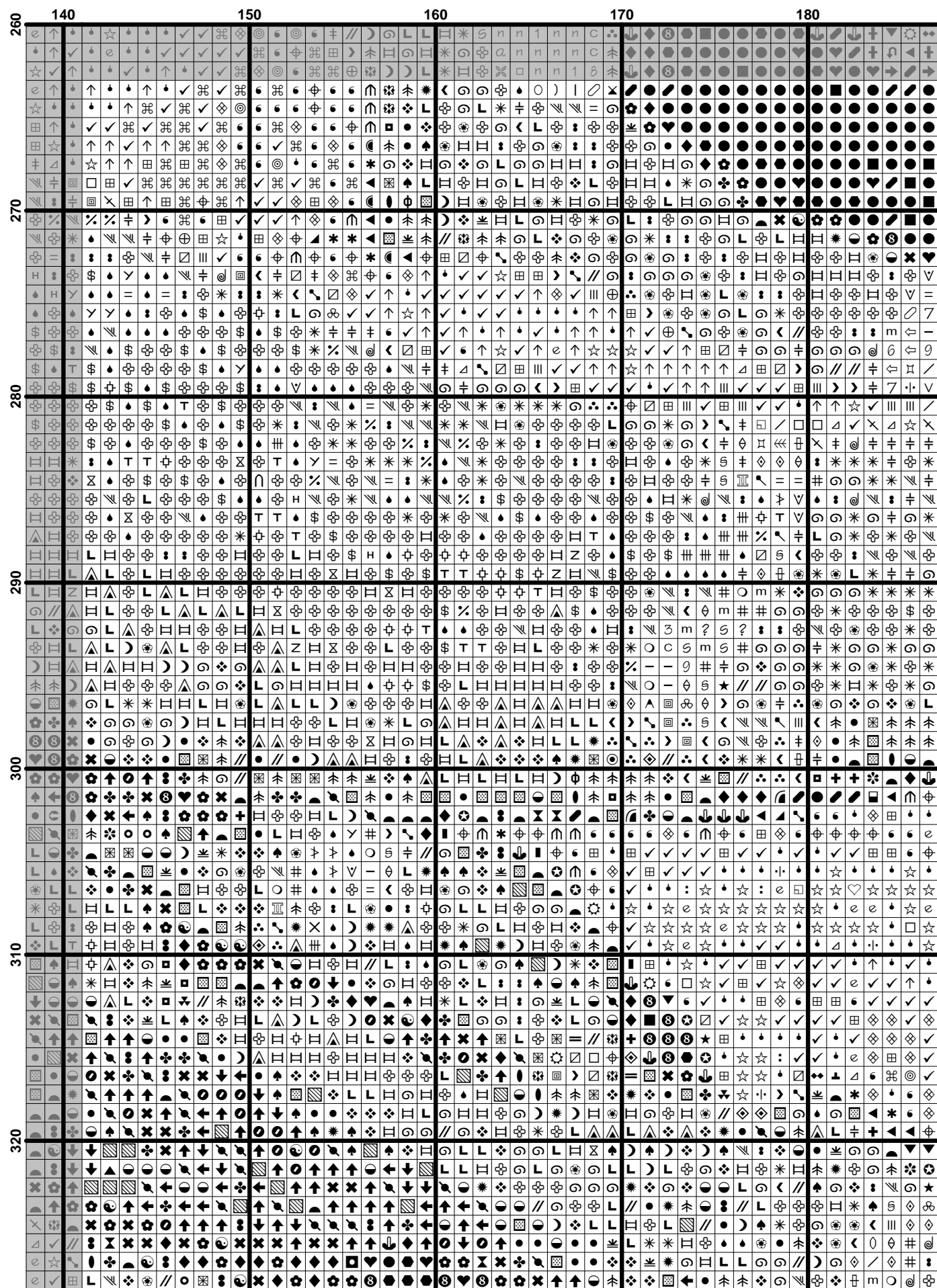


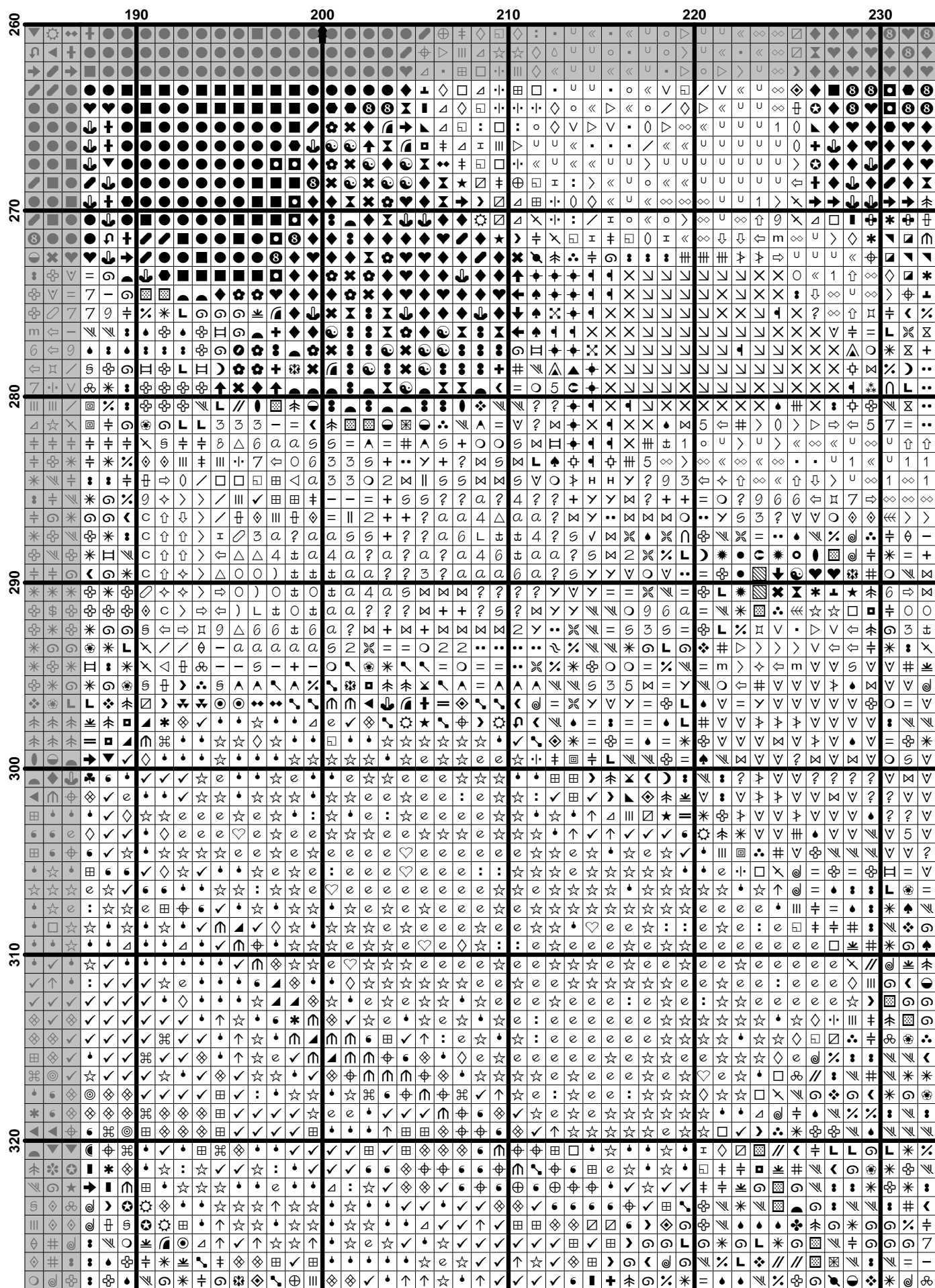


[illegible]

	50	60	70	80	90
260	3 9 9 6 1 0 1) 0 < 4 0 4 0	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n
270	4 9 9 6 1 0 1) 0 < 4 0 4 0	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n
280	4 9 9 6 1 0 1) 0 < 4 0 4 0	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n
290	4 9 9 6 1 0 1) 0 < 4 0 4 0	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n
300	4 9 9 6 1 0 1) 0 < 4 0 4 0	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n
310	4 9 9 6 1 0 1) 0 < 4 0 4 0	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n
320	4 9 9 6 1 0 1) 0 < 4 0 4 0	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n	4 n n 4 0 4 1 n 1 1 1 n) n n ^ 1 n n n

	100										110										120										130										140																																																																															
260																																																																																																																								
270																																																																																																																								
280																																																																																																																								
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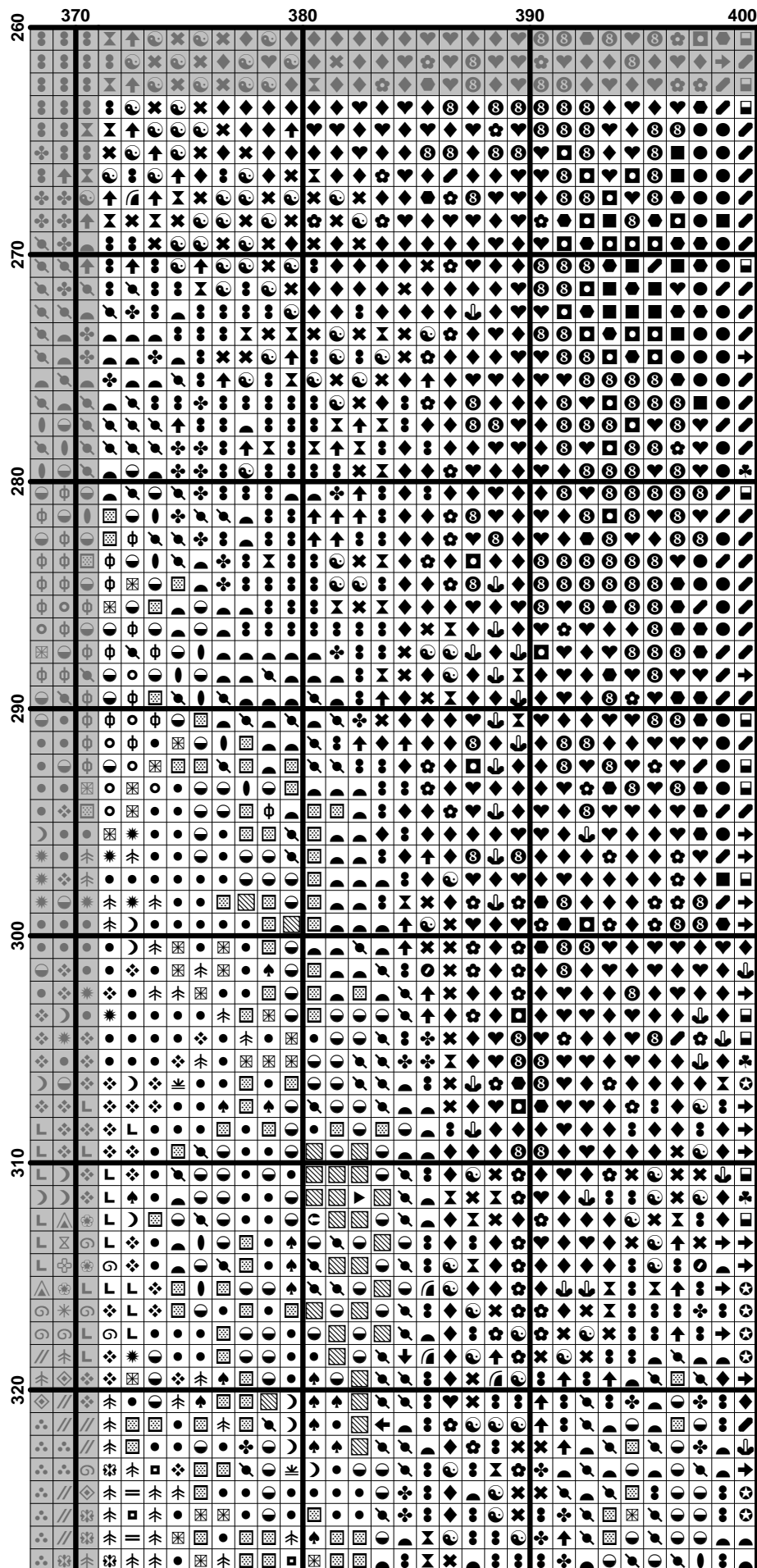




260	230	240	250	260	270
260	230	240	250	260	270
270	280	290	300	310	320
280	290	300	310	320	
290	300	310	320		
300	310	320			
310	320				
320					

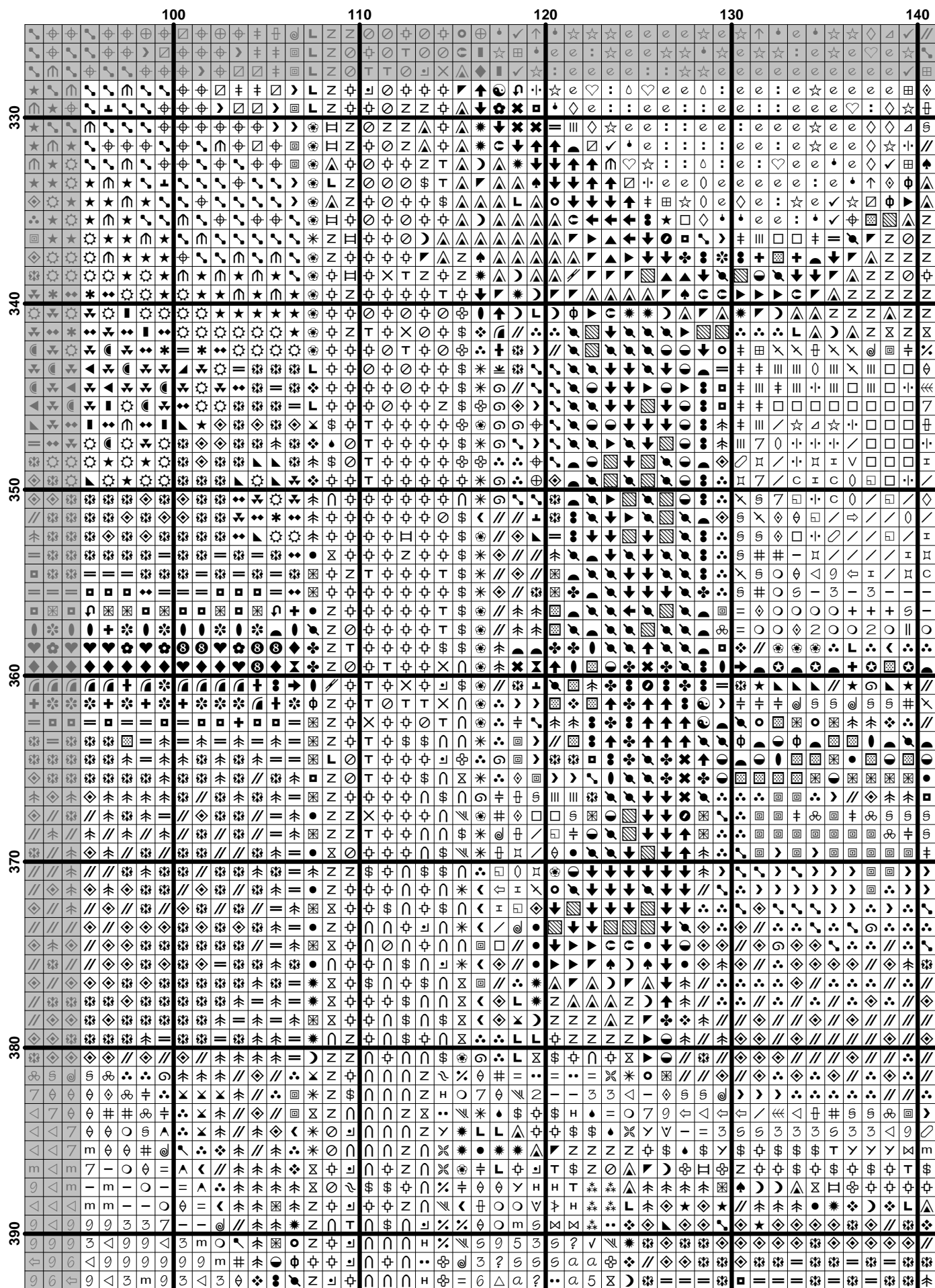
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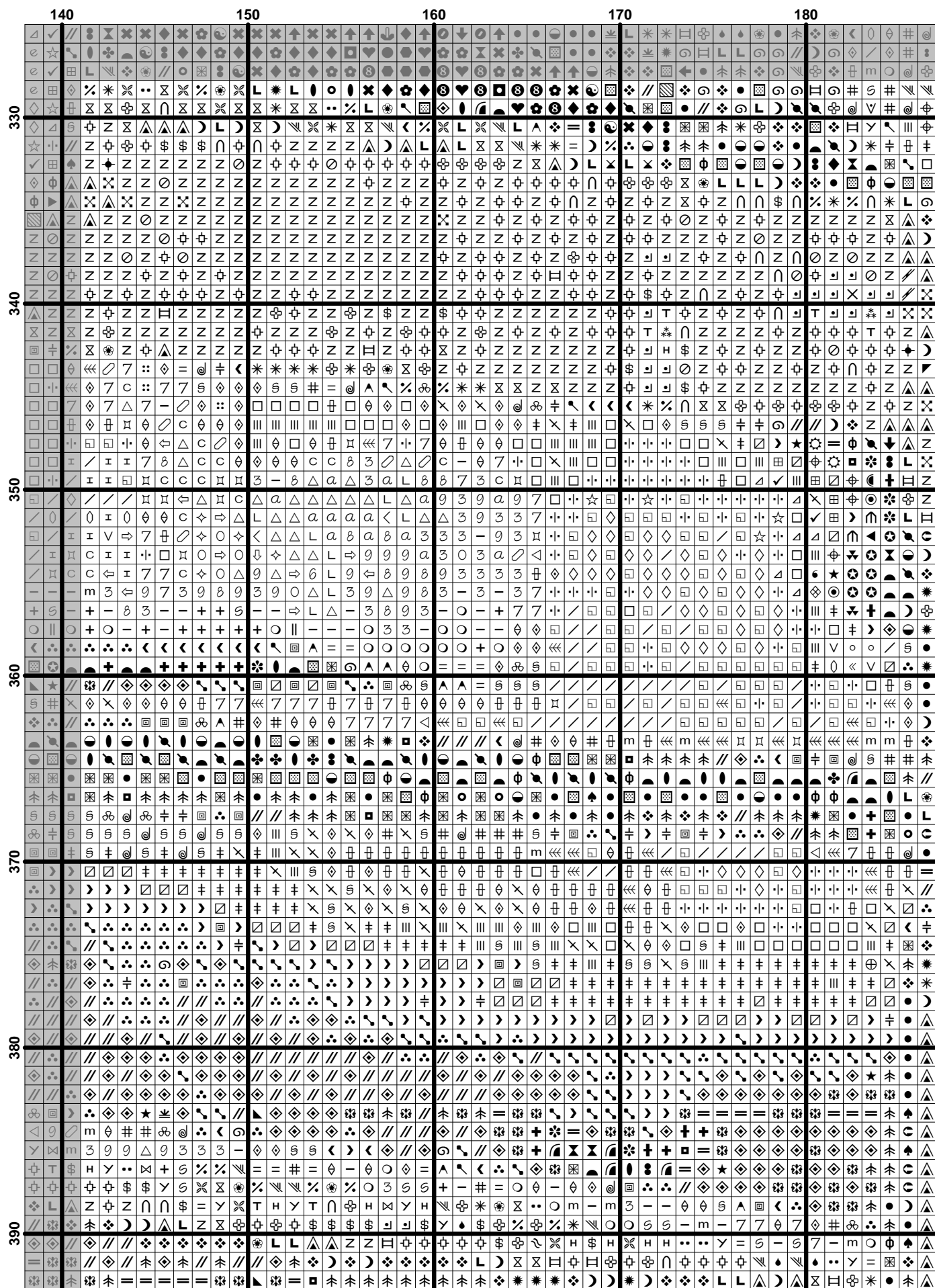
	260	330	340	350	360	370
270						
280						
290						
300						
310						
320						

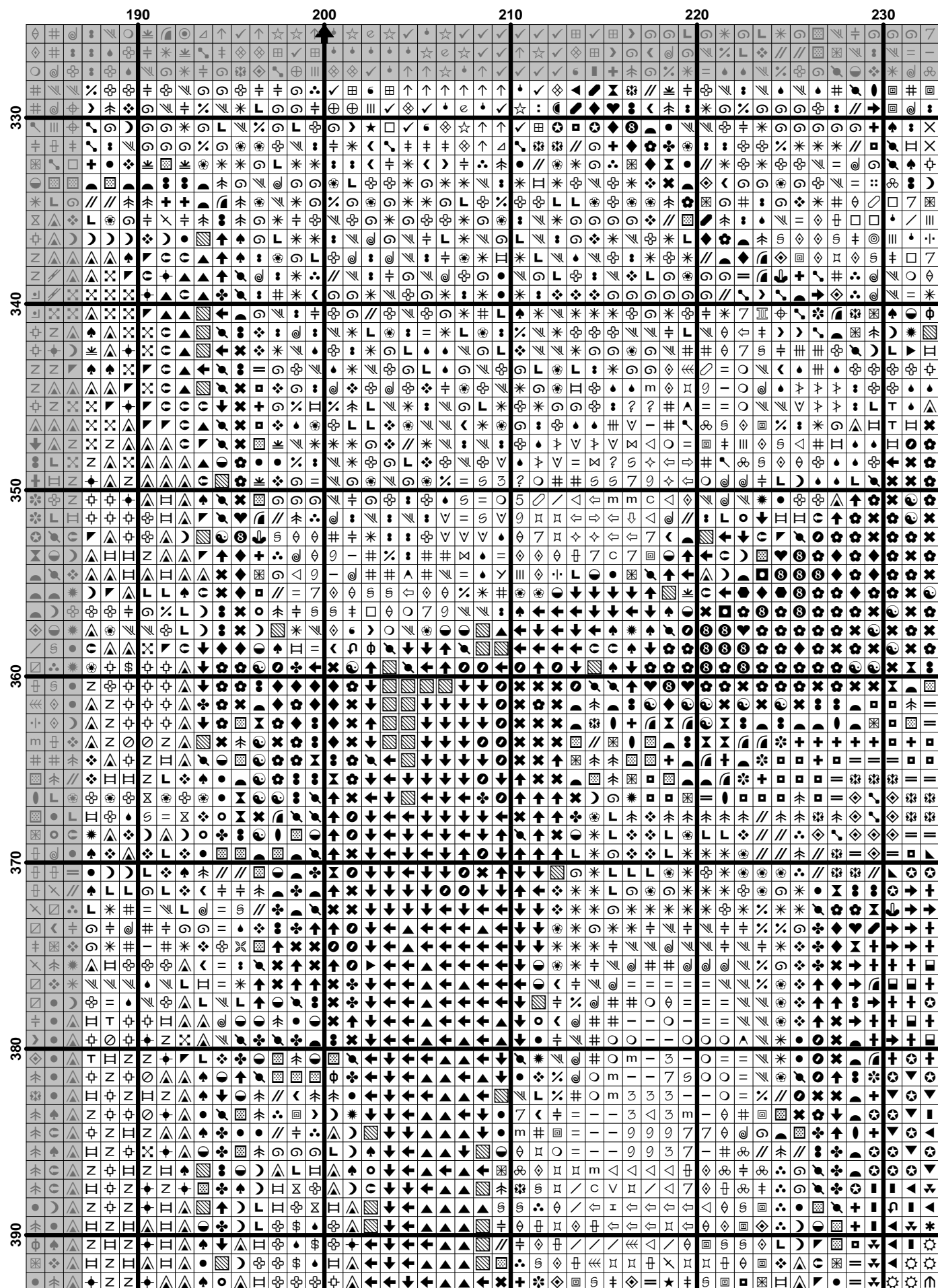


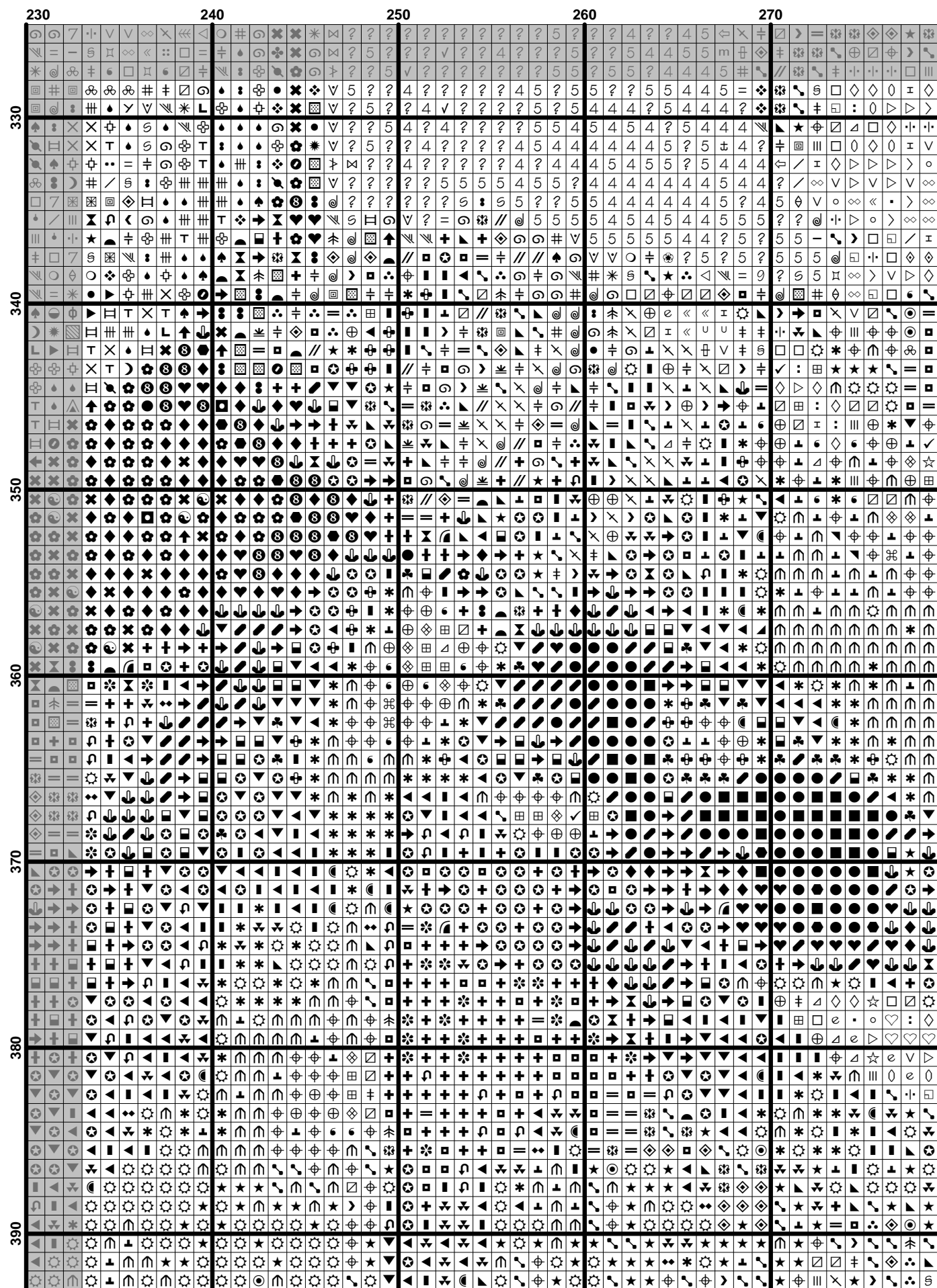
$$(55) \quad \begin{aligned} & \text{[The } \langle \text{Noun}_1 \rangle \text{ is a noun phrase]} \\ & \text{[The } \langle \text{Verb}_1 \rangle \text{ is a verb phrase]} \end{aligned}$$

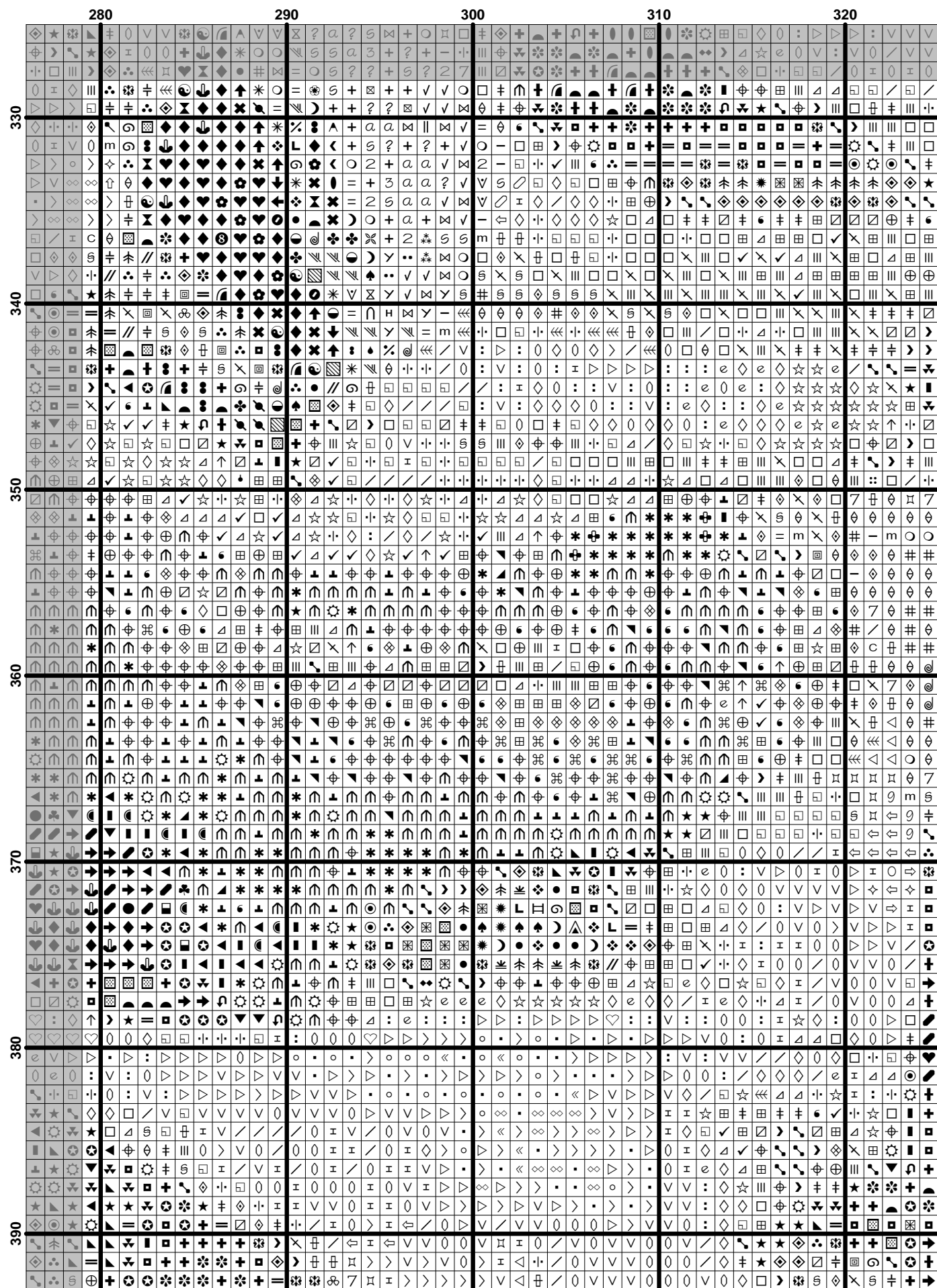
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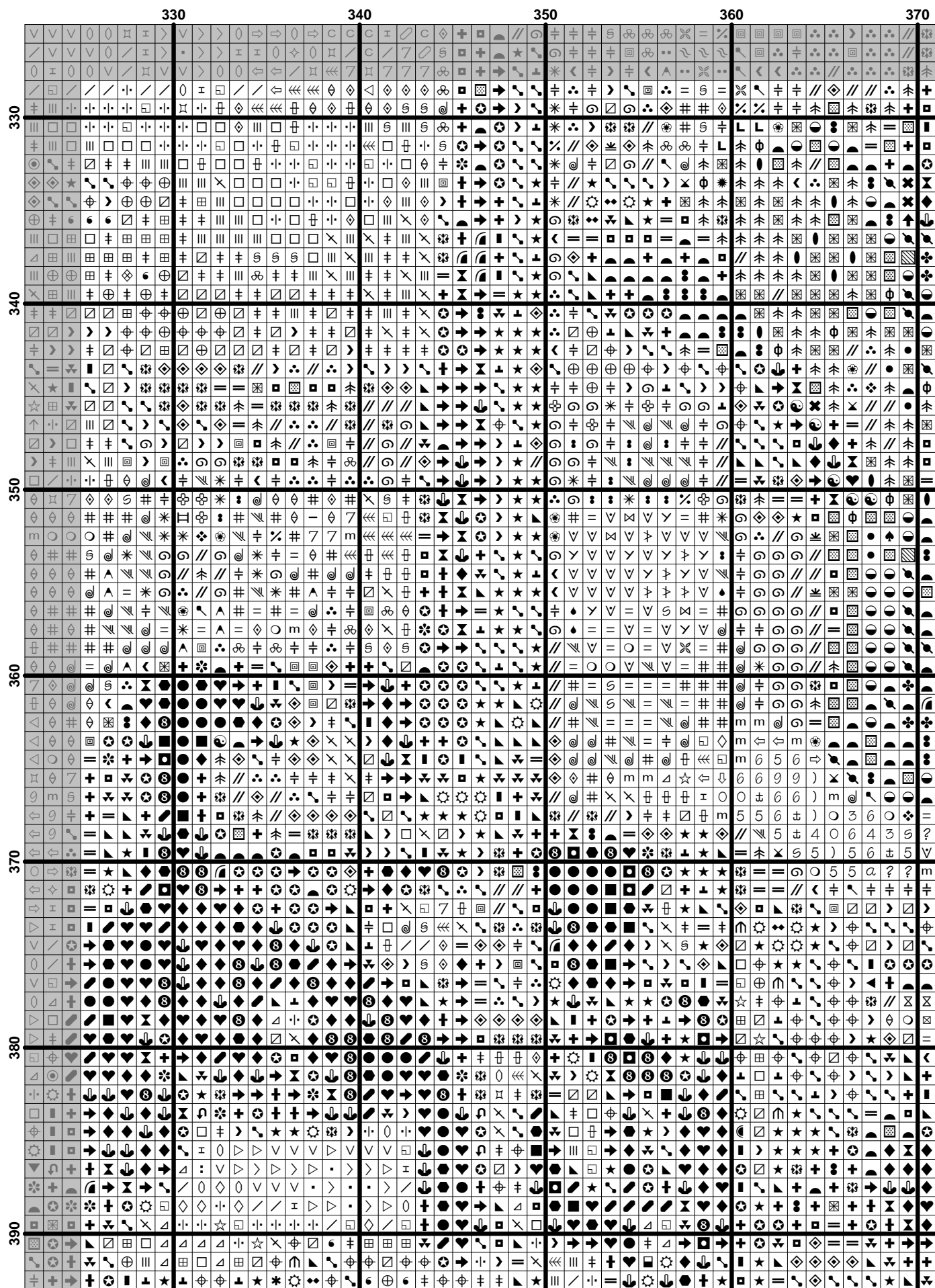


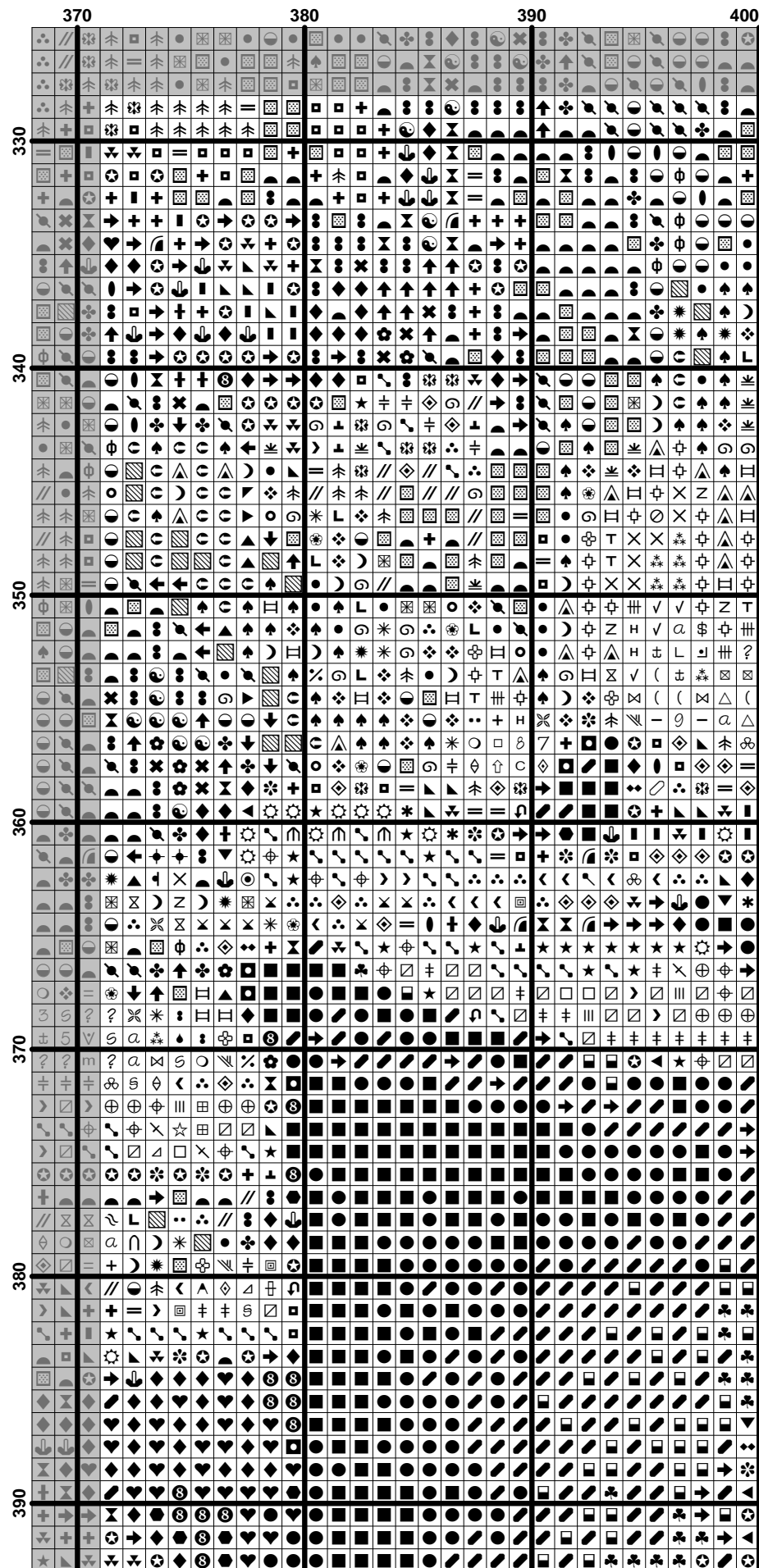


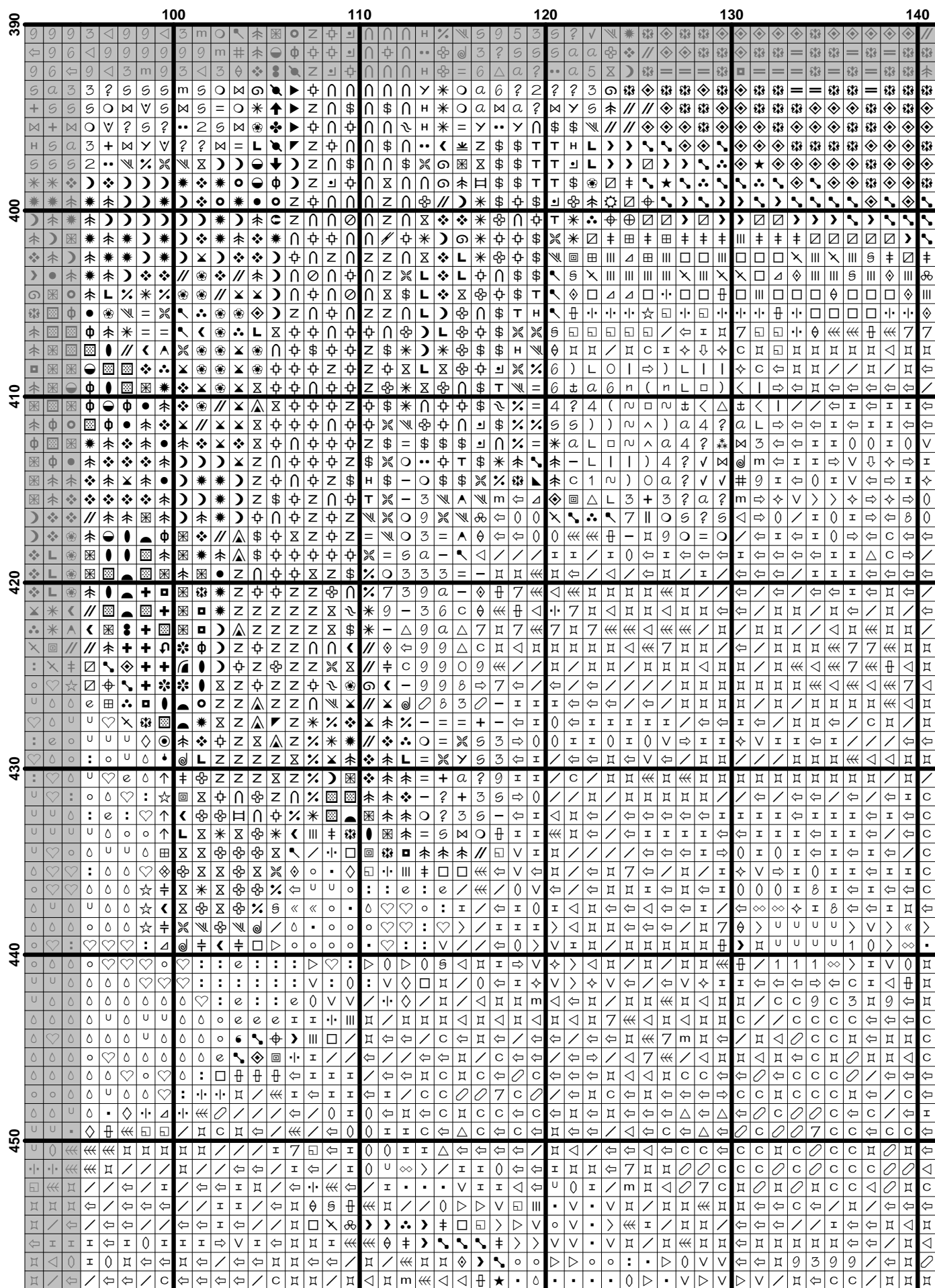


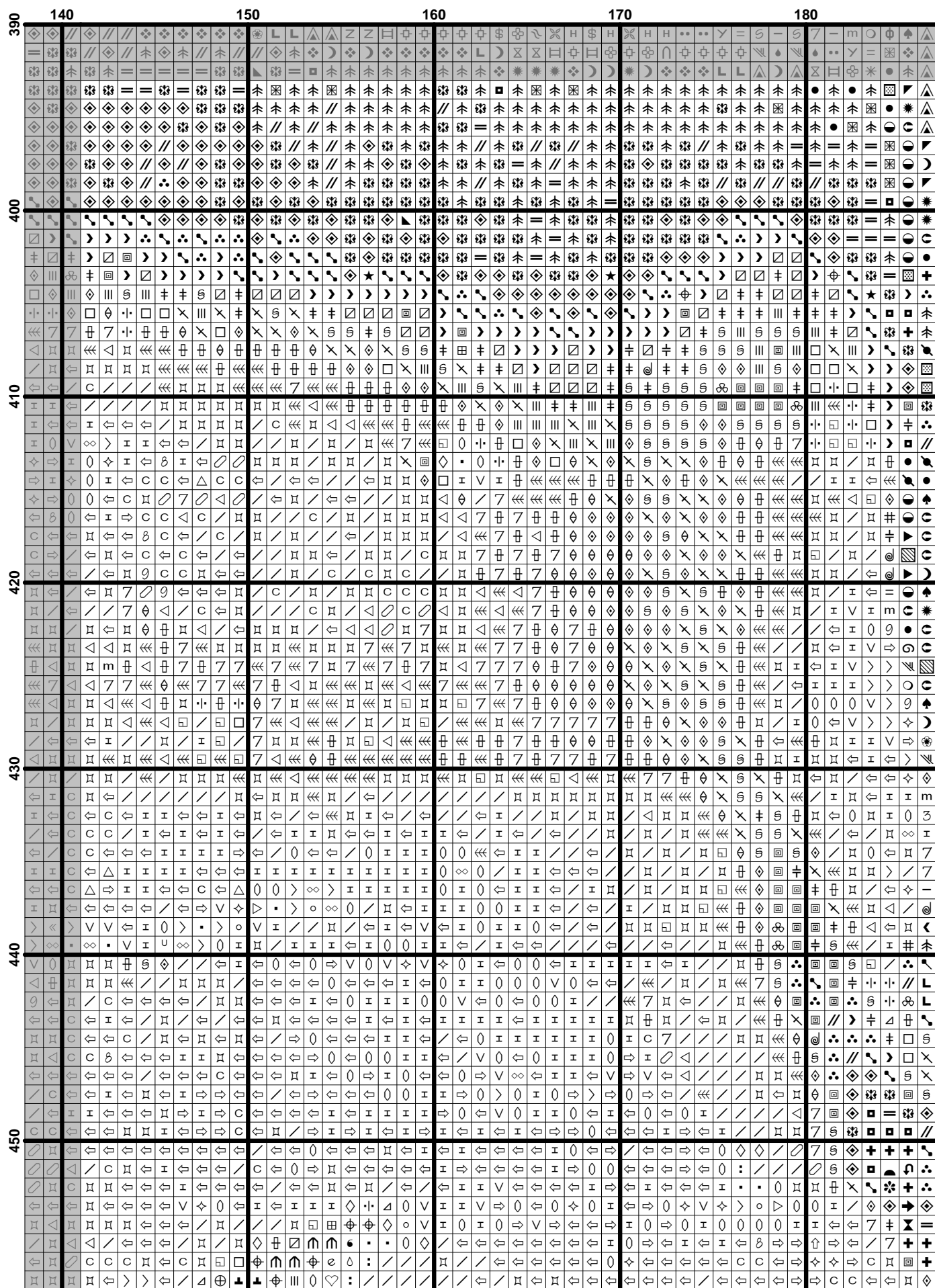


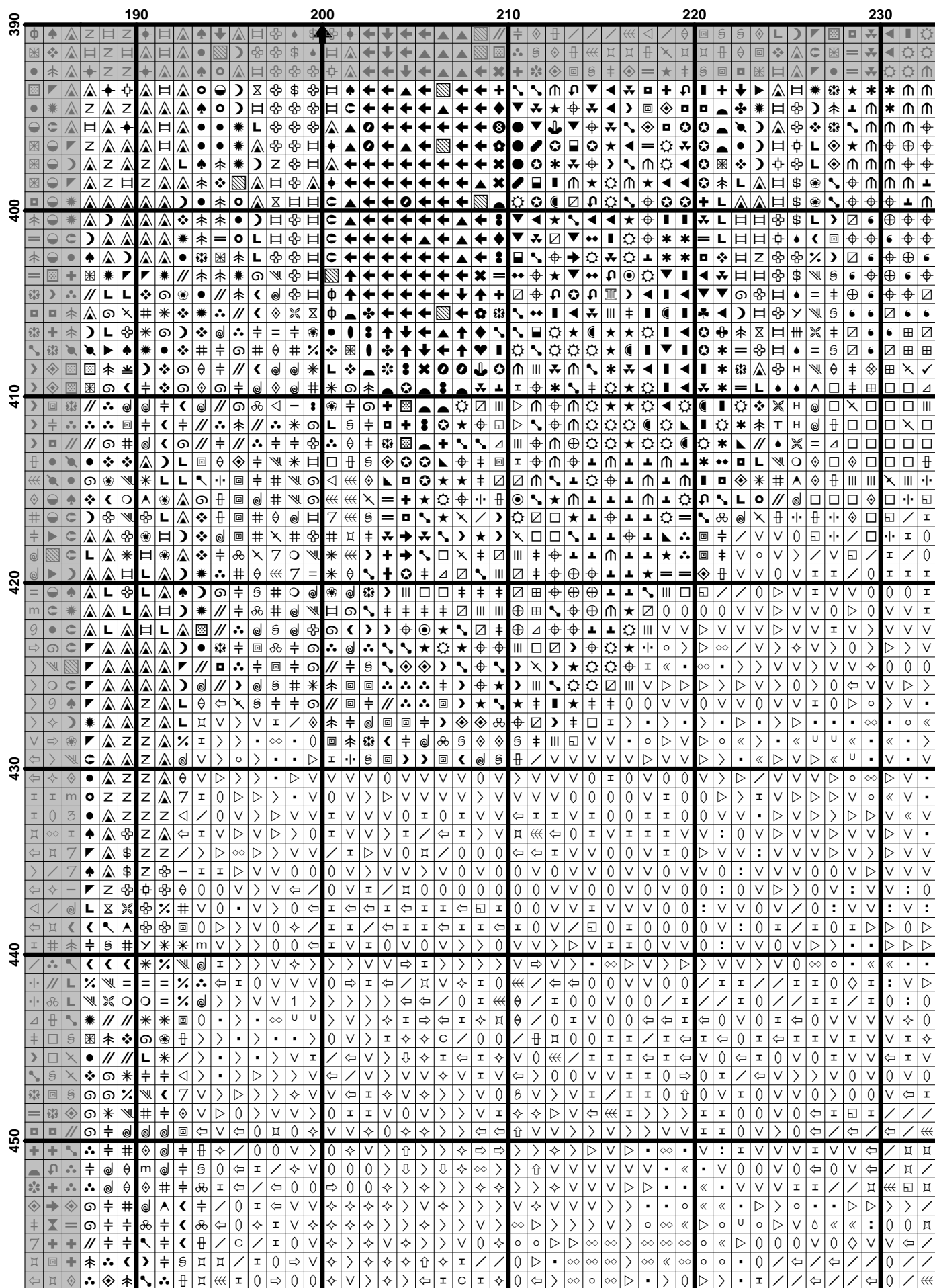


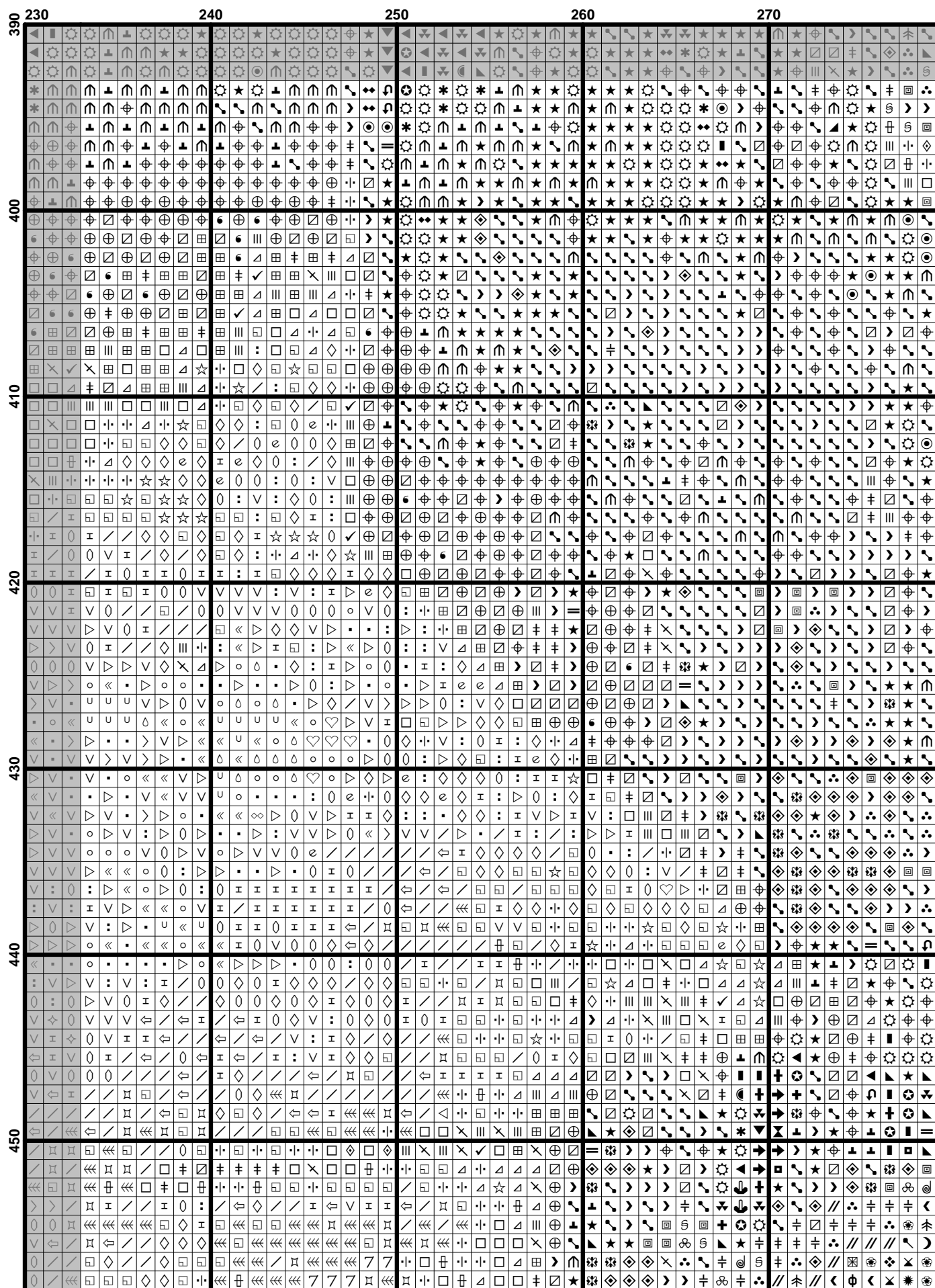


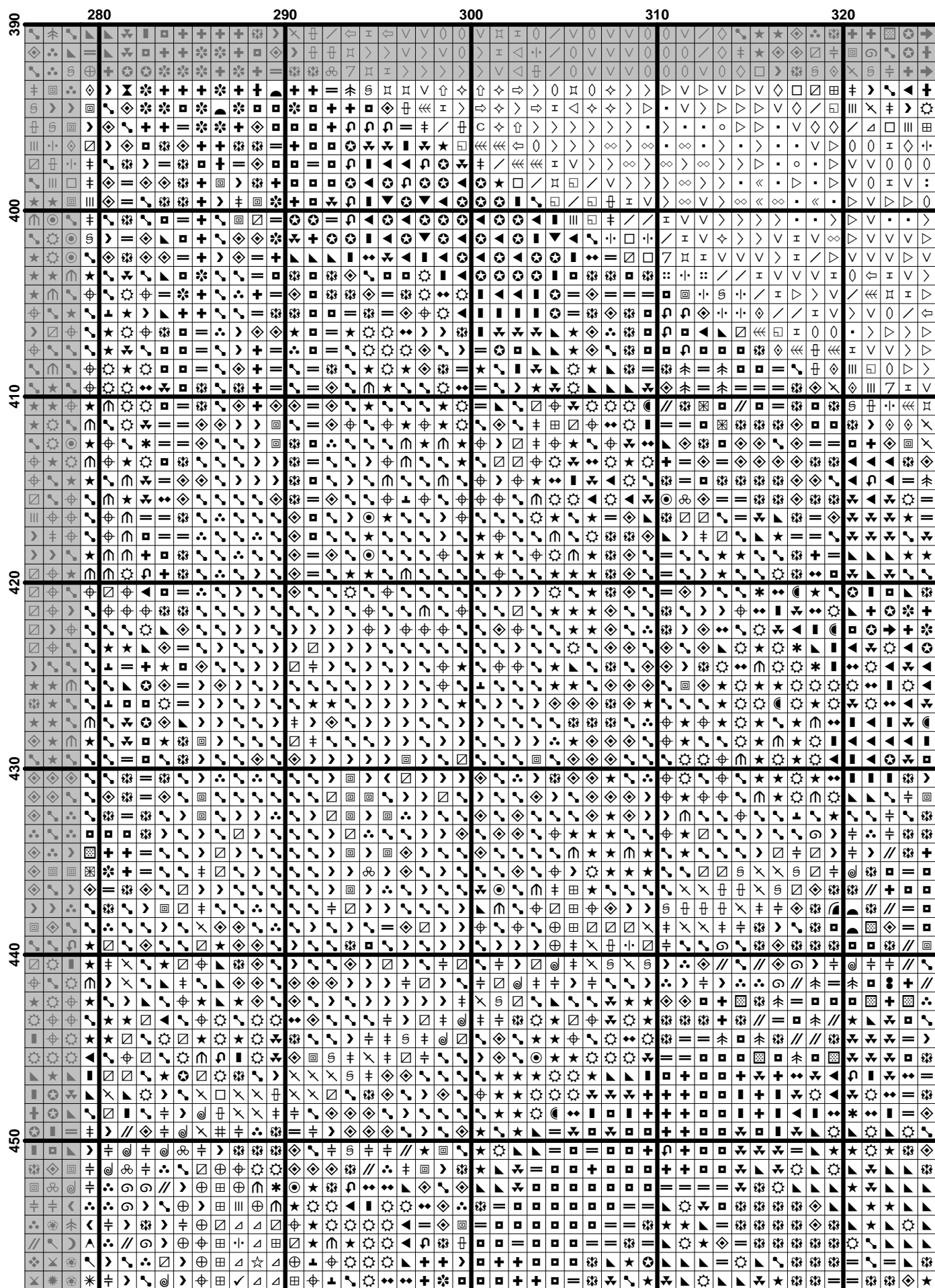


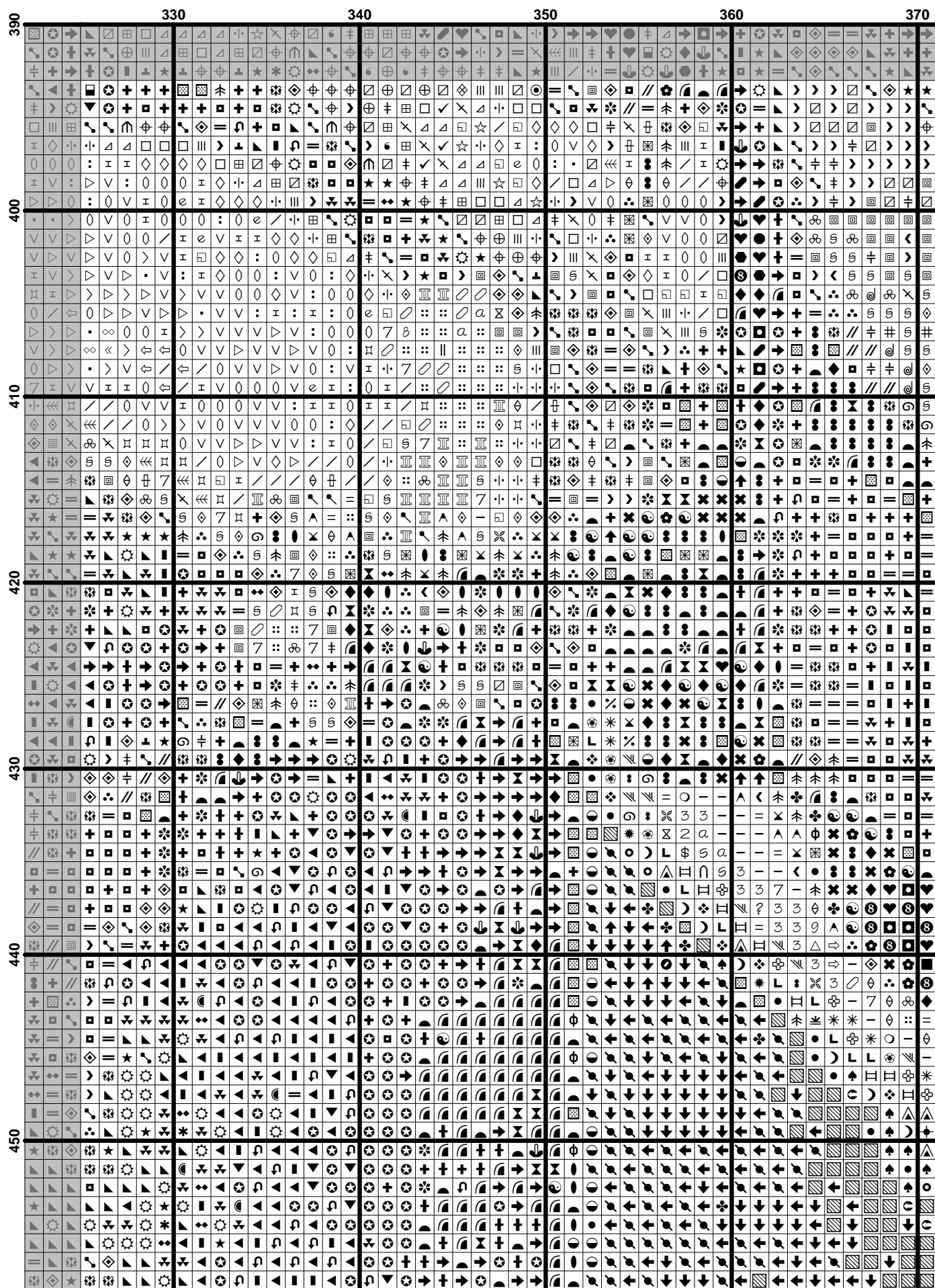


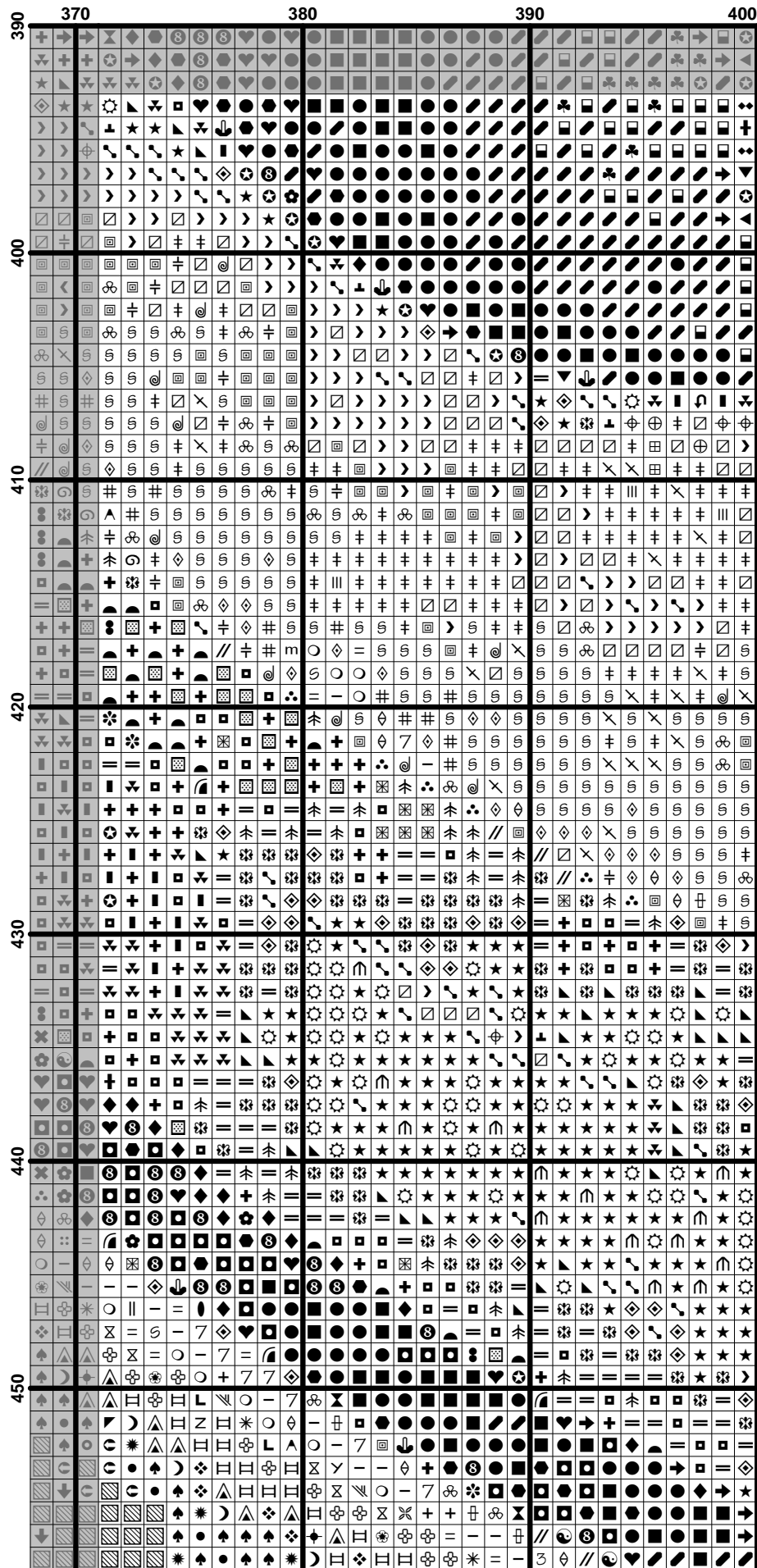












[illegible]

[illegible]

[illegible]

	140																150																160																170																180															
460	[Grid 140x16]																[Grid 150x16]																[Grid 160x16]																[Grid 170x16]																[Grid 180x16]															
470	[Grid 140x16]																[Grid 150x16]																[Grid 160x16]																[Grid 170x16]																[Grid 180x16]															
480	[Grid 140x16]																[Grid 150x16]																[Grid 160x16]																[Grid 170x16]																[Grid 180x16]															
490	[Grid 140x16]																[Grid 150x16]																[Grid 160x16]																[Grid 170x16]																[Grid 180x16]															
500	[Grid 140x16]																[Grid 150x16]																[Grid 160x16]																[Grid 170x16]																[Grid 180x16]															
510	[Grid 140x16]																[Grid 150x16]																[Grid 160x16]																[Grid 170x16]																[Grid 180x16]															

