

1719 Branch of Apple Blossoms



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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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Branch of Apple Blossoms

Stitch Count	
Horizontal:	340
Vertical:	396

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:	62	24,26	72	28,28	54	21,23	63	24,75	48	18,875	56	22
Including Margins:	78	31	88	35	70	28	79	31	64	25	72	29
	10				12				24			
	Width		Height		Width		Height		Width		Height	
	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch
Pattern:	86	33,96	100	39,59	72	28,3	84	32,99	36	14,15	42	16,49
Including Margins:	102	40	116	46	88	35	100	39	52	21	58	23
	25				26				27			
	Width		Height		Width		Height		Width		Height	
	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch
Pattern:	34	13,58	40	15,83	33	13,06	38	15,22	32	12,57	37	14,66
Including Margins:	50	20	56	22	49	20	54	22	48	19	53	21
	28				30				32			
	Width		Height		Width		Height		Width		Height	
	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch	cm	inch
Pattern:	31	12,13	36	14,14	28	11,32	33	13,19	27	10,61	31	12,37
Including Margins:	47	19	52	21	44	18	49	20	43	17	47	19

Solid Color Stitches. Use two strands of the specified color for these stitches.

Symbol	DMC	Name
	221	Shell Pink-VY DK
	223	Shell Pink-LT
	224	Shell Pink-VY LT
	316	Antique Mauve-MD
	347	Salmon-VY DK
	352	Coral-LT
	355	Terra Cotta-DK
	356	Terra Cotta-MD
	370	Mustard-MD
	371	Mustard
	407	Desert Sand-DK
	414	Steel Gray-DK
	420	Hazelnut Brown-DK
	422	Hazelnut Brown-LT
	433	Brown-MD
	437	Tan-LT
	451	Shell Gray-DK
	452	Shell Gray-MD
	453	Shell Gray-LT
	535	Ash Gray-VY LT
	543	Beige Brown-UL VY LT
	610	Drab Brown-DK
	611	Drab Brown
	612	Drab Brown-LT
	632	Desert Sand-UL VY DK
	640	Beige Gray-VY DK
	645	Beaver Gray-VY DK
	647	Beaver Gray-MD
	648	Beaver Gray-LT
	729	Old Gold-MD
	734	Olive Green-LT
	738	Tan-VY LT
	739	Tan-UL VY LT
	754	Peach-LT
	758	Terra Cotta-VY LT
	760	Salmon
	778	Antique Mauve-VY LT
	801	Coffee Brown-DK
	819	Baby Pink-LT
	829	Golden Olive-VY DK
	830	Golden Olive-DK
	831	Golden Olive-MD
	832	Golden Olive
	833	Golden Olive-LT
	834	Golden Olive-VY LT
	844	Beaver Brown-UL DK
	869	Hazelnut Brown-VY DK
	892	Carnation-MD
	893	Carnation-LT
	898	Coffee Brown-VY DK
	926	Gray Green-MD
	931	Antique Blue-MD
	948	Peach-VY LT

:	950	Desert Sand-LT
(951	Tawny-LT
□	963	Dusty Rose-UL VY LT
≡	3011	Khaki Green-DK
•	3012	Khaki Green-MD
↓	3021	Brown Gray-VY DK
↘	3022	Brown Gray-MD
☼	3031	Mocha Brown-VY DK
⌞	3032	Mocha Brown-MD
::	3045	Yellow Beige-DK
±	3046	Yellow Beige-MD
4	3326	Rose-LT
■	3371	Black Brown
· ·	3706	Melon-MD
⋈	3712	Salmon-MD
>	3713	Salmon-VY LT
6	3716	Dusty Rose-VY LT
♠	3721	Shell Pink-DK
◎	3722	Shell Pink-MD
+	3733	Dusty Rose
∞	3756	Baby Blue-UL VY LT
∞	3770	Tawny-VY LT
×	3772	Desert Sand-VY DK
∇	3778	Terra Cotta-LT
←	3781	Mocha Brown-DK
■	3787	Brown Gray-DK
✕	3790	Beige Gray-UL DK
☛	3799	Pewter Gray-VY DK
◇	3825	Pumpkin-Pale
∇	3828	Hazelnut Brown
⋈	3829	Old Gold-VY DK
●	3831	Raspberry-DK
△	3833	Raspberry-LT
⋈	3856	Mahogany-UL VY LT
♣	3860	Cocoa
#	3861	Cocoa-LT
▼	3862	Mocha Beige-DK
?	3864	Mocha Beige-LT
1	3865	Winter White
↑	3866	Mocha Brown-UL VY LT

Blend Stitches. Use one strand of each of DMC1 and DMC2 for these stitches.

Symbol	DMC1	Name1	DMC2	Name2
u	1	White 1	3865	Winter White
▲	223	Shell Pink-LT	3778	Terra Cotta-LT
♣	223	Shell Pink-LT	3861	Cocoa-LT
✓	223	Shell Pink-LT	3864	Mocha Beige-LT
√	224	Shell Pink-VY LT	3733	Dusty Rose
☉	315	Antique Mauve-VY DK	3787	Brown Gray-DK
5	316	Antique Mauve-MD	224	Shell Pink-VY LT
⬇	317	Pewter Gray	451	Shell Gray-DK
▲	317	Pewter Gray	645	Beaver Gray-VY DK
•	353	Peach	948	Peach-VY LT

➤	370	Mustard-MD	420	Hazelnut Brown-DK
☒	370	Mustard-MD	611	Drab Brown
×	371	Mustard	611	Drab Brown
☆	372	Mustard-LT	3864	Mocha Beige-LT
—	402	Mahogany-VY LT	407	Desert Sand-DK
≡	414	Steel Gray-DK	647	Beaver Gray-MD
⊕	414	Steel Gray-DK	931	Antique Blue-MD
≡	414	Steel Gray-DK	3042	Antique Violet-LT
⊕	414	Steel Gray-DK	3849	Teal Green-LT
○	415	Pearl Gray	963	Dusty Rose-UL VY LT
▀	420	Hazelnut Brown-DK	632	Desert Sand-UL VY DK
♦♦	420	Hazelnut Brown-DK	830	Golden Olive-DK
☐	420	Hazelnut Brown-DK	3828	Hazelnut Brown
7	422	Hazelnut Brown-LT	3045	Yellow Beige-DK
☒	433	Brown-MD	632	Desert Sand-UL VY DK
↺	435	Brown-VY LT	436	Tan
☒	451	Shell Gray-DK	642	Beige Gray-DK
☒	451	Shell Gray-DK	645	Beaver Gray-VY DK
//	451	Shell Gray-DK	3860	Cocoa
\$	451	Shell Gray-DK	3861	Cocoa-LT
◀	451	Shell Gray-DK	3863	Mocha Beige-MD
3	452	Shell Gray-MD	842	Beige Brown-VY LT
●	535	Ash Gray-VY LT	844	Beaver Brown-UL DK
⊕	535	Ash Gray-VY LT	3740	Antique Violet-DK
☐	535	Ash Gray-VY LT	3787	Brown Gray-DK
○	543	Beige Brown-UL VY LT	778	Antique Mauve-VY LT
+	610	Drab Brown-DK	640	Beige Gray-VY DK
✱	610	Drab Brown-DK	839	Beige Brown-DK
●	610	Drab Brown-DK	844	Beaver Brown-UL DK
	612	Drab Brown-LT	3859	Rosewood-LT
☒	632	Desert Sand-UL VY DK	3787	Brown Gray-DK
✱	645	Beaver Gray-VY DK	3740	Antique Violet-DK
☐	645	Beaver Gray-VY DK	3860	Cocoa
☐	646	Beaver Gray-DK	3041	Antique Violet-MD
◊	646	Beaver Gray-DK	3860	Cocoa
✱	647	Beaver Gray-MD	841	Beige Brown-LT
†	647	Beaver Gray-MD	931	Antique Blue-MD
•	647	Beaver Gray-MD	932	Antique Blue-LT
∩	647	Beaver Gray-MD	3041	Antique Violet-MD
⊕	647	Beaver Gray-MD	3042	Antique Violet-LT
†	647	Beaver Gray-MD	3860	Cocoa
..	647	Beaver Gray-MD	3861	Cocoa-LT
⇐	738	Tan-VY LT	3046	Yellow Beige-MD
⇐	739	Tan-UL VY LT	945	Tawny
♡	745	Yellow-LT Pale	3046	Yellow Beige-MD
<	745	Yellow-LT Pale	3856	Mahogany-UL VY LT
⇒	778	Antique Mauve-VY LT	3713	Salmon-VY LT
8	778	Antique Mauve-VY LT	3716	Dusty Rose-VY LT
H	793	Cornflower Blue-MD	927	Gray Green-LT
«	819	Baby Pink-LT	3865	Winter White
■	823	Navy Blue-DK	938	Coffee Brown-UL DK
2	833	Golden Olive-LT	3828	Hazelnut Brown
●	838	Beige Brown-VY DK	902	Garnet-VY DK
●	838	Beige Brown-VY DK	3371	Black Brown
✱	838	Beige Brown-VY DK	3781	Mocha Brown-DK
✱	839	Beige Brown-DK	844	Beaver Brown-UL DK
➔	839	Beige Brown-DK	3021	Brown Gray-VY DK
▼	839	Beige Brown-DK	3787	Brown Gray-DK
↑	839	Beige Brown-DK	3799	Pewter Gray-VY DK

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■	839	Beige Brown-DK	3802	Antique Mauve-VY DK
▲	844	Beaver Brown-UL DK	3721	Shell Pink-DK
⊗	844	Beaver Brown-UL DK	3740	Antique Violet-DK
⊕	844	Beaver Brown-UL DK	3860	Cocoa
⊖	844	Beaver Brown-UL DK	3862	Mocha Beige-DK
⊞	892	Carnation-MD	3831	Raspberry-DK
●	902	Garnet-VY DK	3371	Black Brown
⋯	926	Gray Green-MD	931	Antique Blue-MD
↘	927	Gray Green-LT	931	Antique Blue-MD
○	927	Gray Green-LT	3861	Cocoa-LT
◎	931	Antique Blue-MD	932	Antique Blue-LT
◐	931	Antique Blue-MD	3849	Teal Green-LT
↖	931	Antique Blue-MD	3861	Cocoa-LT
⊙	938	Coffee Brown-UL DK	3799	Pewter Gray-VY DK
◆	938	Coffee Brown-UL DK	3802	Antique Mauve-VY DK
↓	945	Tawny	3823	Yellow-UL Pale
◦	963	Dusty Rose-UL VY LT	3756	Baby Blue-UL VY LT
∣	963	Dusty Rose-UL VY LT	3866	Mocha Brown-UL VY LT
⊞	3022	Brown Gray-MD	3860	Cocoa
⊞	3328	Salmon-DK	3712	Salmon-MD
↖	3328	Salmon-DK	3722	Shell Pink-MD
⋈	3346	Hunter Green	3790	Beige Gray-UL DK
♣	3685	Mauve-DK	3721	Shell Pink-DK
⊞	3713	Salmon-VY LT	3716	Dusty Rose-VY LT
+	3721	Shell Pink-DK	3740	Antique Violet-DK
⌋	3721	Shell Pink-DK	3772	Desert Sand-VY DK
✱	3721	Shell Pink-DK	3830	Terra Cotta-MD
◦	3721	Shell Pink-DK	3860	Cocoa
=	3721	Shell Pink-DK	3862	Mocha Beige-DK
Σ	3726	Antique Mauve-DK	3861	Cocoa-LT
☾	3740	Antique Violet-DK	3790	Beige Gray-UL DK
∩	3756	Baby Blue-UL VY LT	3865	Winter White
★	3772	Desert Sand-VY DK	3862	Mocha Beige-DK
*	3787	Brown Gray-DK	3860	Cocoa
=	3849	Teal Green-LT	3861	Cocoa-LT
⊕	3860	Cocoa	3861	Cocoa-LT
▲	3860	Cocoa	3862	Mocha Beige-DK
⊞	3861	Cocoa-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	
1	White 1	7	2	7	2	6	2
221	Shell Pink-VY DK	6	2	6	2	5	1
223	Shell Pink-LT	117	46	112	44	101	39
224	Shell Pink-VY LT	155	61	148	58	133	52
315	Antique Mauve-VY DK	298	117	284	111	255	100
316	Antique Mauve-MD	60	23	57	22	51	20
317	Pewter Gray	140	55	133	52	120	47
347	Salmon-VY DK	4	1	3	1	3	1
352	Coral-LT	7	2	7	2	6	2
353	Peach	9	3	8	3	7	2
355	Terra Cotta-DK	4	1	4	1	4	1
356	Terra Cotta-MD	15	5	14	5	13	5
370	Mustard-MD	197	77	188	74	169	66
371	Mustard	175	68	167	65	150	59
372	Mustard-LT	51	20	48	18	44	17
402	Mahogany-VY LT	11	4	10	3	9	3
407	Desert Sand-DK	44	17	42	16	38	14
414	Steel Gray-DK	354	139	337	132	303	119
415	Pearl Gray	48	18	46	18	41	16
420	Hazelnut Brown-DK	226	88	216	85	194	76
422	Hazelnut Brown-LT	168	66	160	62	144	56
433	Brown-MD	57	22	54	21	49	19
435	Brown-VY LT	4	1	3	1	3	1
436	Tan	4	1	3	1	3	1
437	Tan-LT	24	9	23	9	21	8
451	Shell Gray-DK	1745	687	1662	654	1496	588
452	Shell Gray-MD	146	57	139	54	125	49
453	Shell Gray-LT	70	27	67	26	60	23
535	Ash Gray-VY LT	846	333	806	317	725	285
543	Beige Brown-UL VY LT	118	46	113	44	101	39
610	Drab Brown-DK	576	226	548	215	494	194
611	Drab Brown	297	116	282	111	254	100
612	Drab Brown-LT	139	54	132	51	119	46
632	Desert Sand-UL VY DK	246	96	235	92	211	83
640	Beige Gray-VY DK	311	122	296	116	266	104
642	Beige Gray-DK	289	113	275	108	247	97
645	Beaver Gray-VY DK	2330	917	2219	873	1997	786
646	Beaver Gray-DK	1121	441	1068	420	961	378
647	Beaver Gray-MD	1273	501	1213	477	1091	429
648	Beaver Gray-LT	56	22	53	20	48	18
729	Old Gold-MD	47	18	45	17	40	15
734	Olive Green-LT	70	27	67	26	60	23
738	Tan-VY LT	121	47	115	45	104	40
739	Tan-UL VY LT	37	14	35	13	32	12
745	Yellow-LT Pale	19	7	18	7	16	6
754	Peach-LT	14	5	13	5	12	4
758	Terra Cotta-VY LT	30	11	28	11	25	9
760	Salmon	22	8	21	8	19	7
778	Antique Mauve-VY LT	204	80	194	76	175	68
793	Cornflower Blue-MD	26	10	25	9	23	9
801	Coffee Brown-DK	70	27	67	26	60	23
819	Baby Pink-LT	212	83	202	79	182	71
823	Navy Blue-DK	213	83	203	79	183	72

829	Golden Olive-VY DK	84	33	80	31	72	28
830	Golden Olive-DK	119	46	114	44	102	40
831	Golden Olive-MD	65	25	62	24	56	22
832	Golden Olive	32	12	31	12	28	11
833	Golden Olive-LT	63	24	60	23	54	21
834	Golden Olive-VY LT	89	35	85	33	77	30
838	Beige Brown-VY DK	269	105	257	101	231	90
839	Beige Brown-DK	1196	470	1139	448	1025	403
841	Beige Brown-LT	100	39	96	37	86	33
842	Beige Brown-VY LT	60	23	57	22	51	20
844	Beaver Brown-UL DK	3296	1297	3139	1235	2825	1112
869	Hazelnut Brown-VY DK	71	27	67	26	61	24
892	Carnation-MD	9	3	8	3	8	3
893	Carnation-LT	4	1	3	1	3	1
898	Coffee Brown-VY DK	136	53	130	51	117	46
902	Garnet-VY DK	107	42	102	40	92	36
926	Gray Green-MD	24	9	23	9	21	8
927	Gray Green-LT	410	161	390	153	351	138
931	Antique Blue-MD	526	207	501	197	451	177
932	Antique Blue-LT	162	63	154	60	139	54
938	Coffee Brown-UL DK	494	194	470	185	423	166
945	Tawny	23	9	22	8	19	7
948	Peach-VY LT	39	15	37	14	34	13
950	Desert Sand-LT	60	23	57	22	52	20
951	Tawny-LT	16	6	15	5	14	5
963	Dusty Rose-UL VY LT	262	103	250	98	225	88
3011	Khaki Green-DK	62	24	59	23	53	20
3012	Khaki Green-MD	41	16	39	15	35	13
3021	Brown Gray-VY DK	270	106	257	101	232	91
3022	Brown Gray-MD	626	246	597	235	537	211
3031	Mocha Brown-VY DK	210	82	200	78	180	70
3032	Mocha Brown-MD	209	82	199	78	180	70
3041	Antique Violet-MD	333	131	317	124	285	112
3042	Antique Violet-LT	95	37	90	35	81	31
3045	Yellow Beige-DK	202	79	193	75	173	68
3046	Yellow Beige-MD	109	42	104	40	94	37
3326	Rose-LT	25	9	24	9	21	8
3328	Salmon-DK	24	9	23	9	20	7
3346	Hunter Green	5	1	5	1	5	1
3371	Black Brown	552	217	525	206	473	186
3685	Mauve-DK	4	1	3	1	3	1
3706	Melon-MD	4	1	3	1	3	1
3712	Salmon-MD	19	7	18	7	17	6
3713	Salmon-VY LT	109	42	104	40	94	37
3716	Dusty Rose-VY LT	32	12	30	11	27	10
3721	Shell Pink-DK	69	27	66	25	59	23
3722	Shell Pink-MD	43	16	41	16	37	14
3726	Antique Mauve-DK	29	11	28	11	25	9
3733	Dusty Rose	65	25	62	24	55	21
3740	Antique Violet-DK	1803	709	1717	675	1545	608
3756	Baby Blue-UL VY LT	128	50	122	48	110	43
3770	Tawny-VY LT	59	23	56	22	51	20
3772	Desert Sand-VY DK	134	52	128	50	115	45
3778	Terra Cotta-LT	36	14	34	13	31	12
3781	Mocha Brown-DK	377	148	359	141	323	127
3787	Brown Gray-DK	1657	652	1578	621	1420	559
3790	Beige Gray-UL DK	575	226	547	215	493	194
3799	Pewter Gray-VY DK	431	169	411	161	370	145
3802	Antique Mauve-VY DK	162	63	154	60	139	54

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3823	Yellow-UL Pale	7	2	7	2	6	2
3825	Pumpkin-Pale	4	1	4	1	4	1
3828	Hazelnut Brown	113	44	107	42	97	38
3829	Old Gold-VY DK	10	3	9	3	8	3
3830	Terra Cotta-MD	6	2	6	2	5	1
3831	Raspberry-DK	15	5	14	5	13	5
3833	Raspberry-LT	26	10	25	9	22	8
3849	Teal Green-LT	240	94	228	89	205	80
3856	Mahogany-UL VY LT	25	9	24	9	22	8
3859	Rosewood-LT	17	6	17	6	15	5
3860	Cocoa	5890	2318	5610	2208	5049	1987
3861	Cocoa-LT	1096	431	1044	411	940	370
3862	Mocha Beige-DK	627	246	597	235	538	211
3863	Mocha Beige-MD	381	150	363	142	327	128
3864	Mocha Beige-LT	242	95	230	90	207	81
3865	Winter White	176	69	168	66	151	59
3866	Mocha Brown-UL VY LT	144	56	137	53	124	48

Extended thread usage table.							
DMC	Name	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)
		10		12		24	
1	White 1	11	4	9	3	5	2
221	Shell Pink-VY DK	9	2	8	2	4	1
223	Shell Pink-LT	182	70	152	59	76	29
224	Shell Pink-VY LT	239	94	200	78	100	39
315	Antique Mauve-VY DK	459	180	383	150	191	75
316	Antique Mauve-MD	92	36	77	30	38	15
317	Pewter Gray	216	85	180	71	90	35
347	Salmon-VY DK	5	2	5	2	2	1
352	Coral-LT	11	4	9	3	5	2
353	Peach	13	4	11	3	5	2
355	Terra Cotta-DK	7	2	6	2	3	1
356	Terra Cotta-MD	23	9	20	8	10	4
370	Mustard-MD	304	119	254	99	127	50
371	Mustard	270	106	225	89	113	44
372	Mustard-LT	79	31	66	26	33	13
402	Mahogany-VY LT	16	5	14	5	7	2
407	Desert Sand-DK	68	25	57	21	29	11
414	Steel Gray-DK	545	214	455	179	227	89
415	Pearl Gray	74	29	62	24	31	12
420	Hazelnut Brown-DK	349	137	291	114	146	57
422	Hazelnut Brown-LT	259	101	216	84	108	42
433	Brown-MD	88	34	74	29	37	14
435	Brown-VY LT	5	2	5	2	2	1
436	Tan	5	2	5	2	2	1
437	Tan-LT	38	14	32	12	16	6
451	Shell Gray-DK	2693	1058	2244	882	1122	441
452	Shell Gray-MD	225	88	188	74	94	37
453	Shell Gray-LT	108	41	90	35	45	17
535	Ash Gray-VY LT	1305	513	1088	428	544	214
543	Beige Brown-UL VY LT	182	70	152	59	76	29
610	Drab Brown-DK	889	349	741	291	371	146
611	Drab Brown	457	180	381	150	191	75
612	Drab Brown-LT	214	83	179	69	89	35
632	Desert Sand-UL VY DK	380	149	317	125	158	62
640	Beige Gray-VY DK	479	187	399	156	200	78

642	Beige Gray-DK	445	175	371	146	185	73
645	Beaver Gray-VY DK	3595	1415	2996	1179	1498	590
646	Beaver Gray-DK	1730	680	1442	567	721	284
647	Beaver Gray-MD	1964	772	1637	644	818	322
648	Beaver Gray-LT	86	32	72	27	36	14
729	Old Gold-MD	72	27	60	23	30	11
734	Olive Green-LT	108	41	90	35	45	17
738	Tan-VY LT	187	72	156	60	78	30
739	Tan-UL VY LT	58	22	48	18	24	9
745	Yellow-LT Pale	29	11	24	9	12	5
754	Peach-LT	22	7	18	6	9	3
758	Terra Cotta-VY LT	45	16	38	14	19	7
760	Salmon	34	13	29	11	14	5
778	Antique Mauve-VY LT	315	122	263	102	131	51
793	Cornflower Blue-MD	41	16	35	14	17	7
801	Coffee Brown-DK	108	41	90	35	45	17
819	Baby Pink-LT	328	128	273	107	137	53
823	Navy Blue-DK	329	130	275	108	137	54
829	Golden Olive-VY DK	130	50	108	42	54	21
830	Golden Olive-DK	184	72	153	60	77	30
831	Golden Olive-MD	101	40	84	33	42	17
832	Golden Olive	50	20	42	17	21	8
833	Golden Olive-LT	97	38	81	32	41	16
834	Golden Olive-VY LT	139	54	116	45	58	23
838	Beige Brown-VY DK	416	162	347	135	173	68
839	Beige Brown-DK	1845	725	1538	605	769	302
841	Beige Brown-LT	155	59	129	50	65	25
842	Beige Brown-VY LT	92	36	77	30	38	15
844	Beaver Brown-UL DK	5085	2002	4238	1668	2119	834
869	Hazelnut Brown-VY DK	110	43	92	36	46	18
892	Carnation-MD	14	5	12	5	6	2
893	Carnation-LT	5	2	5	2	2	1
898	Coffee Brown-VY DK	211	83	176	69	88	35
902	Garnet-VY DK	166	65	138	54	69	27
926	Gray Green-MD	38	14	32	12	16	6
927	Gray Green-LT	632	248	527	207	263	104
931	Antique Blue-MD	812	319	677	266	338	133
932	Antique Blue-LT	250	97	209	81	104	41
938	Coffee Brown-UL DK	761	299	635	249	317	125
945	Tawny	34	13	29	11	14	5
948	Peach-VY LT	61	23	51	20	26	10
950	Desert Sand-LT	94	36	78	30	39	15
951	Tawny-LT	25	9	21	8	11	4
963	Dusty Rose-UL VY LT	405	158	338	132	169	66
3011	Khaki Green-DK	95	36	80	30	40	15
3012	Khaki Green-MD	63	23	53	20	26	10
3021	Brown Gray-VY DK	418	164	348	137	174	68
3022	Brown Gray-MD	967	380	806	317	403	158
3031	Mocha Brown-VY DK	324	126	270	105	135	53
3032	Mocha Brown-MD	324	126	270	105	135	53
3041	Antique Violet-MD	513	202	428	168	214	84
3042	Antique Violet-LT	146	56	122	47	61	23
3045	Yellow Beige-DK	311	122	260	102	130	51
3046	Yellow Beige-MD	169	67	141	56	71	28
3326	Rose-LT	38	14	32	12	16	6
3328	Salmon-DK	36	13	30	11	15	5
3346	Hunter Green	9	2	8	2	4	1
3371	Black Brown	851	335	710	279	355	140
3685	Mauve-DK	5	2	5	2	2	1

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3706	Melon-MD	5	2	5	2	2	1
3712	Salmon-MD	31	11	26	9	13	5
3713	Salmon-VY LT	169	67	141	56	71	28
3716	Dusty Rose-VY LT	49	18	41	15	20	8
3721	Shell Pink-DK	106	41	89	35	44	17
3722	Shell Pink-MD	67	25	56	21	28	11
3726	Antique Mauve-DK	45	16	38	14	19	7
3733	Dusty Rose	99	38	83	32	41	16
3740	Antique Violet-DK	2781	1094	2318	912	1159	456
3756	Baby Blue-UL VY LT	198	77	165	65	83	32
3770	Tawny-VY LT	92	36	77	30	38	15
3772	Desert Sand-VY DK	207	81	173	68	86	34
3778	Terra Cotta-LT	56	22	47	18	23	9
3781	Mocha Brown-DK	581	229	485	191	242	95
3787	Brown Gray-DK	2556	1006	2130	839	1065	419
3790	Beige Gray-UL DK	887	349	740	291	370	146
3799	Pewter Gray-VY DK	666	261	555	218	278	109
3802	Antique Mauve-VY DK	250	97	209	81	104	41
3823	Yellow-UL Pale	11	4	9	3	5	2
3825	Pumpkin-Pale	7	2	6	2	3	1
3828	Hazelnut Brown	175	68	146	57	73	29
3829	Old Gold-VY DK	14	5	12	5	6	2
3830	Terra Cotta-MD	9	2	8	2	4	1
3831	Raspberry-DK	23	9	20	8	10	4
3833	Raspberry-LT	40	14	33	12	17	6
3849	Teal Green-LT	369	144	308	120	154	60
3856	Mahogany-UL VY LT	40	14	33	12	17	6
3859	Rosewood-LT	27	9	23	8	11	4
3860	Cocoa	9088	3577	7574	2981	3787	1490
3861	Cocoa-LT	1692	666	1410	555	705	278
3862	Mocha Beige-DK	968	380	807	317	404	158
3863	Mocha Beige-MD	589	230	491	192	245	96
3864	Mocha Beige-LT	373	146	311	122	155	61
3865	Winter White	272	106	227	89	113	44
3866	Mocha Brown-UL VY LT	223	86	186	72	93	36

Extended thread usage table.							
DMC	Name	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)
		25		26		27	
1	White 1	4	1	4	1	4	1
221	Shell Pink-VY DK	4	1	3	1	3	1
223	Shell Pink-LT	73	28	70	27	67	26
224	Shell Pink-VY LT	96	37	92	36	89	35
315	Antique Mauve-VY DK	184	72	177	69	170	67
316	Antique Mauve-MD	37	14	35	14	34	13
317	Pewter Gray	86	34	83	33	80	31
347	Salmon-VY DK	2	1	2	1	2	1
352	Coral-LT	4	1	4	1	4	1
353	Peach	5	1	5	1	5	1
355	Terra Cotta-DK	3	1	3	1	3	1
356	Terra Cotta-MD	9	4	9	3	9	3
370	Mustard-MD	122	48	117	46	113	44
371	Mustard	108	42	104	41	100	39
372	Mustard-LT	32	12	30	12	29	11
402	Mahogany-VY LT	6	2	6	2	6	2
407	Desert Sand-DK	27	10	26	10	25	9

414	Steel Gray-DK	218	86	210	82	202	79
415	Pearl Gray	30	12	28	11	27	11
420	Hazelnut Brown-DK	140	55	134	53	129	51
422	Hazelnut Brown-LT	104	40	100	39	96	37
433	Brown-MD	35	14	34	13	33	13
435	Brown-VY LT	2	1	2	1	2	1
436	Tan	2	1	2	1	2	1
437	Tan-LT	15	6	15	6	14	5
451	Shell Gray-DK	1077	423	1036	407	997	392
452	Shell Gray-MD	90	35	87	34	83	33
453	Shell Gray-LT	43	17	42	16	40	15
535	Ash Gray-VY LT	522	205	502	197	483	190
543	Beige Brown-UL VY LT	73	28	70	27	67	26
610	Drab Brown-DK	356	140	342	134	329	129
611	Drab Brown	183	72	176	69	169	67
612	Drab Brown-LT	86	33	82	32	79	31
632	Desert Sand-UL VY DK	152	60	146	57	141	55
640	Beige Gray-VY DK	192	75	184	72	177	69
642	Beige Gray-DK	178	70	171	67	165	65
645	Beaver Gray-VY DK	1438	566	1383	544	1331	524
646	Beaver Gray-DK	692	272	665	262	641	252
647	Beaver Gray-MD	786	309	755	297	727	286
648	Beaver Gray-LT	35	13	33	12	32	12
729	Old Gold-MD	29	11	28	10	27	10
734	Olive Green-LT	43	17	42	16	40	15
738	Tan-VY LT	75	29	72	28	69	27
739	Tan-UL VY LT	23	9	22	8	21	8
745	Yellow-LT Pale	12	4	11	4	11	4
754	Peach-LT	9	3	8	3	8	3
758	Terra Cotta-VY LT	18	6	17	6	17	6
760	Salmon	14	5	13	5	13	5
778	Antique Mauve-VY LT	126	49	121	47	117	45
793	Cornflower Blue-MD	17	6	16	6	15	6
801	Coffee Brown-DK	43	17	42	16	40	15
819	Baby Pink-LT	131	51	126	49	121	47
823	Navy Blue-DK	132	52	127	50	122	48
829	Golden Olive-VY DK	52	20	50	19	48	19
830	Golden Olive-DK	73	29	71	28	68	27
831	Golden Olive-MD	40	16	39	15	37	15
832	Golden Olive	20	8	19	8	19	7
833	Golden Olive-LT	39	15	37	15	36	14
834	Golden Olive-VY LT	55	22	53	21	51	20
838	Beige Brown-VY DK	166	65	160	62	154	60
839	Beige Brown-DK	738	290	710	279	683	269
841	Beige Brown-LT	62	24	60	23	57	22
842	Beige Brown-VY LT	37	14	35	14	34	13
844	Beaver Brown-UL DK	2034	801	1956	770	1883	741
869	Hazelnut Brown-VY DK	44	17	42	17	41	16
892	Carnation-MD	6	2	6	2	5	2
893	Carnation-LT	2	1	2	1	2	1
898	Coffee Brown-VY DK	84	33	81	32	78	31
902	Garnet-VY DK	66	26	64	25	61	24
926	Gray Green-MD	15	6	15	6	14	5
927	Gray Green-LT	253	99	243	96	234	92
931	Antique Blue-MD	325	127	312	123	301	118
932	Antique Blue-LT	100	39	96	37	93	36
938	Coffee Brown-UL DK	305	120	293	115	282	111
945	Tawny	14	5	13	5	13	5
948	Peach-VY LT	24	9	24	9	23	9

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950	Desert Sand-LT	37	14	36	14	35	13
951	Tawny-LT	10	4	10	3	9	3
963	Dusty Rose-UL VY LT	162	63	156	61	150	59
3011	Khaki Green-DK	38	14	37	14	35	13
3012	Khaki Green-MD	25	9	24	9	23	9
3021	Brown Gray-VY DK	167	66	161	63	155	61
3022	Brown Gray-MD	387	152	372	146	358	141
3031	Mocha Brown-VY DK	130	50	125	48	120	47
3032	Mocha Brown-MD	130	50	125	48	120	47
3041	Antique Violet-MD	205	81	197	78	190	75
3042	Antique Violet-LT	58	22	56	21	54	21
3045	Yellow Beige-DK	125	49	120	47	115	45
3046	Yellow Beige-MD	68	27	65	26	63	25
3326	Rose-LT	15	6	15	6	14	5
3328	Salmon-DK	14	5	14	5	13	5
3346	Hunter Green	4	1	3	1	3	1
3371	Black Brown	341	134	327	129	315	124
3685	Mauve-DK	2	1	2	1	2	1
3706	Melon-MD	2	1	2	1	2	1
3712	Salmon-MD	12	4	12	4	11	4
3713	Salmon-VY LT	68	27	65	26	63	25
3716	Dusty Rose-VY LT	19	7	19	7	18	7
3721	Shell Pink-DK	42	17	41	16	39	15
3722	Shell Pink-MD	27	10	26	10	25	9
3726	Antique Mauve-DK	18	6	17	6	17	6
3733	Dusty Rose	40	15	38	15	37	14
3740	Antique Violet-DK	1112	438	1070	421	1030	405
3756	Baby Blue-UL VY LT	79	31	76	30	73	29
3770	Tawny-VY LT	37	14	35	14	34	13
3772	Desert Sand-VY DK	83	32	80	31	77	30
3778	Terra Cotta-LT	22	9	21	8	21	8
3781	Mocha Brown-DK	233	91	224	88	215	85
3787	Brown Gray-DK	1022	402	983	387	947	373
3790	Beige Gray-UL DK	355	140	341	134	329	129
3799	Pewter Gray-VY DK	266	104	256	100	247	97
3802	Antique Mauve-VY DK	100	39	96	37	93	36
3823	Yellow-UL Pale	4	1	4	1	4	1
3825	Pumpkin-Pale	3	1	3	1	3	1
3828	Hazelnut Brown	70	27	67	26	65	25
3829	Old Gold-VY DK	6	2	6	2	5	2
3830	Terra Cotta-MD	4	1	3	1	3	1
3831	Raspberry-DK	9	4	9	3	9	3
3833	Raspberry-LT	16	6	15	6	15	5
3849	Teal Green-LT	148	58	142	55	137	53
3856	Mahogany-UL VY LT	16	6	15	6	15	5
3859	Rosewood-LT	11	4	10	3	10	3
3860	Cocoa	3635	1431	3495	1376	3366	1325
3861	Cocoa-LT	677	266	651	256	627	247
3862	Mocha Beige-DK	387	152	372	146	359	141
3863	Mocha Beige-MD	235	92	226	89	218	85
3864	Mocha Beige-LT	149	58	143	56	138	54
3865	Winter White	109	42	105	41	101	39
3866	Mocha Brown-UL VY LT	89	35	86	33	83	32

Extended thread usage table.

DMC	Name	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)	Usage (cm)	Usage (inch)
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		28		30		32	
1	White 1	4	1	4	1	3	1
221	Shell Pink-VY DK	3	1	3	1	3	1
223	Shell Pink-LT	65	25	61	23	57	22
224	Shell Pink-VY LT	86	33	80	31	75	29
315	Antique Mauve-VY DK	164	64	153	60	143	56
316	Antique Mauve-MD	33	13	31	12	29	11
317	Pewter Gray	77	30	72	28	68	26
347	Salmon-VY DK	2	1	2	1	2	1
352	Coral-LT	4	1	4	1	3	1
353	Peach	5	1	4	1	4	1
355	Terra Cotta-DK	3	1	2	1	2	1
356	Terra Cotta-MD	8	3	8	3	7	3
370	Mustard-MD	109	42	101	40	95	37
371	Mustard	96	38	90	35	84	33
372	Mustard-LT	28	11	26	10	25	10
402	Mahogany-VY LT	6	2	5	2	5	2
407	Desert Sand-DK	24	9	23	8	21	8
414	Steel Gray-DK	195	77	182	71	170	67
415	Pearl Gray	26	10	25	10	23	9
420	Hazelnut Brown-DK	125	49	116	46	109	43
422	Hazelnut Brown-LT	93	36	86	34	81	32
433	Brown-MD	32	12	29	11	28	11
435	Brown-VY LT	2	1	2	1	2	1
436	Tan	2	1	2	1	2	1
437	Tan-LT	14	5	13	5	12	5
451	Shell Gray-DK	962	378	898	353	842	331
452	Shell Gray-MD	80	32	75	29	70	28
453	Shell Gray-LT	39	15	36	14	34	13
535	Ash Gray-VY LT	466	183	435	171	408	160
543	Beige Brown-UL VY LT	65	25	61	23	57	22
610	Drab Brown-DK	318	125	296	116	278	109
611	Drab Brown	163	64	152	60	143	56
612	Drab Brown-LT	77	30	71	28	67	26
632	Desert Sand-UL VY DK	136	53	127	50	119	47
640	Beige Gray-VY DK	171	67	160	62	150	59
642	Beige Gray-DK	159	62	148	58	139	55
645	Beaver Gray-VY DK	1284	505	1198	472	1123	442
646	Beaver Gray-DK	618	243	577	227	541	213
647	Beaver Gray-MD	701	276	655	257	614	241
648	Beaver Gray-LT	31	12	29	11	27	10
729	Old Gold-MD	26	10	24	9	23	8
734	Olive Green-LT	39	15	36	14	34	13
738	Tan-VY LT	67	26	62	24	59	23
739	Tan-UL VY LT	21	8	19	7	18	7
745	Yellow-LT Pale	10	4	10	4	9	3
754	Peach-LT	8	3	7	2	7	2
758	Terra Cotta-VY LT	16	6	15	5	14	5
760	Salmon	12	5	11	4	11	4
778	Antique Mauve-VY LT	113	44	105	41	98	38
793	Cornflower Blue-MD	15	6	14	5	13	5
801	Coffee Brown-DK	39	15	36	14	34	13
819	Baby Pink-LT	117	46	109	43	102	40
823	Navy Blue-DK	118	46	110	43	103	41
829	Golden Olive-VY DK	46	18	43	17	41	16
830	Golden Olive-DK	66	26	61	24	57	23
831	Golden Olive-MD	36	14	34	13	32	12
832	Golden Olive	18	7	17	7	16	6
833	Golden Olive-LT	35	14	32	13	30	12

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834	Golden Olive-VY LT	50	19	46	18	43	17
838	Beige Brown-VY DK	149	58	139	54	130	51
839	Beige Brown-DK	659	259	615	242	577	227
841	Beige Brown-LT	55	21	52	20	48	19
842	Beige Brown-VY LT	33	13	31	12	29	11
844	Beaver Brown-UL DK	1816	715	1695	667	1589	626
869	Hazelnut Brown-VY DK	39	15	37	14	34	14
892	Carnation-MD	5	2	5	2	5	2
893	Carnation-LT	2	1	2	1	2	1
898	Coffee Brown-VY DK	75	30	70	28	66	26
902	Garnet-VY DK	59	23	55	22	52	20
926	Gray Green-MD	14	5	13	5	12	5
927	Gray Green-LT	226	89	211	83	197	78
931	Antique Blue-MD	290	114	271	106	254	100
932	Antique Blue-LT	89	35	83	32	78	30
938	Coffee Brown-UL DK	272	107	254	100	238	93
945	Tawny	12	5	11	4	11	4
948	Peach-VY LT	22	8	20	8	19	7
950	Desert Sand-LT	33	13	31	12	29	11
951	Tawny-LT	9	3	8	3	8	3
963	Dusty Rose-UL VY LT	145	57	135	53	127	50
3011	Khaki Green-DK	34	13	32	12	30	11
3012	Khaki Green-MD	23	8	21	8	20	7
3021	Brown Gray-VY DK	149	59	139	55	131	51
3022	Brown Gray-MD	345	136	322	127	302	119
3031	Mocha Brown-VY DK	116	45	108	42	101	39
3032	Mocha Brown-MD	116	45	108	42	101	39
3041	Antique Violet-MD	183	72	171	67	160	63
3042	Antique Violet-LT	52	20	49	19	46	17
3045	Yellow Beige-DK	111	44	104	41	97	38
3046	Yellow Beige-MD	60	24	56	22	53	21
3326	Rose-LT	14	5	13	5	12	5
3328	Salmon-DK	13	5	12	4	11	4
3346	Hunter Green	3	1	3	1	3	1
3371	Black Brown	304	120	284	112	266	105
3685	Mauve-DK	2	1	2	1	2	1
3706	Melon-MD	2	1	2	1	2	1
3712	Salmon-MD	11	4	10	4	10	3
3713	Salmon-VY LT	60	24	56	22	53	21
3716	Dusty Rose-VY LT	17	6	16	6	15	6
3721	Shell Pink-DK	38	15	35	14	33	13
3722	Shell Pink-MD	24	9	22	8	21	8
3726	Antique Mauve-DK	16	6	15	5	14	5
3733	Dusty Rose	35	14	33	13	31	12
3740	Antique Violet-DK	993	391	927	365	869	342
3756	Baby Blue-UL VY LT	71	28	66	26	62	24
3770	Tawny-VY LT	33	13	31	12	29	11
3772	Desert Sand-VY DK	74	29	69	27	65	25
3778	Terra Cotta-LT	20	8	19	7	17	7
3781	Mocha Brown-DK	208	82	194	76	182	71
3787	Brown Gray-DK	913	359	852	335	799	314
3790	Beige Gray-UL DK	317	125	296	116	277	109
3799	Pewter Gray-VY DK	238	93	222	87	208	82
3802	Antique Mauve-VY DK	89	35	83	32	78	30
3823	Yellow-UL Pale	4	1	4	1	3	1
3825	Pumpkin-Pale	3	1	2	1	2	1
3828	Hazelnut Brown	62	24	58	23	55	21
3829	Old Gold-VY DK	5	2	5	2	5	2
3830	Terra Cotta-MD	3	1	3	1	3	1

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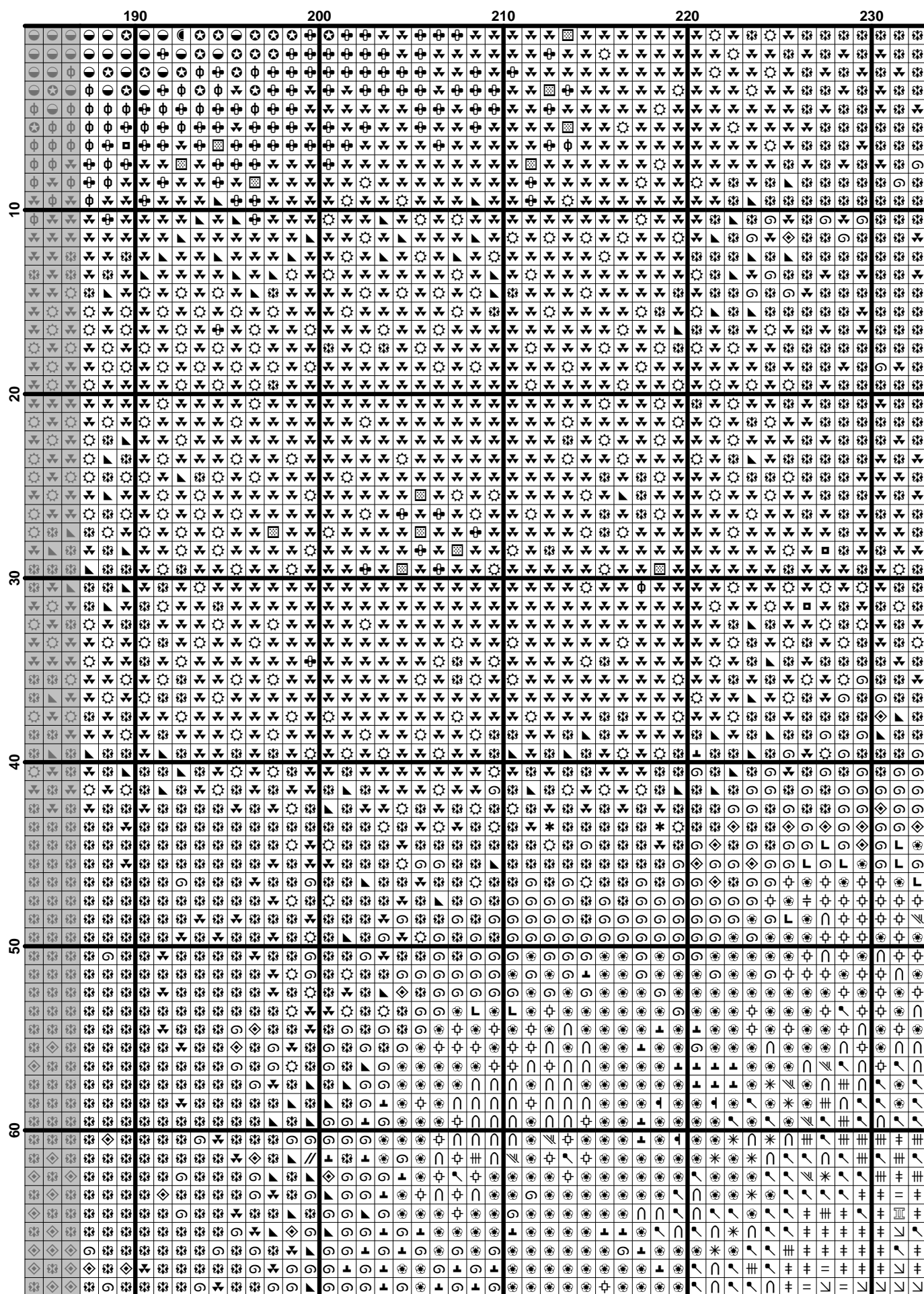
3831	Raspberry-DK	8	3	8	3	7	3
3833	Raspberry-LT	14	5	13	5	12	5
3849	Teal Green-LT	132	51	123	48	115	45
3856	Mahogany-UL VY LT	14	5	13	5	12	5
3859	Rosewood-LT	10	3	9	3	8	3
3860	Cocoa	3246	1277	3029	1192	2840	1118
3861	Cocoa-LT	604	238	564	222	529	208
3862	Mocha Beige-DK	346	136	323	127	303	119
3863	Mocha Beige-MD	210	82	196	77	184	72
3864	Mocha Beige-LT	133	52	124	49	116	46
3865	Winter White	97	38	91	35	85	33
3866	Mocha Brown-UL VY LT	80	31	74	29	70	27

(9) (10)

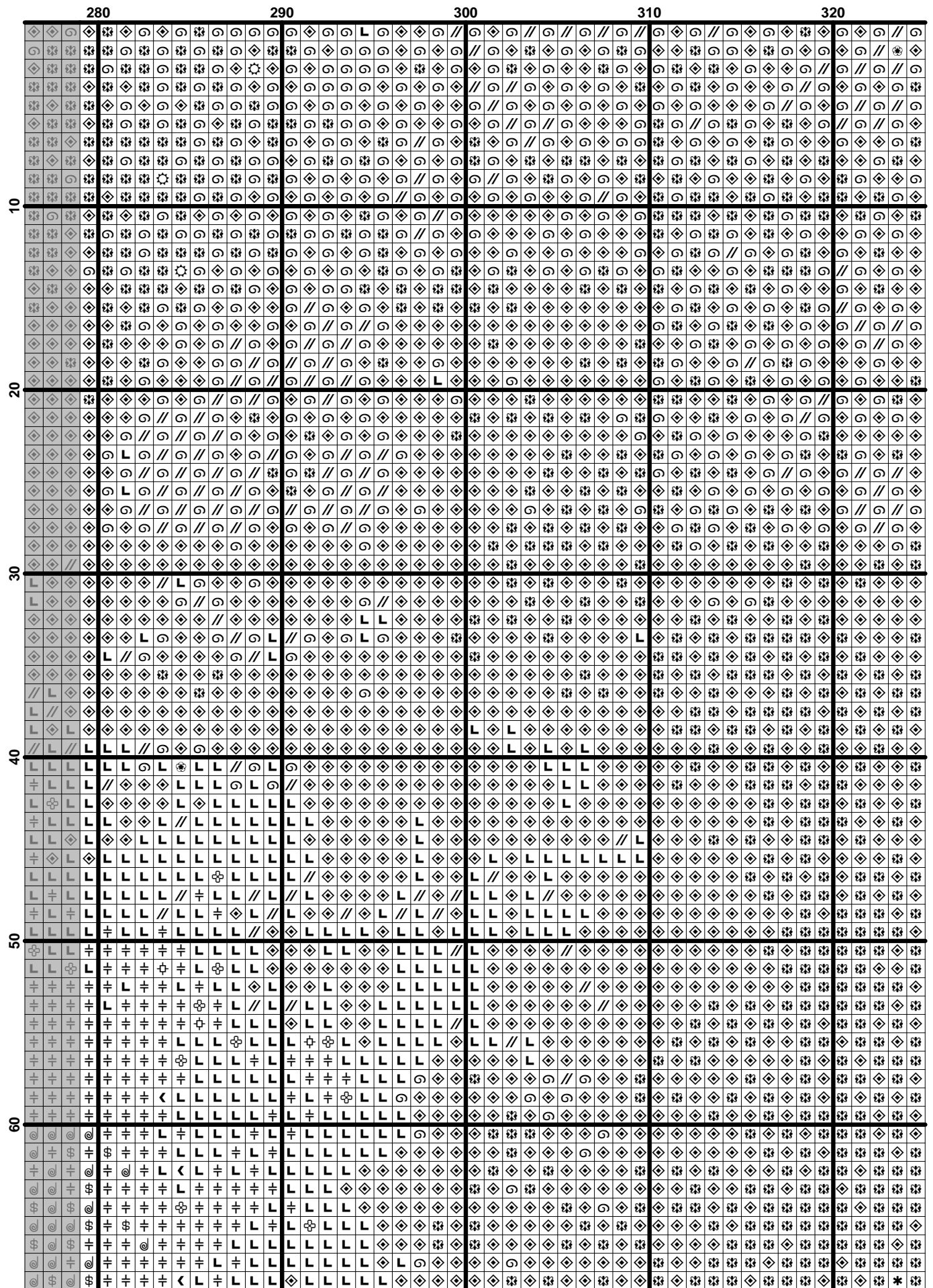
$$(10) \quad \mathcal{L}(\mathcal{A}) = \mathcal{L}(\mathcal{B}) \quad (11)$$

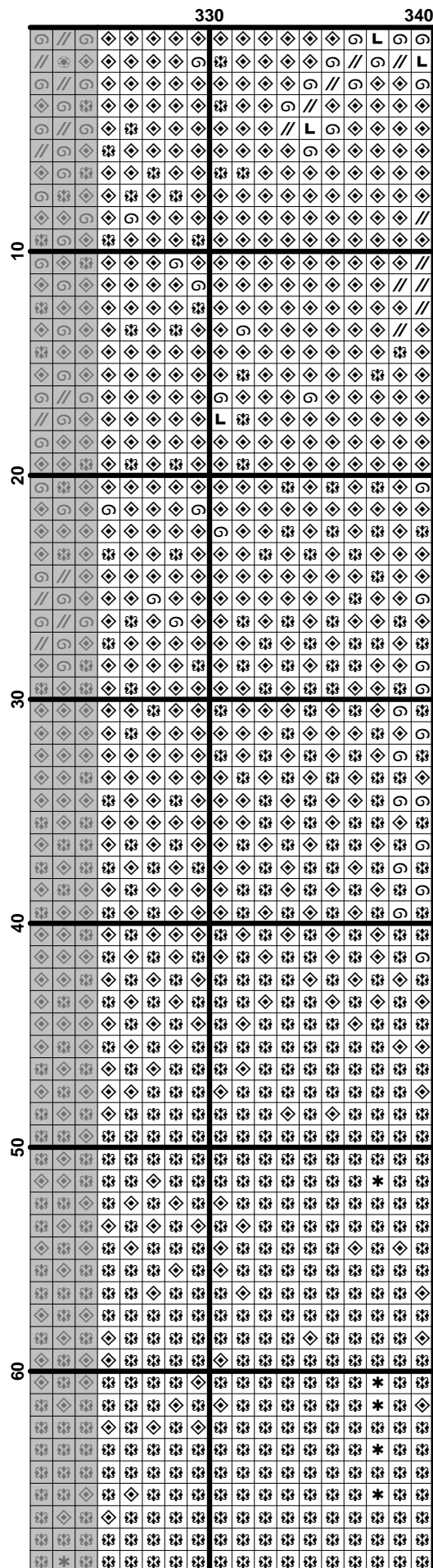
$$(11) \quad \frac{d}{dt} \left(\frac{\partial L}{\partial \dot{x}} \right) = \frac{\partial L}{\partial x}$$

	140	150	160	170	180
10					
20					
30					
40					
50					
60					



$$(14) \quad \frac{1}{\Gamma(\alpha)} \int_0^t (t-s)^{\alpha-1} f(s) ds = \frac{1}{\Gamma(\alpha)} \int_0^t (t-s)^{\alpha-1} g(s) ds + \frac{1}{\Gamma(\alpha)} \int_0^t (t-s)^{\alpha-1} h(s) ds$$





$$(17) \quad \frac{1}{\Gamma(\alpha)} \int_0^t (t-s)^{\alpha-1} f(s) ds = \frac{1}{\Gamma(\alpha)} \int_0^t (t-s)^{\alpha-1} g(s) ds + \frac{1}{\Gamma(\alpha)} \int_0^t (t-s)^{\alpha-1} h(s) ds$$

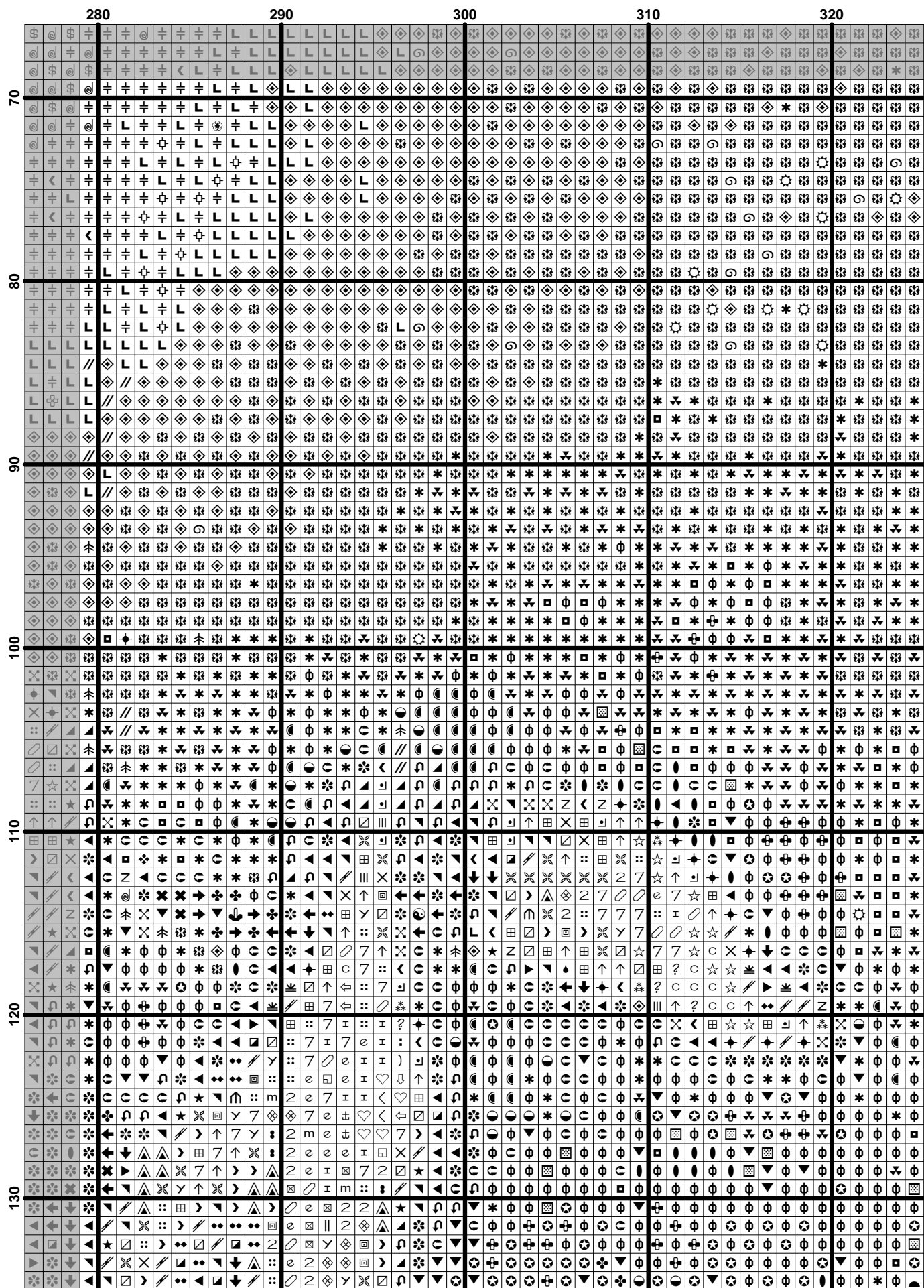
[illegible]

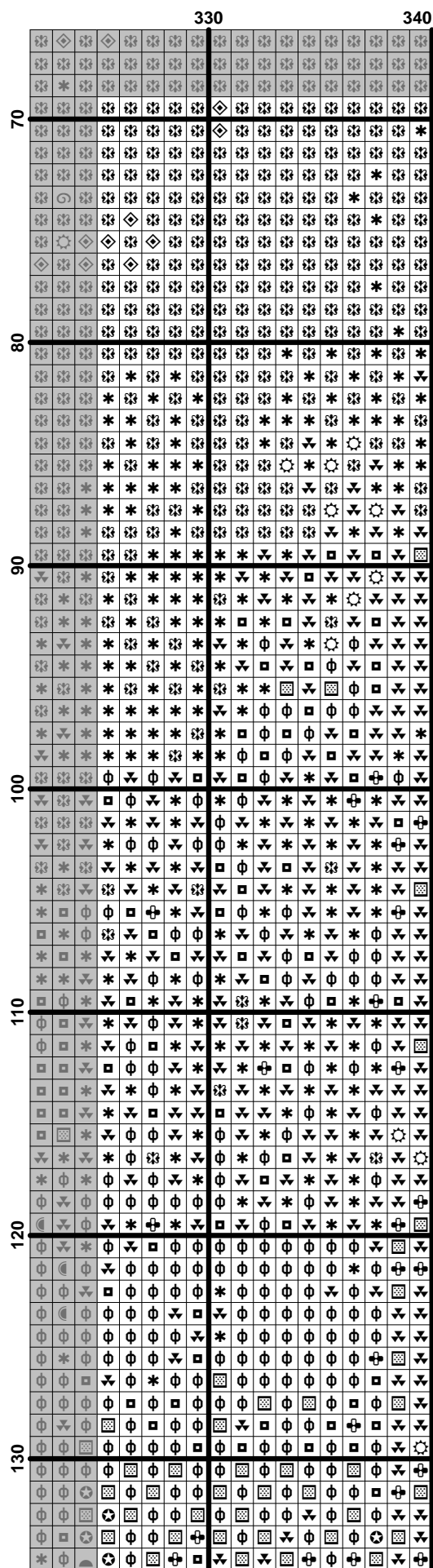
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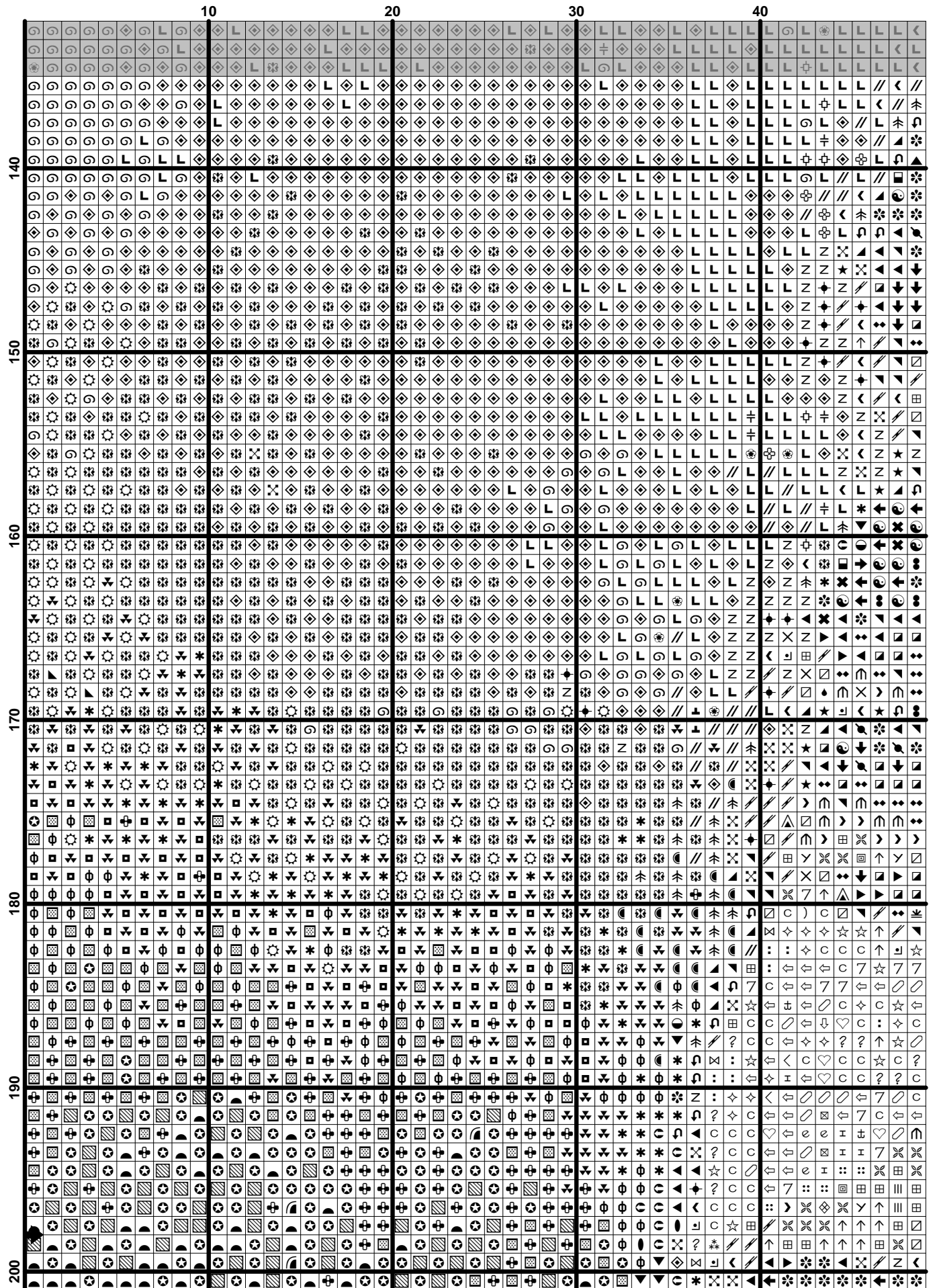
$$(20) \quad \mathcal{L}(\mathcal{A}) = \mathcal{L}(\mathcal{B}) \quad (21)$$

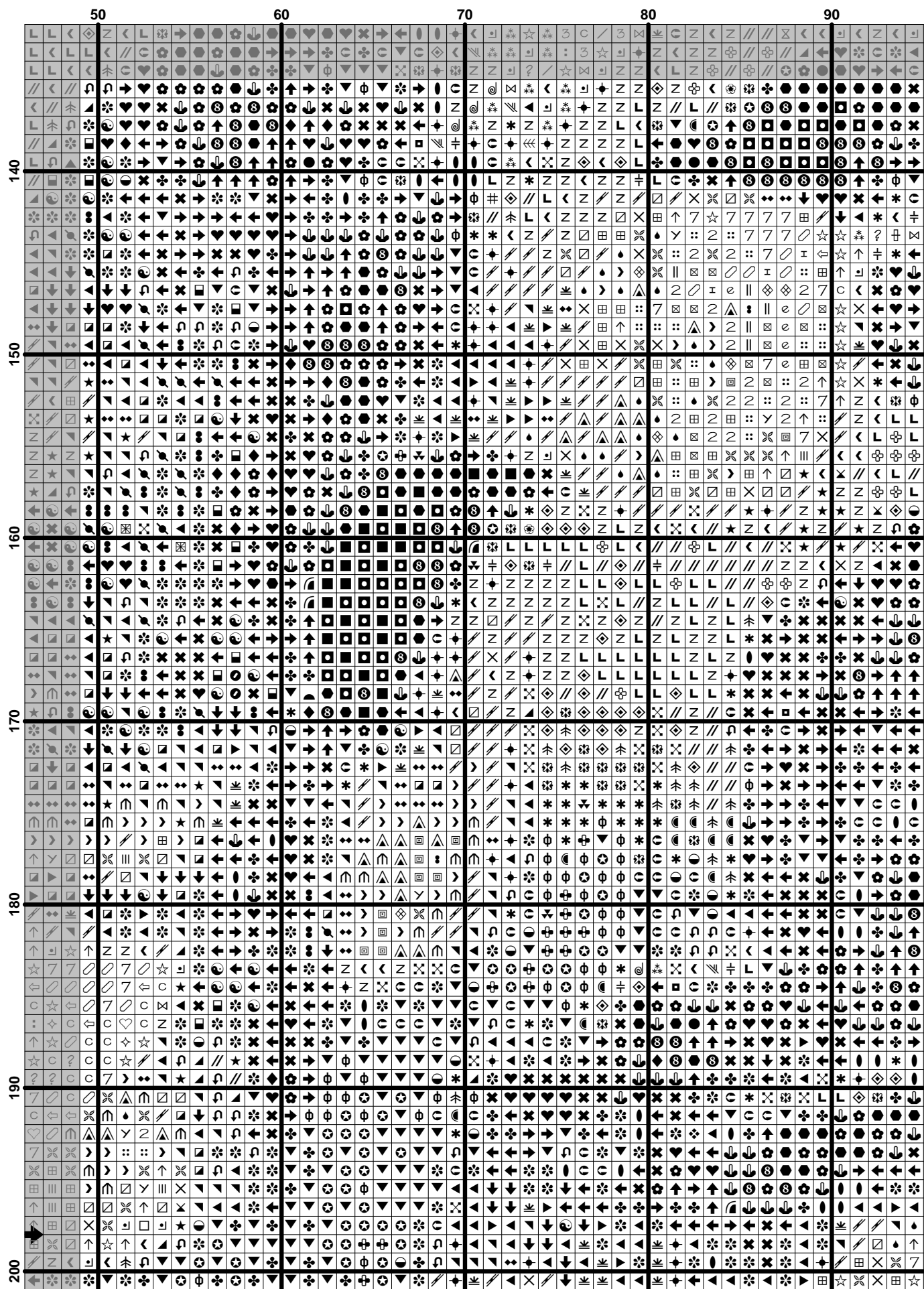
[illegible]

$$(22) \quad \mathcal{L}(\mathcal{A}) = \mathcal{L}(\mathcal{B}) \quad (23)$$

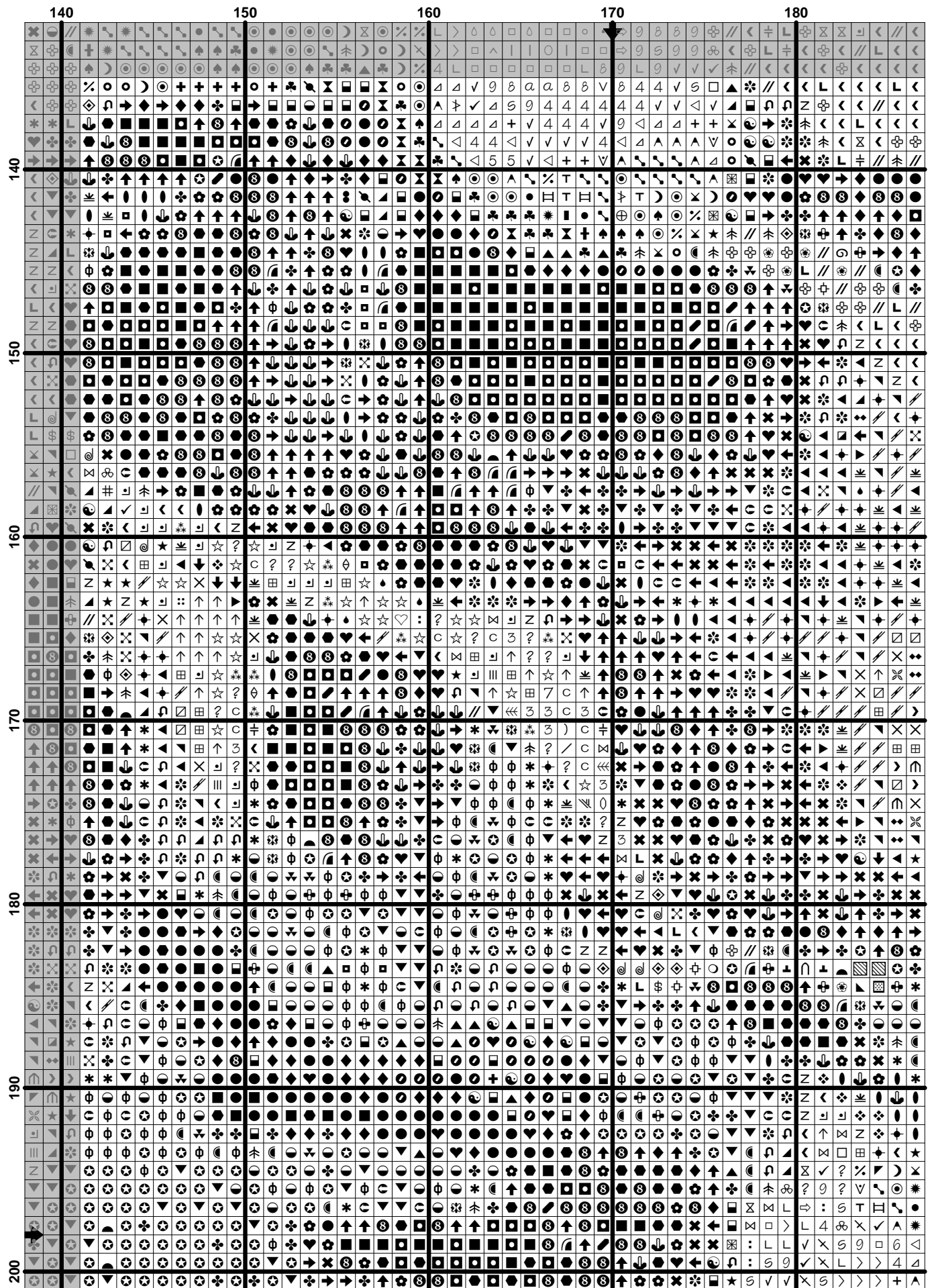






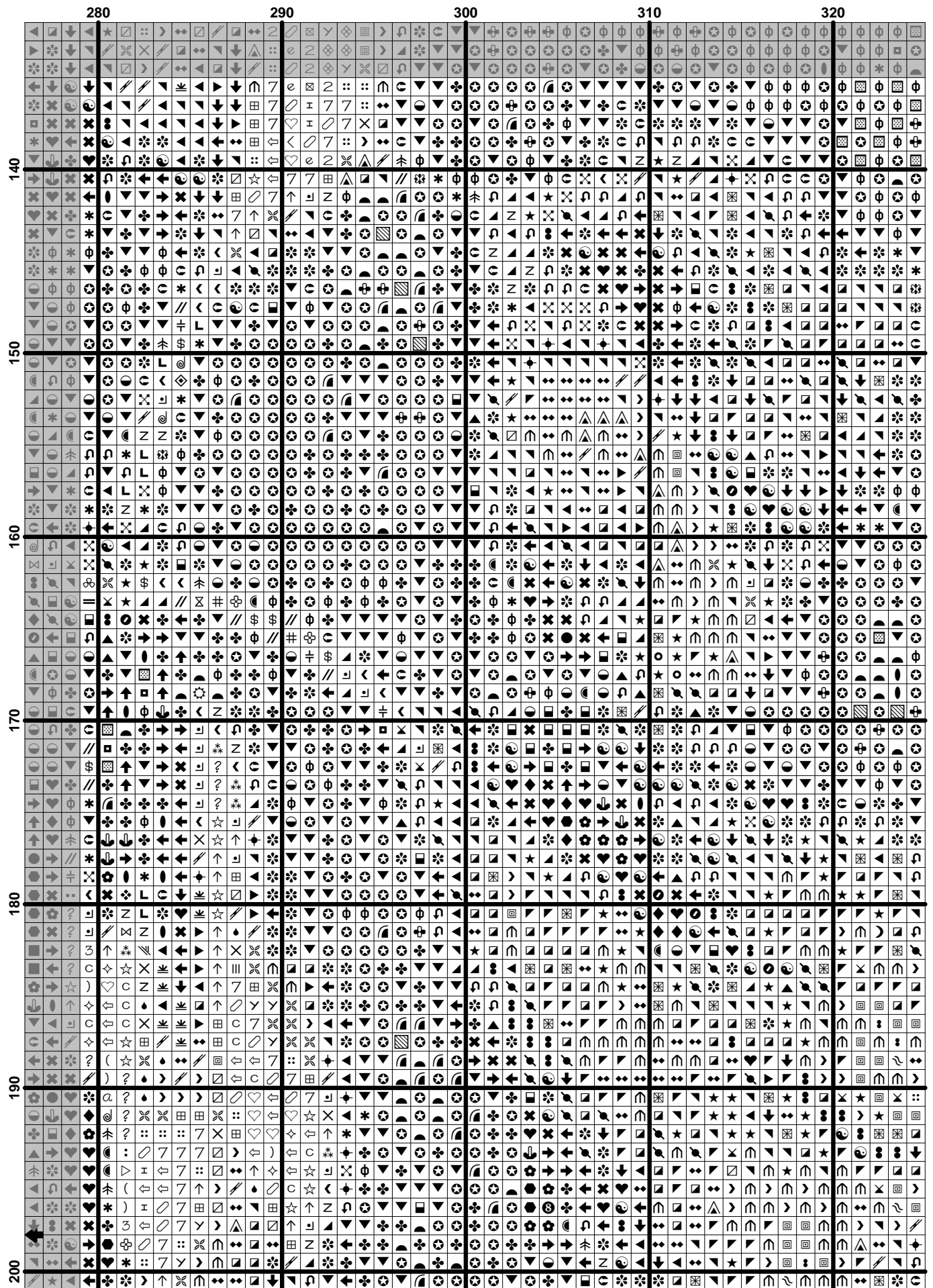


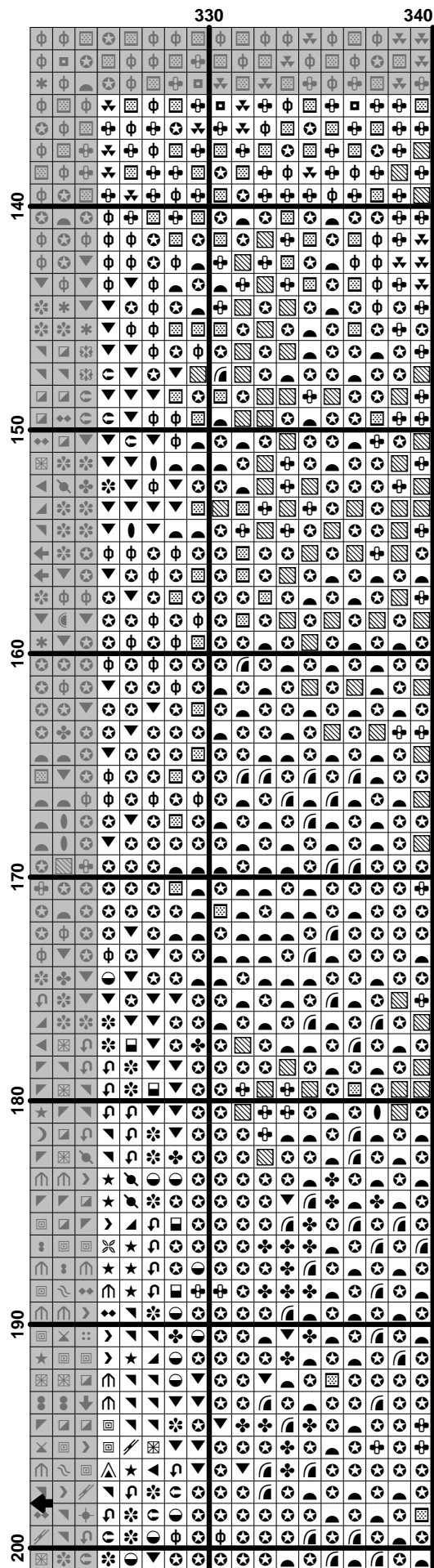
$$(27) \quad \mathcal{L}(\mathcal{A}) = \mathcal{L}(\mathcal{B}) \quad (28)$$

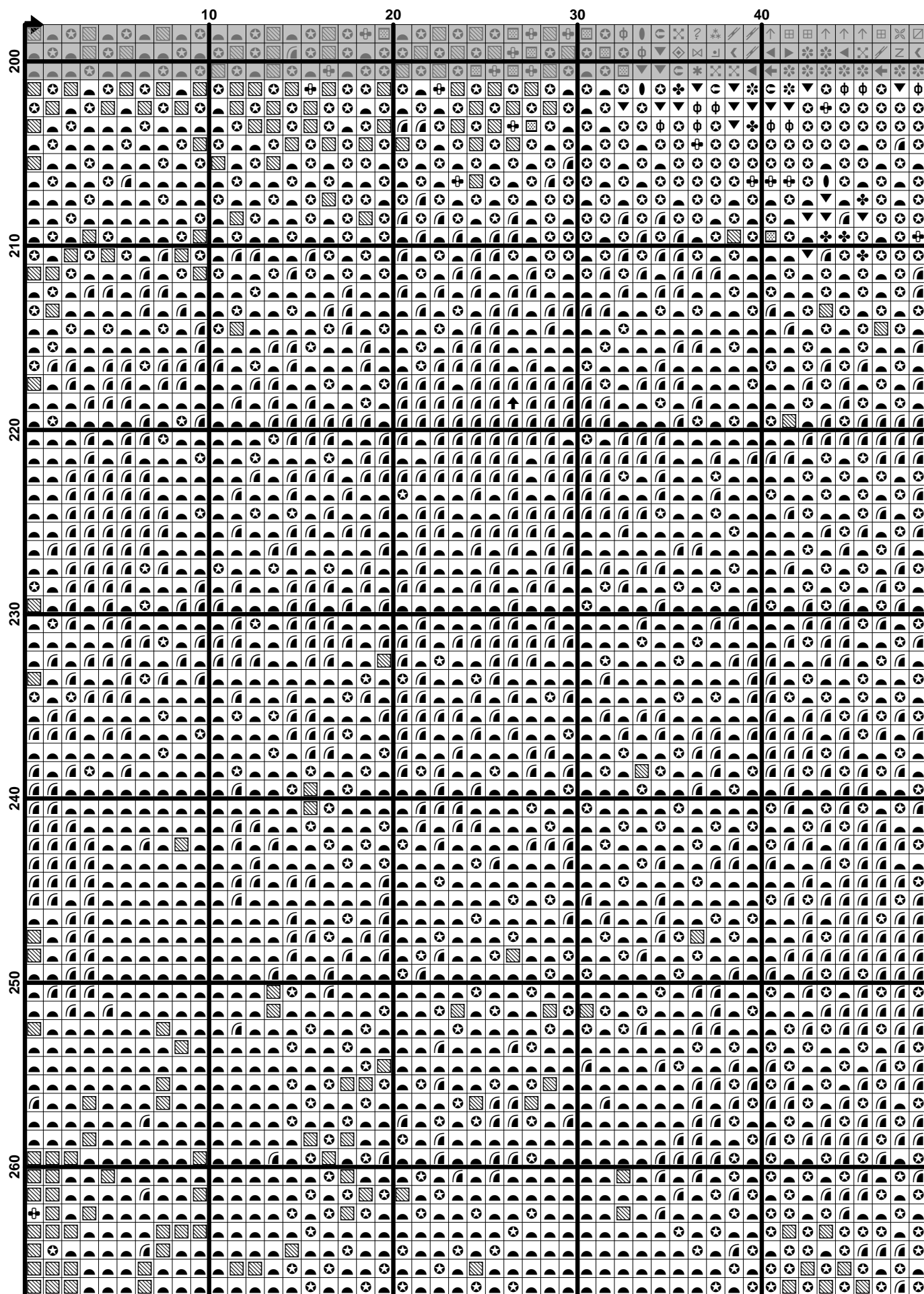


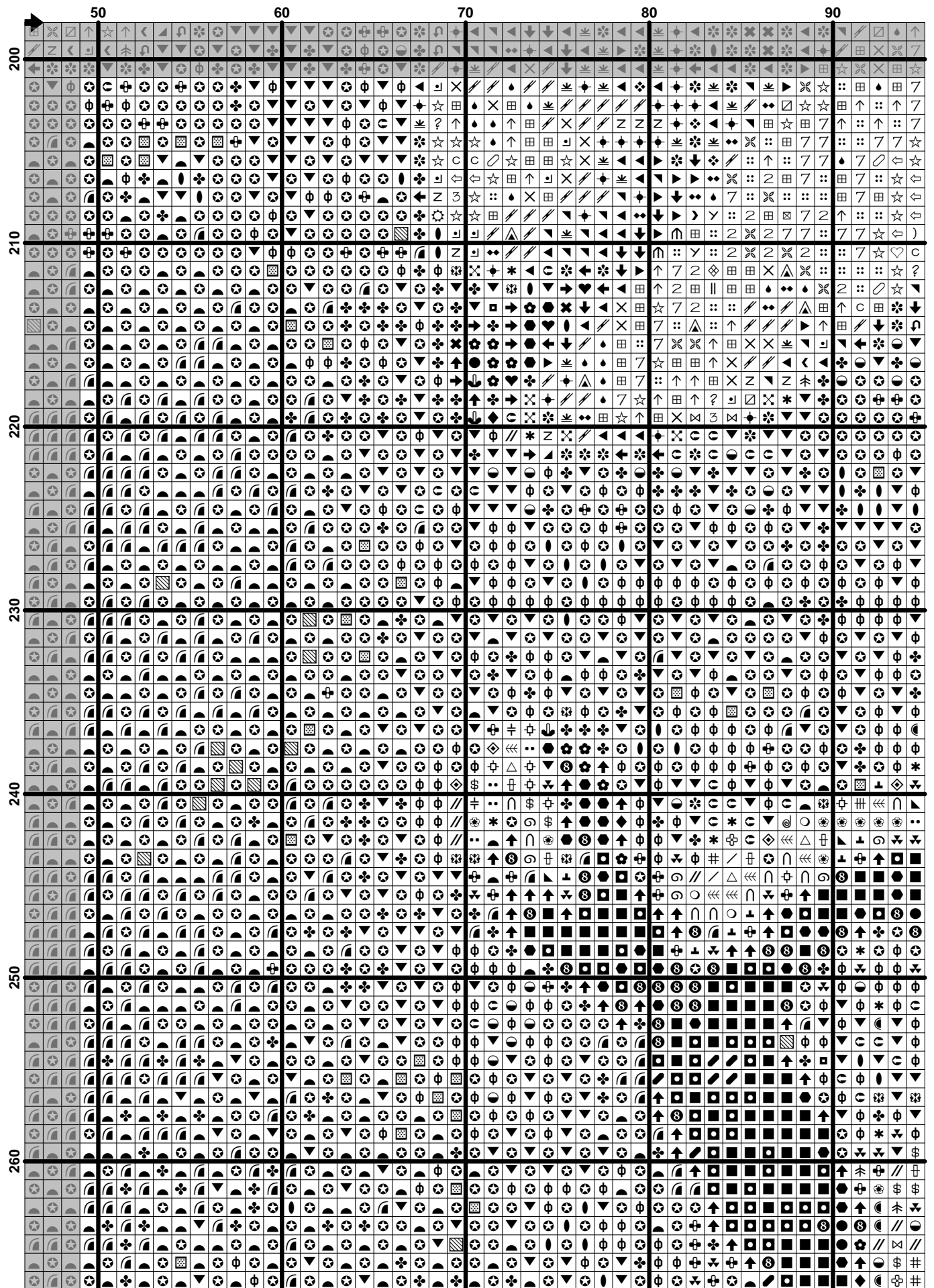
	190	200	210	220	230
140
150
160
170
180
190
200

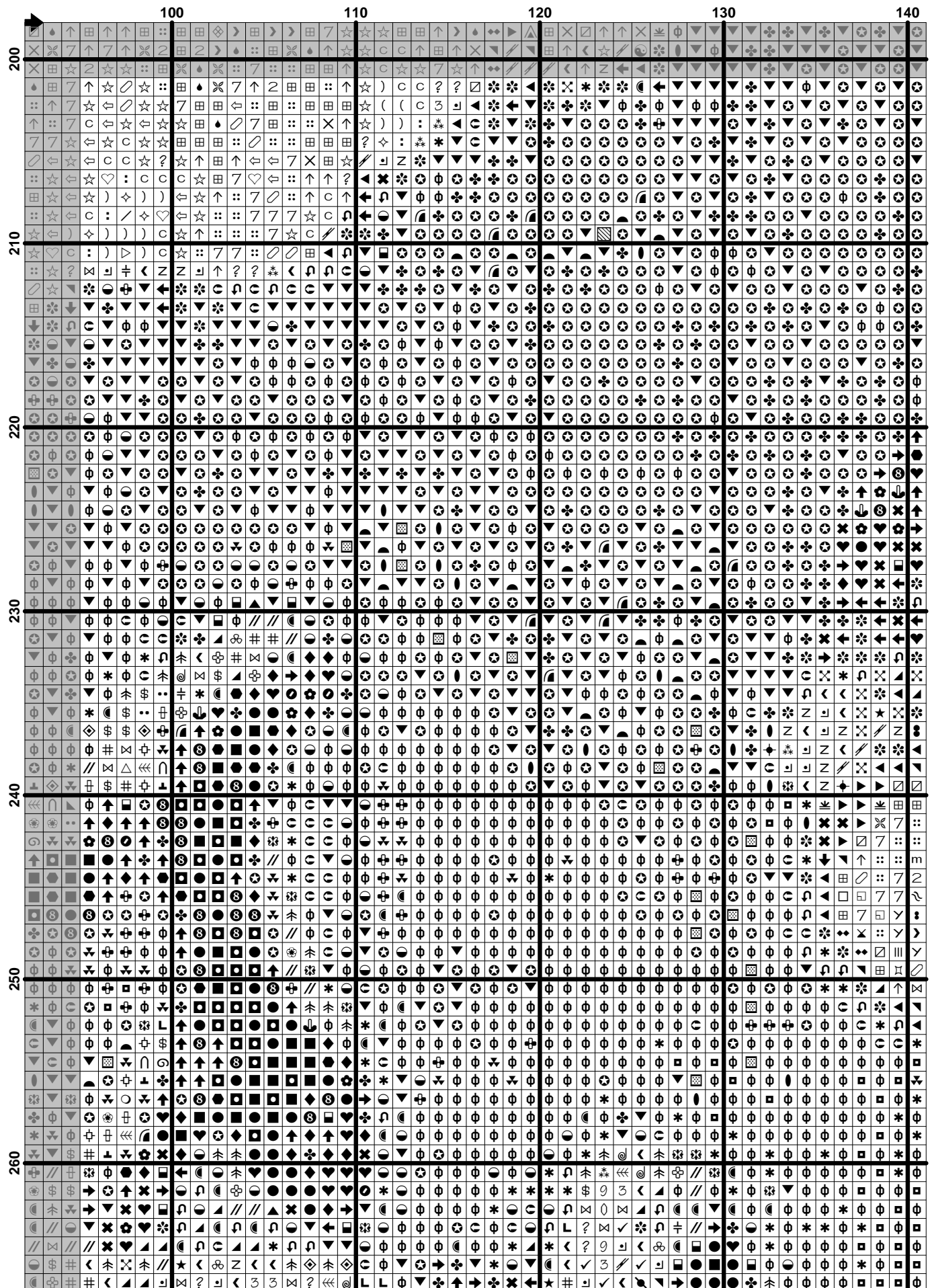
[illegible]











$$(36) \quad \frac{1}{\Gamma(\alpha)} \int_0^t (t-s)^{\alpha-1} f(s) ds = \frac{1}{\Gamma(\alpha)} \int_0^t (t-s)^{\alpha-1} f(s) ds$$

[illegible]

