A CATALOG OF QUADRI / TRIVALENT GRAPHS

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Heuristic Programming Project

6

ABSTRACT: In a previous report [1] a method for computer generation of
           quadri/trivalent "vertex-graphs" was presented in detail.
           This report is a catalog of 13 classes of graphs generated
           by using this method.

INTRODUCTION

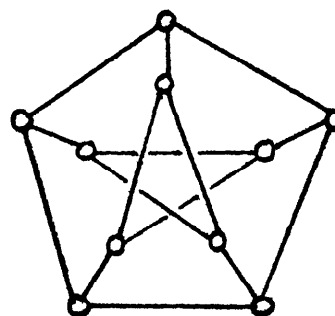   A "vertex-graph" is a graph satisfying the following constraints:

  i) Its vertices are of valence 3 or higher;

 ii) It is at least 2-edge-connected, i.e., no bridges;

iii) Its vertices have no self-loops.

The above definition permits multiple edges between vertices, i.e.,

multi-graphs.

   A previous paper indicated the need for the availability of a complete

list of vertex-graphs for specified degree sequences and the usefulness of

such a list to a computer program [2] that generates a complete list of

isomers based on a specified atomic composition. Chemical atoms of valence

higher than 4 are rare and thus our attention here is confined to vertex-graphs

$G(t,q)$ having t vertices of valence 3 and q vertices of valence 4.

   The computer method presented in [1] uses the sub-methods of "Edge

Labelling" and "Vertex-Pair Promotion", and generates $G(t,q)$ graphs from

$G(t+2q)$ graphs, i.e., from Trivalent Regular Graphs.

   Lederberg [3] has presented a listing of $G(t,0)$ graphs which was used in

generating the graphs presented at the end of this report. Lederberg's lists

are complete for t=2,4,6 and 8. For t=10 the only (non-Hamiltonian, non--planar)

graph that was not listed was the Petersen graph shown below.

RESULTS

Table 1 shows the number of G(t,O) graphs. Table 2 lists the number of quadri/trivalent graphs that were derived. The Appendix gives a complete list of graphs.

REFERENCES

1. N. S. Sridharan, "Computer Generation of Vertex-Graphs", Stanford
   Computer Science Memo STAN-CS-73-381, Stanford University; California,
   July, 1973.

2. H. Brown and L. Masinter, "An Algorithm for the Construction of the
   Graphs of Organic Molecules" , to appear in DISCRETE MATHEMATICS, 1974.

3. J. Lederberg, "DENDRAL-64" Part II. Topology of Cyclic Graphs, NASA
   Technical Report CR 68898, 1965.

TRIVALENTS	NUMBER OF GRAPHS
2	1
4	2
6	5
8	16
10	66

Table I. Number of $G(t,o)$ graphs.

4

| GRAPHS HAVING | | COUNT | TRIVALENTS IN |
TRIVALENTS	QUADRIVALENTS		BASIS GRAPH
2	1	1	4
4	1	5	6
6	1	24	8
8	1	180	10
2	2	4	6
4	2	34	8
6	2	297	10
0	3		6
2	3	12	8
4	3	186	10
0	4	3	8
2	4	54	10
0	5	6	10

Table II. SUMMARY OF RESULTS PRESENTED

APPENDIX.   THE CATALOG OF $G(t,q)$ GRAPHS FOR THE THIRTEEN CLASSES PRESENTED
IN TABLE II.

Explanation of Format:

No attempt has been made to derive canonical numberings for the graphs. Each graph is listed on two lines. The first line is an arbitrary sequence number that begins with 1 for each class presented. The second line is a list of edges. All graphs are undirected.

Disclaimer: ,

These tables carry no guarantee of accuracy since there is always the possibility of undetected hardware or software errors. There are no known errors prior to the time of this reporting and the author is reasonably sure of the results.

CATALOG21 (1 Entry)

1-2   1-2   1-3   1-3   2-3

CATALOG41 (5 Entries)

1
1-2   1-3   1-4   1-5   2-3   2-5   3-4   4-5
2
1-2   1-2   1-3   2-4   2-5   3-4   3-5   4-5
3
1-2   1-3   1-4   1-5   2-3   2-3   4-5   4-5
4
1-2   1-2   1-3   1-3   2-4   3-5   4-5   4-5
5
1-2   1-2   1-3   2-3   2-4   3-5   4-5   4-5

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CATALOG61 (24 Entries)

#											
1	1-2	1-2	1-7	1-7	2-3	3-4	3-4	4-5	5-6	5-6	6-7
2	1-2	1-2	1-7	2-3	3-4	3-4	3-5	4-7	5-6	5-6	6-7
3	1-2	1-2	1-5	1-7	2-3	3-4	3-4	4-5	5-6	6-7	6-7
4	1-2	1-2	1-5	2-3	3-4	3-4	4-5	5-6	5-7	6-7	6-7
5	2-2	1-2	1-7	2-3	2-3	3-f	4-5	4-j	5-6	5-6	6-7
6	1-2	1-2	1-7	2-3	3.4	3-4	4-b	5-6	5-6	5-7	6-7
7	1-2	1-2	1-3	2-3	3-4	3-7	4-5	4-7	S-6	5-6	6-7
8	1-2	1-2	1-7	2-3	3-4	3-7	4-5	4-5	4-6	5-6	6-7
9	t-2	1-2	1-7	2-3	3-4	S-6	4-5	4-7	5-6	5-6	6-7
10	1-2	1-2	1-7	2-3	2-4	3-4	3-7	4-5	5-6	5-6	6-7
11	1-2	1-2	1-4	2-3	3-4	3-5	4-5	4-7	5-6	6-7	6-7
12	1-2	1-2	1-7	2-3	3-4	3-4	3-6	4-3	5-6	5-7	6-7
13	1-2	1-2	1-6	1-7	2-3	3-4	3-4	4-5	5-6	5-7	6-7
14	1-2	1-2	1-7	2-3	2-3	3-4	4-5	4-8	5-6	5-7	6-7
15	1-2	1-3	1-6	1-7	2-3	2-5	3-4	4-5	4-7	5-6	6-7
16	1-2	1-3	1-7	2-3	2-4	2-5	3-4	4-6	5-6	5-7	6-7
17	1-2	1-3	1-7	2-3	2-4	3-4	4-5	4-6	5-6	5-7	6-7
18	1-2	1-2	1-3	1-7	2-3	3-4	4-5	4-c)	5-6	5-7	6-7
19	⅔2	1-2	1-3	2-3	3-4	3-7	4-5	4-b	5-6	5-7	6-7
20	1-2	1-2	1-7	2-3	3-4	3-5	3-7	4-5	4-6	5-6	6-7
21	222	12.	17.	23.	3a4	3-5	3a6	4m3	4a7	5-6	6-7
22	1-2	1-2	1-7	2-3	3-4	3-5	4-5	4-6	4-7	5-6	6-7
23	1-2	1-2	1-4	1-7	2-3	3-4	3-6	4-5	5-6	5-7	6-7
a4											

1-2 1-2 1-7 2-3 2-4 3-4 3-6 4-5 5-6 5-7 6-7

CATALOG81 (180 Entries)

1
1-2 1-3 1-9 2-3 2-5 3-4 4-5 4-6 4-7 5-6 6-8 7-a 7-9 8-9
2
1-2 1-3 1-9 2-3 2-4 3-4 4-5 4-6 5-6 5-8 6-7 7-8 7-9 8-9
3
1-2 1-3 1-9 2-3 2-4 2-5 3-4 4-6 5-6 5-8 6-7 7-8 7-9 8-9
4
1-2 1-3 1-8 1-9 2-3 2-5 3-4 4-5 4-7 5-6 6-7 6-9 7-8 8-9
5
1-2 1-3 1-9 2-3 2-4 3-4 4-5 4-7 5-6 5-9 6-7 6-8 7-8 8-9
6
1-2 1-3 1-9 2-3 2-5 3-4 4-5 4-7 5-6 5-9 6-7 6-8 7-8 8-9
7
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8
1-2 1-3 1-6 1-9 2-3 2-5 3-4 4-5 4-8 5-6 6-7 7-8 7-9 8-9
9
1-2 1-3 1-8 1-9 2-3 2-6 3-4 4-5 4-9 5-6 5-7 6-7 7-8 8-9
10
1-2 1-3 1-7 1-9 2-3 2-6 3-4 4-5 4-9 5-6 5-8 6-7 7-8 8-9
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1-2 1-2 1-9 1-3 2-3 3-4 3-4 4-5 5-6 5-6 6-7 7-8 7-8 8-9
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86	1-2	1-2	1-9	2-3	3-4	3-5	4-5	4-5	5-6	6-7	6-9	7-8	7-8	8-9
87	1-2	1-2	1-9	2-3	3-4	3-5	3-6	4-5	4-5	6-7	6-9	7-a	7-8	8-9
88	1-2	1-2	1-9	2-3	3-4	3-6	4-5	4-5	5-6	6-7	6-9	7-8	7-a	8-9
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92	1-2	1-2	1-9	2-3	3-4	3-6	4-5	4-8	5-6	5-7	5-8	6-7	7-9	8-9
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101	1-2	1-2	1-9	2-3	3-4	3-6	4-5	4-9	5-6	5-7	6-7	6-8	7-8	8-9
102	1-2	1-2	1-9	2-3	3-4	3-5	3-6	4-5	4-9	5-8	6-7	6-7	7-8	a-9

#														
103	1-2	1-2	1-4	1-9	2-3	3-4	3-6	4-5	5-6	5-9	6-7	7-8	7-8	8-9
104	1-2	1-2	1-9	2-3	3-4	3-6	4-5	4-5	5-6	5-9	6-7	7-8	7-8	8-9
105	1-2	1-2	1-9	2-3	3-4	3-6	3-7	4-5	4-5	5-6	6-9	7-8	7-8	8-9
106	1-2	1-2	1-9	2-3	3-4	3-4	3-6	4-5	5-6	5-9	6-7	7-8	7-8	8-9
107	1-2	1-2	1-6	1-9	2-3	3-4	3-7	4-5	4-5	5-6	6-7	7-8	8-9	8-9
108	1-2	1-2	1-9	2-3	3-4	3-6	3-7	4-5	4-6	5-6	5-9	7-8	7-8	8-9
109	1-2	1-2	1-9	2-3	2-6	3-4	3-5	4-5	4-9	5-6	6-7	7-8	7-8	8-9
110	1-2	1-2	1-5	1-9	2-3	3-4	3-7	4-5	4-6	5-6	6-7	7-8	8-9	8-9
111	1-2	1-2	1-5	1-9	2-3	3-4	3-8	4-5	4-6	5-6	6-7	7-8	7-9	8-9
112	1-2	1-2	1-9	2-3	3-4	3-8	4-5	4-6	4-9	5-6	5-7	6-7	7-8	8-9
113	1-2	1-2	1-9	2-3	3-4	3-6	3-8	4-5	4-9	5-6	5-7	6-7	7-8	8-9
114	1-2	1-2	1-5	1-9	2-3	3-4	3-9	4-5	4-7	5-6	6-7	6-8	7-8	8-9
115	1-2	1-2	1-9	2-3	3-4	3-8	4-5	4-7	4-9	5-6	5-6	6-7	7-8	8-9
116	1-2	1-2	1-5	2-3	3-4	3-9	4-5	4-8	5-6	5-9	6-7	6-7	7-8	8-9
117	1-2	1-2	1-9	2-3	2-8	3-4	3-7	4-5	4-9	5-6	5-6	6-7	7-8	8-9
118	1-2	1-2	1-5	1-9	2-3	3-4	3-9	4-5	4-8	5-6	6-7	6-7	7-8	8-9
119	1-2	1-2	1-4	1-9	2-3	3-4	3-9	4-5	5-6	5-7	6-7	6-8	7-8	8-9
120	1-2	1-2	1-3	2-3	3-4	3-9	4-5	4-6	5-6	5-8	6-7	7-8	7-9	8-9
121	1-2	1-9	2-3	3-4	3-9	4-5	4-6	5-6	5-7	5-8	6-7	7-8	8-9	
122	1-2	1-2	1-3	1-9	2-3	3-4	4-5	4-6	5-6	5-8	6-7	7-8	7-9	8-9
123	1-2	1-2	1-9	2-3	3-4	3-9	4-5	4-6	4-8	5-6	5-7	6-7	7-8	8-9
124	1-2	1-2	1-9	2-3	3-4	3-9	4-5	4-6	4-7	5-6	5-8	6-7	7-8	8-9
125	1-2	1-3	2-3	3-4	3-9	4-5	4-7	5-6	5-9	6-7	6-8	7-8	8-9	
126	1-2	1-2	1-3	1-9	2-3	3-4	4-5	4-7	5-6	5-9	6-7	6-8	7-8	8-9
127	1-2	1-9	2-3	3-4	3-9	4-5	4-7	5-6	5-6	5-8	6-7	7-8	8-9	
128	1-2	1-2	1-3	2-3	3-4	3-9	4-5	4-8	5-6	5-9	6-7	6-7	7-8	8-9

129	1-2	1-2	1-3	1-9	2-3	3-4	4-5	4-8	5-6	5-9	6-7	6-7	7-8	8-9
130	1-2	1-2	1-3	2-3	3-4	3-9	4-5	4-9	5-6	5-7	6-7	6-8	7-8	8-9
131	1-2	1-2	1-9	2-3	3-4	3-9	4-5	4-8	4-9	5-6	5-7	6-7	6-8	7-8
132	1-2	1-2	1-3	1-9	2-3	3-4	4-5	4-9	5-6	5-7	6-7	6-8	7-8	8-9
133	1-2	1-2	1-9	2-3	3-4	3-9	4-5	4-8	4-9	5-6	5-8	6-7	6-7	7-8
134	1-2	1-2	1-3	2-3	3-4	3-9	4-5	4-9	5-6	5-8	6-7	6-7	7-8	8-9
135	1-2	1-2	1-3	1-9	2-3	3-4	4-5	4-9	5-6	5-8	6-7	6-7	7-8	8-9
136	1-2	1-3	1-9	2-3	2-4	3-4	4-5	5-6	5-7	6-7	6-8	6-9	7-8	8-9
137	1-2	1-3	1-9	2-3	2-4	3-4	4-5	5-6	5-7	5-8	6-7	6-9	7-8	8-9
138	1-2	1-3	1-9	2-3	2-4	3-4	4-5	5-6	5-7	5-9	6-7	6-8	7-8	8-9
139	1-2	1-3	1-5	2-3	2-4	3-4	4-5	5-6	5-9	6-7	6-8	7-8	7-9	8-9
140	1-2	1-7	1-7	1-8	2-3	2-3	3-4	4-5	4-9	5-6	5-6	6-7	8-9	8-9
141	1-2	1-2	1-7	1-8	2-3	3-4	3-9	4-5	4-5	5-6	6-7	6-7	8-9	8-9
142	1-2	1-7	1-8	2-3	2-3	3-4	4-5	4-9	5-6	5-6	6-7	6-7	8-9	8-9
143	1-2	1-2	1-7	1-8	2-3	3-4	3-9	4-5	4-6	5-6	5-7	6-7	8-9	8-9
144	1-2	1-7	1-8	2-3	2-3	3-4	4-5	4-9	5-6	5-6	5-7	6-7	8-9	8-9
145	1-2	1-5	1-8	2-3	2-3	3-4	4-5	4-9	5-6	5-7	6-7	6-7	8-9	8-9
146	1-2	1-2	1-7	1-8	2-3	3-4	3-9	4-5	4-7	5-6	5-6	6-7	8-9	8-9
147	1-2	1-4	1-7	2-3	2-3	2-8	3-4	4-5	5-6	5-6	6-7	7-9	8-9	8-9
148	1-2	1-7	1-8	2-3	2-7	3-4	3-4	4-5	4-9	5-6	5-6	6-7	8-9	8-9
149	1-2	1-8	1-9	1-9	2-3	2-8	3-4	3-4	4-5	5-6	5-9	6-7	6-7	7-8
150	1-2	1-2	1-9	2-3	2-3	3-4	4-5	4-7	5-6	5-8	6-7	6-9	7-8	8-9
151	1-2	1-2	1-7	1-9	2-3	3-4	3-4	4-5	5-6	5-8	6-7	6-9	7-8	8-9
152	1-2	1-2	1-9	2-3	3-4	3-5	4-5	4-7	4-8	5-6	6-7	6-8	7-9	8-9
153	1-2	1-2	1-9	2-3	2-4	3-4	3-7	4-5	5-6	5-8	6-7	6-9	7-8	8-9
154	1-2	1-2	1-7	1-9	2-3	3-4	3-5	4-5	4-8	5-6	6-7	6-9	7-8	8-9

Row														
155	1-2	1-2	1-9	2-3	2-5	3-4	3-6	4-5	4-9	5-6	6-7	7-8	7-8	8-9
156	1-2	1-2	1-5	1-9	2-3	3-4	3-6	4-5	4-7	5-6	6-7	7-8	8-9	8-9
157	1-2	1-2	1-9	2-3	3.4	3-6	4-5	4-7	4-8	5-6	5-8	6-7	7-9	8-9
158	1-2	1-2	1-9	2-3	3-4	3-6	4-5	4-7	5-6	5-8	6-7	6-9	7-0	8-9
359	1-2	1-2	1-9	2-3	3-4	3-5	3-7	4-5	4-8	5-6	6-7	6-9	7-8	8-9
160	1-2	1-2	1-7	1-9	2-3	3-4	3-6	4-5	4-8	5-6	5-9	6-7	7-8	8-9
161	1-2	1-2	a-9	2-3	2-5	3-4	3-7	4-5	4-9	5-6	6-7	6-8	7-8	8-9
162	1-2	1-2	1-5	1-9	2-3	3-4	3-6	4-5	4-8	5-6	6-7	7-8	7-9	8-9
163	1-2	1-2	1-5	1-9	2-3	3-4	3-6	4-5	4-9	5-6	6-7	7-8	7-8	8-9
164	1-2	1-2	1-9	2-3	3-4	3-6	3-8	4-5	4-7	5-6	5-9	6-7	7-8	8-9
165	1-2	1-2	1-6	1-9	2-3	3-4	3-7	4-5	4-9	5-6	5-8	6-7	7-8	8-9
166	1w2	1w2	1-9	2-3	3-4	3-6	3-9	4-5	4-7	5-6	5-8	6-7	7-8	8-9
167	1-2	1-2	1-4	1-9	2-3	3-4	3-7	4-5	5-6	5-8	6-7	6-9	7-8	8-9
168	1-2	1-2	1-3	2-3	3-4	3-9	4-5	4-7	5-6	5-8	6-7	6-9	7-8	8-9
169	1-2	1-2	1-3	1-9	2-3	3-4	4-5	4-7	5-6	5-8	6-7	6-9	7-8	8-9
170	1-2	1-3	1-7	1-9	2-3	2-4	3-4	4-5	5-6	5-8	6-7	6-9	7-8	8-9
171	1-2	1-3	1-9	2-3	2-5	3-4	4-5	4-7	4-8	5-6	6-7	6-8	7-9	8-9
172	1-2	1-3	1-9	2-3	2-4	2-5	3-4	4-7	5-6	5-8	6-7	6-9	7-R	8-9
173	1-2	1-3	1-7	1-9	2-3	2-5	3-4	4-5	4-8	5-6	6-7	6-9	7-8	8-9
174	1-2	1-3	1-9	2-3	2-5	2-6	3-4	4-5	4-6	5-8	6-7	7-8	7-9	8-9
175	1-2	1-3	1-8	1-9	2-3	2-6	3-4	4-5	4-7	5-6	5-9	6-7	7-8	8-9
176	1-2	1-3	1-9	2-3	2-6	3-4	4-5	4-7	4-0	5-6	5-8	6-7	7-9	8-9
177	1-2	1-3	1-9	2-3	2-5	2-6	3-4	4-5	4-7	5-8	6-7	6-9	7-8	8-9
178	1-2	1-3	1-7	1-9	2-3	2-6	3-4	4-5	4-8	5-6	5-9	6-7	7-8	8-9
179	1-2	1-4	1-7	1-9	2-3	2-5	3-4	3-8	4-5	5-6	6-7	6-9	7-8	8-9
180	1-2	1-4	1-9	2-3	2-5	2-6	3-4	3-7	4-5	5-8	6-7	6-9	7-0	8-9

1-2 1-4 1-7 1-9 2-3 2-6   3-4   3-8 4-5 5-6 5-9 6-7 7-8 8-9

CATALOG22 (4 Entries)

```
1
1-2   1-3   1-4    q-3   2-4   3-4   3-4

1-2   1-2   1-4    2-3   3-4   3-4   3-4
3
1-2   1-2   1-4    2-3   2-4   3-4   3-4
4
1-2   1-2   1-4    1-4   2-3   3-4   3-4
```

CATALOG42 (34 Entries)

#									
1									
1-2	1-4	1-6	2-3	2-5	3-4	3-6	4-5	5-6	5-6
2									
1-2	1-3	1-4	1-6	2-3	2-4	3-4	4-5	5-6	5-6
3									
1-2	1-4	1-6	2-3	2-6	3-4	3-5	4-5	5-6	5-6
4									
1-2	1-3	1-6	2-3	2-4	3-5	4-5	4-6	5-6	5-6
5									
1-2	1-4	1-6	2-3	2-4	3-4	3-5	4-6	5-6	5-6
6									
1-2	1-3	1-6	2-3	2-4	3-4	4-5	4-6	5-6	5-6
7									
1-2	1-4	1-6	2-3	2-4	3-4	3-4	4-5	5-6	5-6
8									
1-3	1-5	1-6	2-3	2-5	2-6	3-4	4-5	4-6	5-6
9									
1-2	1-3	1-6	2-3	2-6	3-4	3-5	4-5	4-6	5-6
10									
1-2	1-3	1-6	2-5	2-6	3-4	3-5	4-5	4-6	5-6
11									
1-2	1-3	1-4	2-3	2-3	3-4	4-5	4-6	5-6	5-6
12									
1-2	1-5	1-4	2-3	2-4	3-4	3-4	4-5	5-6	5-6
13									
1-2	1-3	1-6	2-3	2-3	3-4	4-5	4-6	5-6	5-6
14									
1-2	1-2	1-4	2-3	3-4	3-5	4-5	4-6	5-6	5-6
15									
1-2	1-3	1-6	2-3	2-4	3-4	3-4	4-5	5-6	5-6
16									
1-2	1-3	1-6	2-3	2-3	2-4	3-4	4-5	5-6	5-6
17									
1-2	1-3	1-6	2-3	2-4	3-4	4-5	4-5	5-6	5-6
18									
1-2	1-2	1-6	2-3	2-4	3-4	3-5	4-5	5-6	5-6
19									
1-2	1-2	1-4	2-3	2-6	3-4	3-5	4-6	5-6	5-6
20									
1-2	1-2	1-6	2-3	2-4	3-4	3-6	4-5	5-6	5-6
21									
1-2	1-2	1-4	2-3	2-6	3-4	3-6	4-5	5-6	5-6
22									
1-2	1-3	1-6	2-3	2-4	3-4	4-5	5-6	5-6	5-6
23									
1-2	1-6	1-6	2-3	2-3	3-4	4-5	4-5	5-6	5-6
24									

1-2^	1-6	1-6	2-3	2-3	3-4	3-4	4-5	5-6	5-6
25 1-2	1-2	1-3	2-3	3-4	3-4	4-5	4-6	5-6	5-6
26 1-2	1-2	1-3	2-4	3-4	3-4	3-6	4-5	5-6	5-6
27 1-2	1-2	1-4	2-3	2-6	3-4	3-4	4-5	5-6	5-6
28 1-2	1-2	1-3	2-3	3-4	3-6	4-5	4-5	5-6	5-6
29 1-2	1-2	1-6	2-3	3-4	3-4	3-6	4-5	5-6	5-6
30 1-2	1-2	1-6	2-3	3-4	3-6	4-5	4-5	5-6	5-6
31 1-2	1-3	1-6	2-3	2-3	3-4	4-5	4-5	5-6	5-6
32 1-2	1-2	1-6	2-3	2-6	3-4	3-4	4-5	5-6	5-6
33 1-2	1-4	1-6	2-3	2-3	2-3	3-4	4-5	5-6	5-6
34 1-2	1-2	1-2	1-6	2-3	3-4	3-4	4-5	5-6	5-6

CATALOG62 (297 Entries)

1
1-2 1-3 1-8 2-3 2-4 3-5 4-5 4-5 4-7 5-6 6-7 6-8 7-8
2
1-2 1-3 1-8 2-3 2-4 3-4 4-5 4-5 5-6 5-7   6-7   6-8 7-8
3
1-2 1-3 1-8 2-3 2-4 3-5 4-5 4-7 5-6 5-7 6-7 6-8   7-8
4
1-2   1-3 1-8   2-3 2-5 3-4 4-5 4-6 5-7 6-7 6-7 6-8 7-8
3
1-2 1-3 1-8 2-3 2-4 3-4 4-5 4-7 5-6 5-7 6-7 6-8 7-8
6
1-2 1-4 1-8 2-3   2-4   3-4 3-6 4-5 5-6 5-7   6-7 6-8 7-8
7
1-2 1-4 1-8 2-3 2-4 3-4 3-5 4-7 5-6 5-7   6-7   6-8 7-8
8
1-2 1-3 1-8 2-5 2-8 3-4 3-5 4-5 4-7 5-6   6-7   6-8   7-8
9
1-2   1-4 1-8 2-3 2-8 3-4 3-5 4-5 5-6 5-7 6-7 6-8 7-8
10
1-2 1-4 1-8 2-3 2-8 3-4 3-5 4-7 5-6 5-7 6-7 6-8 7-8
11
1-2 1-5 1-8 2-3 2-4 3-4 3-6 4-5 5-6 5-7   6-7   6-8 7-8
12
1-2 1-5 1-8   2-3   2-4 3-4 3-6   4-3 5-7 6-7 6-t 6-8 7-8
13
1-2 1-3 1-4 2-3 2-5   3-4   4-5 4-8 5-6 5-7 6-7 6-8 7-8
14
1-2 1-3   1-4   2-3   2-6 3-4 4-5 4-8 5-6 5-7   6-7   6-8 7-8
15
1-2   1-5   1-8   2-3   2-5   3-4 3-8 4-5 4-7 5-6 6-7 6-8 7-8
16
1-2 1-3 1-8   2-3   2-5 3-4   4-5   4-8 5-6 5-7   6-7   6-8 7-8
17
1-2 1-5 1-8 2-3 2-8 3-4 3-7 4-5 4-7 5-6 6-7 6-8 7-8   .
18
1-2 1-5 1-8   2-3   2-4   3-4   3-7 4-5 4-5 5-6 6-7 6-8 7-8
19
1-2 1-5 1-8 2-3 2-4 3-7 3-8 4-3 4-7 5-6 6-7 6-8 7-8
20
1-2   1-6   1-8   2-3   2-5 3-4 3-7 4-5 4-7 5-6 6-8 7-8 7-8
21
1-2 1-6 1-8 2-3 2-5 3-4 3-8.   4-5 4-7 5-6 6-7 7-8 7-8
22
1-2 1-8   1-8   2-3 2-3 3-4 4-5 4-5 5-6 5-6 6-7   7-8   7-8
33
t-2 1-8 1-8 2-3 2-3 3-4 4-5 4-5 5-6 6-7 6-7 7-8 7-8
24

22

25	1-2	1-3	1-8	2-3	2-4	3-4	4-5	5-6	5-6	6-7	6-7	7-8	7-8
26	1-3	1-8	2-3	2-8	3-4	4-5	4-5	5-6	6-7	6-7	7-8	7-8	
27	1-2	1-3	1-8	2-3	2-8	3-4	4-5	4-3	5-6	5-6	6-7	7-8	7-8
28	1-2	1-3	1-8	2-3	2-8	3-4	3-4	4-5	5-6	5-6	6-7	7-8	7-8
29	1-2	1-3	1-8	2-3	2-3	3-4	4-5	4-5	5-6	5-6	6-7	7-8	7-8
30	1-2	1-4	1-8	2-3	2-3	3-4	4-5	5-6	5-6	6-7	6-f	7-8	7-8
31	1-2	1-3	1-8	2-3	a;3	3-4	4-5	4-3	5-6	6-7	6-7	7-8	7-8
32	1-2	1-2	1-3	2-3	3-4	3-8	4-5	4-5	5-6	6-7	6-7	7-8	7-8
33	1-2	1-2	1-8	2-3	3-4	3-4	3-8	4-5	5-6	5-6	6-7	7-8	7-8
34	1-2	1-2	1-8	2-3	3-4	3-8	4-5	4-3	5-6	5-6	6-7	7-8	7-8
35	2-2	1-2	1-8	2-3	2-8	3-4	3-4	4-5	5-6	5-6	6-7	7-8	7-8
36	1-2	1-2	1-8	2-3	3-4	S-8	4-5	4-3	5-6	6-7	6-7	7-8	7-8
37	1-2	1-2	1-2	1-8	2-3	3-4	3-4	4-5	5-6	5-6	6-7	7-8	7-8
38	1-2	1-4	1-8	2-3	2-4	3-4	3-5	4-5	5-6	6-7	6-7	7-8	7-8
39	892	1-4	1-8	2-3	2-8	3-4	3-5	4-5	5-6	5-6	6-7	7-8	7-8
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96	1-2	1-2	1-3	1-8	2-3	3-4	4-5	4-6	5-6	5-7	6-7	7-8	7-8
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123	1-2	1-3	1-5	1-8	2-3	2-5	3-4	4-3	4-6	5-6	6-7	7-8	7-8
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142	1-2	1-4	1-8	2-3	2-3	3-4	4-5	4-6	5-6	5-8	6-7	7-8	7-8
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a45	1-2	1-3	1-8	2-3	2-3	3-4	4-5	4-6	5-6	5-8	6-7	7-8	7-8
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155	1-2	1-5	1-8	2-3	2-3	2-3	3-4	4-5	4≠6	5-6	6-7	7-8	7-8
156	1-2	1-4	1-8	2-3	2-3	3-4	4-5	5-6	5≠6	5-6	b-7	7-8	7-8
157	t-2	1-4	i-8	2-3	2-3	3-4	4-5	4-6	5≠6	5-b	6-7	7-8	7-8
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166	1-2	1-2	1-8	2-3	3-4	3-b	3-8	4-5	4-5	5-6	6-7	7-8	7-8
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173	t-2	1-3	i-5	2-3	2-4	3-b	3-8	4-5	4-6	5-6	6-7	7-8	7-8
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175	1-2	1-4	1-S	2-3	2-8	3-4	3-b	4-5	5-6	5-8	b-7	7-8	7-8
176	1-4	1-5	1-8	2-3	2-4	2-8	3-4	3-6	4-5	5-6	6-f	7-8	7.8
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179	1-2	1-3	1-8	2-3	2-4	3-6	4-5	4-6	5-6	5-8	6-7	7-8	7-8
180	1-2	1-5	1-8	2-3	2.4	3-4	3-5	4-6	5-6	5-6	6-7	7-8	7-8

181	1-2	1-3	1-6	2-3	2-5	3-4	4-5	4-7	5-6	b-7	6-8	7-8	7-8
182	1-2	1-3	1-3	2-3	2-4	3-b	4-5	4-6	5-6	5-8	6-7	7-8	7-8
183	1-2	1-4	1-8	2-3	2-4	3-4	3-b	4-5	5-6	5-8	6-7	7-8	7-8
284	1-2	l-b	l-8	2-3	2-5	3-4	3-5	4-9	4-6	5-6	6-7	7-8	7-8
185	b-2	1-3	1-8	2-3	2-4	3-4	3-6	4-5	5-6	5-8	b-7	7-8	7-8
186	1-2	1-6	1-8	2-3	2-4	3-4	3-5	4-5	4-7	5-b	6-7	7-8	7-8
187	1-2	1-3	1-5	2-3	2-4	3-4	3-6	4-5	5-6	5-8	6-7	7-8	7-8
188	1-2	1-5	1-8	2-3	2-4	3-4	3-4	3-6	4-5	5-b	6-7	7-8	7-8
189	1-2	1-5	1-8	2-3	2-5	3-4	3-4	4-6	5-6	5-6	6-7	7-8	7-Q
190	1-2	1-b	1-8	2-3	2-5	3-4	3-4	4-3	4-7	5-6	6-7	7-8	7-8
191	1-2	1-4	1-8	2-3	2-3	3-6	4-5	4-6	5-b	5-8	6-7	7-8	7-8
192	1-2	1-4	1-8	2-3	2-3	3-4	3-6	4-3	5-6	5-8	b-7	7-8	7-8
193	1-2	1-5	1-8	2-3	2-3	3-4	4-5	4-7	5-6	6-7	b-8	7-8	7-8
194	1-2	1-4	1-5	1-8	2-3	2-3	3-6	4-5	4-6	5-6	6-7	7-8	7-8
195	1-2	1-4	1-8	2-3	2-3	3-b	4-5	4-3	4-6	5-b	b-7	7-8	7-8
196	1-2	1-2	1-3	2-b	3-4	3-6	3-8	4-5	4-5	5-b	b-7	7-8	7-8
197	1-2	1-2	1-4	2-3	3-4	3-b	4-5	4-8	5-6	5-b	6-7	7-8	7-8
190	1-2	1-5	1-8	2-3	2.3	3-4	4-5	4-7	5-6	5-6	6-7	7-8	7-8
199	1-2	1-4	1-8	2-3	2-3	3-4	3-b	4-5	4-5	5-6	6-7	7-8	7-8
200	1-2	1-4	1-8	2-3	2-3	3-4	3-b	4-t)	5-6	5-6	6-7	7-8	7-8
201	5-2	1-2	1-8	2-3	3-4	S-6	4-5	4-8	4-8	5-6	b-7	7-8	7-8
202	1-2	1-2	1-8	2-3	3-4	3-b	4-5	4-8	5-6	5-6	6-7	7-8	7-8
203	1-2	1-2	1-8	2-3	3-4	3-7	4-5	4-8	5-b	5-6	b-7	7-8	7-8
204	1-2	1-2	1-4	1-8	2-3	3-4	3-b	4-5	5-6	5-6	6-7	7-8	7-8
205	1-2	1-5	1-8	2-3	2-3	3-4	4-5	4-6	4-b	5-b	b-7	7-8	7-8
206	L-2	1-5	1-8	2-3	2-3	3-4	3-7	4-5	4-6	5-6	6-7	7-8	7-8

207	1-2	1-2	1-8	2-6	3.4	3-5	3-b	4-5	4-8	5-6	6-7	7-8	7-8
208	1-2	1-2	1-8	2-3	2-6	3-4	3-5	4-5	4-8	5-6	6-7	7.8	7-8
209	1-2	1-6	1-8	2-3	2-4	3-4	3-5	4-5	5-6	5-8	6-7	7-8	7-8
210	1-2	1-6	1-8	2-3	2.4	3-4	3-b	4-5	5-6	5-8	b-7	7-8	7-8
4;:		1-5	1-8	2-3	2-6	3-4	3-4	3-5	4-5	5-6	6-7	7-8	7-8
4;:		1-6	1-8	2-3	2-7	3-4	3-6	4-5	4-5	5-6	6-7	7-8	7-8
213	1-2	1-5	1-8	2-3	2-7	3-4	3-b	4-5	4-5	5-6	6-7	7-8	7-8
214	1-2	1-5	1-7	2-3	2-6	3-4	3-4	4-5	5-6	5-8	6-7	7-8	7-8
215	1-2	1-5	1-8	2-3	2-7	3-4	3-4	3-6	4-5	5-b	6-7	7-8	7-8
216	1-2	1-6	1-8	2-3	2-5	3-4	3-4	4-5	4-8	5-b	b-7	7-8	7-8
217	1-2	1-3	1-6	2-3	2-4	3-4	4-5	5-6	5-6	5-8	6-7	7-8	7-8
218	1-2	1-7	1-8	2-3	2.4	3-4	3-5	4-5	5-6	b-t	6-8	7-8	7-8
219	1-2	1-4	1-b	2-3	2-4	3-4	3-5	4-3	5-6	b-7	6-8	7-8	7-8
220	1-2	1-6	1-8	2-3	2-4	3-4	3-4	3-5	4-5	5-6	6-7	7-8	7-8
221	1-2	1-4	1.8	2-3	2-4	3-4	3-5	4-3	5-6	6-7	6-8	7-8	7-8
222	1-2	1-3	1-8	2-3	2-5	3-4	4-3	4-6	5-6	6-7	7-8	7-8	7-8
223	1-2	1-5	1-6	2-3	2-4	3-4	3-5	4-5	5-b	b-7	6-8	7-8	7-8
224	1-2	1-4	1-6	2-3	2-5	3-4	3-5	4-5	5-6	b-7	6-8	7-8	7-8
225	1-4	1-6	1-8	2-3	2-4	2-5	3-4	3-5	4-5	5-6	6-7	7-8	7-8
226	1-2	1-7	1-8	2-3	2-6	3-4	3-5	4-5	4-6	5-b	6-7	7-8	7-8
227	1-2	1-7	1-8	2-3	2-5	3-4	3-b	4-5	4-6	5-b	6-7	7-8	7-8
228	1-2	1-5	1-8	2-3	2-4	3-4	3-5	4-5	5-6	b-7	6-8	7-8	7-8
229	1-2	1-4	1-8	2-3	2-5	3-4	3-5	4-j	5-b	b-7	b-8	7-8	7-8
230	1-2	1-5	1-8	2-3	2-4	3-4	3-b	4-5	5-6	b-7	7-8	7-8	7-8
231	1-2	1-4	1-b	2-3	2-5	3-4	3-4	4-3	5-6	b-7	6-8	7-8	7-8
232	i-4	1-b	1-8	2-3	2-3	2-5	3-4	4-5	4-5	5-6	6-7	7-8	7-8

1-2	1 - 4	1-8	2-3	2-5	3-4	3-4	4-5	5≠6	6-7	6-8	7-8	7-8

233

| 1-2 | 1 - 5 | i-8 | 2-3 | 2-6 | 3-4 | 3-4 | 4-3 | 5≠6 | 6-7 | 7-8 | 7-8 | 7-8 |

234

| 1-2 | 1-3 | 1-5 | 2-3 | 2-4 | 3-4 | 4-5 | 5-6 | 5≠6 | b-7 | 6-8 | 7-8 | 7-8 |

235

| 1-2 | 1-3 | 1-5 | 2-3 | 2-4 | 3-4 | 4-5 | 5-6 | 5-8 | 6-7 | 6-8 | 7-8 | 7-8 |

236

| 1-2 | 1-6 | 1-8 | 2-3 | 2-4 | 3-4 | 3-5 | 4-8 | 5-6 | b-7 | 7-8 | 7-8 | 7-8 |

237

| 1-2 | 1-4 | 1-5 | 2-3 | 2.3 | 3-4 | 4-5 | 5-6 | 5≠6 | 6-7 | 6-8 | 7-8 | 7-8 |

238

| 1-2 | 1-5 | 1-b | 2-3 | 2-4 | 3-4 | 3-4 | 4-3 | 5≠6 | b-t | 6-8 | 7-8 | 7-8 |

239

| 1-4 | 1-5 | 1-b | 2-3 | 2-3 | 2-4 | 3-4 | 4-5 | 5-6 | 6-7 | 6-8 | 7-8 | 7-8 |

2'40

| 1-2 | 1-7 | 1-8 | 2-3 | 2-6 | 3-4 | 3-5 | 4-g | 4-5 | 5-6 | 6-7 | 7-8 | 7-8 |

241

| a-2 | 1-4 | 1-5 | 2-3 | 2-3 | 3-4 | 4-5 | 5-6 | 5-8 | 6-7 | 6-8 | 7-8 | 7-8 |

242

| 1-2 | 1 - 5 | 1-8 | 2-3 | 2-4 | 3-4 | 3-4 | 4-5 | 5-6 | 6-7 | 6-8 | 7-8 | 7-8 |

243

| 1-2 | 1-6 | 1-8 | 2-3 | 2-5 | 3-4 | 3-4 | 4-5 | 5-6 | 6-7 | 7-8 | 7-8 | 7-8 |

244

| 1-2 | 1-3 | 1-4 | 2-3 | 2-4 | 3-4 | 3-8 | 4-5 | 5-6 | 5-7 | b-7 | 6-8 | 7-8 |

245

| 1-6 | 1 - 8 | 1-8 | 2-3 | 2-3 | 2-8 | 3-4 | 4-5 | 4-5 | 5-6 | 6-7 | 6-7 | 7-8 |

246

| 1-2 | 1-2 | 1-b | 2-8 | 3-4 | 3-8 | 3-8 | 4-5 | 4-5 | 5-6 | 6-7 | 6-7 | 7-8 |

247

| 1-2 | 1-2 | 1-5 | 2-8 | 3-4 | 3-8 | 3-8 | 4-5 | 4≠5 | 5-6 | b-7 | 6-7 | 7-8 |

248

| 1-2 | 1-2 | 1-5 | 2-8 | 3-4 | 3-4 | 3-8 | 3-8 | 4-5 | 5-6 | 6-7 | 6-7 | 7-8 |

249

| 1-2 | 1 - 2 | 1-6 | 2-8 | 3-4 | 3-4 | 3-8 | 4-5 | 4-5 | 5-6 | 6-7 | 7-8 | 7-8 |

250

| S-6 | 1-8 | 1-8 | 2-3 | 2-4 | 2-8 | 3-4 | 3-5 | 4≠5 | 5-6 | 6-7 | 6-7 | 7-8 |

251

| 1-6 | 1-8 | 1-8 | 2-3 | 2-5 | 2-8 | 3-4 | 3-4 | 4≠5 | 5-6 | b-7 | b-7 | 7-8 |

252

| 1-2 | 1 - 2 | 1-6 | 2-8 | 3-4 | 3-5 | 3-8 | 4-5 | 4-5 | 5-6 | b-7 | b-7 | 7-8 |

253

| 1-2 | 1-2 | 1-6 | 2-8 | 3-4 | 3-5 | 3-8 | 4-5 | 4-5 | 5-b | b-7 | 7-8 | 7-8 |

254

| 1-2 | 1-2 | 1-6 | 2-8 | 3-4 | 3-4 | 3-5 | 4-5 | 5≠6 | 5-8 | 6-7 | 7-8 | 7-8 |

255

| 1-2 | 1-2 | 1-5 | 2-8 | 3-4 | 3-4 | 3-4 | 3-c) | 4-5 | 5-6 | 6-7 | 6-7 | 7-8 |

256

| 1 - 2 | 1-7 | 1-7 | 2-3 | 2-8 | 3-4 | 3-4 | 4-5 | 5≠6 | 5-b | 5-8 | b-7 | 7-8 |

257

| 1-2 | 1-7 | 1-7 | 2-3 | 2-8 | 3-4 | 3-4 | 4-5 | 4≠8 | 5-6 | 5-b | b-7 | 7-8 |

258

1-5	1-8	1-8	2-3	2-7	2-8	3-4	3-8	4-5	5-6	5-6	6-7	7-8
259
1-5	1-8	1-8	2-3	2-7	2-8	3-4	3-5	4-5	5-6	6-7	6-7	7-8
260
1-2	1-4	1-8	2-3	2-5	3-4	3-8	4-5	5-6	S-6	6-7	7-8	7-8
261
1-2	1-4	1-8	2-3	2-5	3-4	3-8	4-5	5-6	6-7	6-7	7-8	7-8
262
1-2	1-3	1-8	2-4	2-5	3-4	3-S	4-5	4-6	5-6	6-7	7-8	7-8
263
1-2	1-3	1-8	2-4	2-6	3-4	3-6	4-5	5-6	5-7	6-7	7-8	7-8
264
1-3	1-5	1-0	2-3	2.5	2-8	3-4	4-f)	4-6	5-6	6-7	7-8	7-8
265
1-2	1-4	1-8	2-3	2-6	3-4	3-8	4-5	5-6	5-7	6-7	7-8	7-8
266
1-2	1-5	1-8	2-3	2-3	3-4	3-6	4-5	4-7	5-6	6-7	7-8	7-8
267
1-2	1-2	1-8	2-3	3-4	S-6	4-5	4-7	5-6	5-8	6-7	7-8	7-8
268
1-2	1-2	1-8	2-3	2-5	3-4	3-6	4-5	4-8	5-6	6-7	7-8	7-8
269 1-2
1-4	1-8	2-3	2-5	3-4	3-6	4-b	4-5	5-6	6-7	7-8	7-8
270
1-3	1-5	1-8	2-3	2-5	2-6	3-4	4-3	4-6	5-6	6-7	7-8	7-8
271
1-2	1-3	1-8	2-5	2-6	3-4	3-6	4-5	4-7	5-6	6-7	7-8	7-8
272
t-4	1-5	1-8	2-3	2-5	2-8	3-4	3-6	4-5	5-6	6-7	7-8	7-8
273
1-2	1-4	1-8	2-S	2-5	3-4	3-6	3-8	4-5	5-6	6-7	7-8	7-8
274
1-2	1-5	1-8	2-3	2-6	3-4	3-8	4-5	4-6	5-6	6-7	7-8	7-8
275
1-2	1-5	1-8	2-3	2-6	3-4	3-8	4-5	4-7	5-6	6-7	7-8	7-8
276
If-2	1-3	1-8	2-3	2-6	3-4	4-5	4-7	5-6	5-8	6-7	7-8	7-8
277
1-2	1-5	1-8	2-3	2-6	3-4	3-4	4-5	4-7	5-6	6-7	7-8	7-8
278
1-2	1-5	1-8	2-3	2-3	3-4	3-6	4-3	4-8	5-6	6-7	7-8	7-8
279
1-2	1-3	1-5	2-4	2-6	3-4	3-6	3-8	4-5	5-6	6-7	7-8	7-8
280
1-2	1-4	1-6	2-3	2-5	3-4	3-6	4-5	4-8	5-6	6-7	7-8	7-8
281
1-2	1-6	1-8	2-3	2-5	3-4	3-6	4-5	4-8	5-6	6-7	7-8	7-8
282
1-2	1-6	1-8	2-3	2-5	3-4	3-7	4-5	4-8	5-6	6-7	7-8	7-8
283
1-2	1-4	1-8	2-3	2-5	3-4	3-6	4-5	5-6	6-7	6-8	7-8	7-8
284

1-2	1-4	1-8	2-3	2-5	3-4	3-7	4-5	5-6	6-7	6-8	7-8	7-8
285												
1-2	1-4	1-8	2-3	2-5	3-4	3-6	4-5	5-6	6-7	7-8	7-8	7-8
286												
1-2	1-4	1-8	2-3	2-5	3-4	3-8	4-5	5-6	5-7	6-7	6-8	7-8
287												
1-2	1-3	1-8	2-4	2-5	3-4	3-5	4-5	4-7	5-6	6-7	6-8	7-8
280												
1-2	1-3	1-8	2-4	2-5	3-4	3-5	4-7	5-6	5-7	6-7	6-8	7-8
209												
1-3	1-5	1-8	2-3	2-5	2-8	3-4	4-5	4-7	5-6	6-7	6-8	7-8
290												
1-2	1-3	1-8	2-3	2-5	3-4	4-6	4-7	5-6	5-7	6-7	6-8	7-8
291												
1-2	1-4	1-8	2-3	2.4	3-5	3-7	4-5	4-7	5-6	6-7	6-8	7-8
292												
1-2	1-4	1-8	2-3	2-8	S-5	3-7	4-j	4-7	5-6	6-7	6-8	7-8
293												
1-2	1-3	1-8	2-4	2-5	3-5	3-7	4-5	4-7	5-6	6-7	6-8	7-8
294												
1-2	1-5	1-8	2-3	2-6	3-4	3-8	4-5	4-7	5-6	6-7	6-8	7-8
295												
1-2	1-4	1-8	2-3	2-5	3-7	3-8	4-5	4-7	5-6	6-7	6-8	7-8
296												
1-3	1-6	1-8	2-3	2-6	2-8	3-4	4-3	4-7	5-6	5-8	6-7	7-8
297												
1-3	1-4	1-8	2-3	2-4	2-6	3-7	4-3	4-7	5-6	5-8	6-7	7-8

CATALOG23 (1 Entry)

1-2 1-2 1-3 1-3 2-3 2 3

CATALOG23 (12 Entries)

1								
1-2	1-2	1-3	2-3	3-4	3-5	4-5	4-5	4-5
2								
1-2	1-2	1-3	1-5	2-3	3-4	4-5	4-5	4-5
3								
1-2	1-2	1-3	1-5	2-3	2-3	3-4	4-5	4-5
4								
1-2	1-2	1-5	2-3	2-3	3-4	4-5	4-5	4-5
5								
1-2	1-2	1-5	2-3	2-4	3-4	3-4	3-5	4-5
6								
1-2	1-3	1-4	1-5	2-3	2-3	2-4	3-5	4-5
7								
1-2	1-3	1-4	1-5	2-3	2-4	2-5	3-4	4-5
8								
1-2	1-2	1-4	1-5	2-3	2-3	3-4	3-5	4-5
9								
1-2	1-2	1-5	2-3	2-3	3-4	3-4	4-5	4-5
10								
1-2	1-2	1-3	1-5	2-3	2-4	3-4	4-5	4-5
11								
1-2	1-2	1-3	1-4	2-3	3-4	3-5	4-5	4-5
12								
1-2	1-2	1-3	1-5	2-3	3-4	3-4	4-5	4-5

CATALOG43   (186 Entries)

1
1-2	1-3	1-7	2-3	2-3	2-4	3-4	4-5	4-6	5-6	5-7	6-7

2
1-2	1-3	1-7	2-3	2-4	2-5	3-4	4-5	4-6	5-6	5-7	6-7

3
1-2	1-3	1-7	2-3	2-3	2-4	3-5	4-5	4-6	4-7	5-6	6-7

4
1-2	1-3	1-6	1-7	2-3	2-5	3-4	4-5	4-5	4-6	5-7	6-7

5
1-2	1-3	1-6	1-7	2-3	2-4	3-4	4-5	4-5	5-6	5-7	6-7

6
1-2	1-3	1-6	1-7	2-3	2-4	-2-5	3-4	4-5	4-6	5-7	6-7

7
1-2	1-3	1-6	1-7	2-3	2-3	2-4	3-5	4-5	4-7	5-6	6-7

8
1-2	1-3	1-6	1-7	2-3	2-4	2-5	3-4	4-5	5-6	5-7	6-7

9
1-2	1-3	1-5	1-7	2-3	2-4	3-4	3-6	4-5	5-6	5-7	6-7

10
1-2	1-2	1-7	2-3	3-4	3-5	4-5	4-6	4-7	5-6	5-7	6-7

11
1-2	1-3	1-4	2-3	2-3	2-4	3-6	4-5	4-7	5-6	5-7	6-7

12
1-2	1-3	1-4	1-7	2-3	2-4	3-4	3-6	4-5	5-6	5-7	6-7

13
1-2	1-3	1-4	1-7	2-s	2-3	2-4	3-6	4-5	5-6	5-7	6-7

14
1-2	1-2	1-6	2-3	3-4	3-5	3-7	4-5	4-6	4-7	5-6	6-7

15
1-2	1-3	1-7	2-3	2-3	2-4	3-6	4-5	4-7	5-6	5-7	6-7

16
1-2	1-3	1-6	1-7	2-3	2-5	2-6	3-4	4-5	4-7	5-6	6-7

17
1-2	1-3	1-7	2-3	2-6	3-4	4-5	4-5	4-7	5-6	5-6	6-7

18
1-2	1-3	1-7	2-3	2-5	2-6	3-4	4-5	4-5	4-7	5-6	6-7

19
1-2	1-3	1-4	1-7	2-3	2-6	3-4	4-5	4-5	5-6	5-7	6-7

20
1-2	1-2	1-3	1-3	2-5	2-6	3-4	3-7	4-5	4-7	5-6	6-7

21
1-2	1-2	1-7	1-7	2-3	2-3	3-4	3-4	4-5	5-6	5-6	6-7

22
1-2	1-2	1-7	I-7	2-3	2-3	3-4	4-5	4-5	5-6	5-6	6-7

23
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1-2	1-3	1-7	2-3	2-4	2-5	3-4	3-5	4-6	4-7	5-6	6-7
177											
1-2	1-3	1-5	1-7	2-3	2-5	2-6	3-4	4-5	4-6	5-7	6-7
178											
1-2	1-4	1-6	1-7	2-3	2-5	3-4	3-6	3-7	4-5	5-6	5-7
179											
1-2	1-6	1-7	1-7	2-3	2-3	3-4	3-7	4-5	4-5	5-6	5-6
180											

1-2	**1-5**	**1-5**	1-6	2-3	2-3	3-4	3-7	4-5	4-5	6-7	6-7
181											
1-2	1-6	1-7	1-7	2-3	2-3	3-4	3-7	**4-5**	4-5	4-6	**5-6**
182											
183	**1-4**	**1-7**	1-7	2-3	2-3	3-4	3-7	**4-5**	**4-6**	5-6	**5-6**
1-2	1-2	**1-5**	**1-6**	2-3	3-4	3-7	4-5	**4-5**	4-5	6-7	6-7
184											
1-2	**1-4**	1-6	2-3	2-7	2-7	3-4	3-4	**4-5**	**5-6**	5-6	**6-7**
185											
1-2	1-6	**1-7**	1-7	2-3	2-3	2-6	**3-4**	4-5	4-5	4-7	5-6
186											
1-2	1-6	1-7	**1-7**	2-3	2-3	2-6	3-4	4-5	4-7	5-6	5-6

CATALOG#4   (3 Entries)

```
1   1-2   1-2   1-4   2-3   2-3   3-4
2
3   1-2   1-2   1-2   1-4   2-3   3-4   3-4
1-2   1-2   1-3   1-4   2-4   3-4   3-4
```

CATALOG24   (54 Entries)

```
1
1-2   1-3   1-4   2-4   2-5   3-4   3-5   3-6   4-5   4-6   5-6
2
1-2   1-4   1-b   2-3   2-5   3-4   3-4   3-6   4-5   5-6   5-6
3
1-3   1-4   1-6   2-3   2-4   2-6   3-4  3-5   4-5   5-6   5-6
4
1-2   1-3   1-6   2-3   2-6   3-4   3-5   4-5   4-5   4-6   5-6
5
1-2   1-3   1-6   2-3   2-5   2-6   3-4   3-5   4-5   4-6   5-6
6
1-2   1-3   1-6   2-3   2-4   3-5   3-6   4-5   4-5   4-6   5-6
7
1-2   1-3   1-6   2-3   2-3   2-4   3-5   4-5   4-5   4-6   5-6
8
1-2  1-3   1-3   1-6   2-3   2-4   3-5   4-5   4-5   4-6   5-6

r-2   1-2   1-5   1-6   2-3   2-3   3-4   3-6   4-5   4-6   5-6
10
1-2   1-5   1-6   2-3   2-3   2-5   3-4   3-6   4-5   4-6   5-6
11
1-2   1-5   1-6   2-3   2-4   3-4   3-6   3-6   4-5   4-5   5-6
12
1-2   1-3   1-5   2-3   2-4   3-6   3-6   4-5   4-5   4-6   5-6
13
1-2   1-3   1-5   2-3   2-5   3-4   3-4   4-6   4-6   5-6   5-6
14
1-2   1-6   1-6   2-3   2-3   3-4   3-4   4-5   4-5   5-6   5-6
15
1-2   1-2   1-6   2-3   3-4   3-4   3-6   4-5   4-5   5-6   5-6
16
1-2   1-2   1-6   2-3   2-6   3-4   3-4   4-5   4-5   5-6   5-6
17
1-2   1-2   1-2   1-6   2-3   3-4   3-4   4-5   4-5   5-6   5-6
18
1-2   1-2   1-3   1-6   2-3   2-6   3-4   4-5   4-5   5-6   5-6

1-2 19   1-2   1-3   i-6   2-3   2-6   3-4   3-4   4-5   5-6   5-6
20
1-2     1-2     1-6   2-3 2-4   3-4   3-6   4-5   4-5   T-6   5-6
21
1-2   1-2   1-3   2-3   2-4   3-4   3-6   4-5   4-5   5-6   5-6

1-2 22   1-2   1-3   1-6   2-3   2-4   3-4   4-5   4-5   5-6   5-6
23
1-2   1-2   1-3   1-4   2-3   2-3   3-4   4-5   4-5   5-6   5-6
24
```

45

No.											
25	1-2	1-4	1-6	2-3	2-3	3-4	3-6	4-5	4-5	5-6	5-6
26	1-2	1-2	1-6	2-3	2-3	3-4	3-6	4-5	4-5	5-6	5-6
27	1-2	1-2	1-2	i-3	2-3	3-4	3-G	4-5	4-5	5-6	5-6
28		1-3	1-6	2-3	2-3	3-4	4-5	4-5	4-6	5-6	5-6
29	1-2	1-2	1-3	2-3	3-4	3-6	4-5	4-5	4-6	5-6	5-6
30	1-2	1-2	1-2	1-6	2-3	3-4	3-4	3-6	4-5	5-6	5-6
31	1-2	1-2	1-2	1-6	2-3	3-4	3-6	4-5	4-5	5-6	5-6
32	1-2	1-2	1-6	2-3	2-6	3-4	3-4	3-5	4-5	5-6	5-6
33	1-2	1-2	1-6	2-4	3-4	3-4	3-5	3-6	4-5	5-6	5-6
34	1-2	1-2	1-6	2-3	2-4	3-4	3-5	3-6	4-5	5-6	5-6
35	1-2	1-2	1-3	1-6	2-4	3-4	3-4	3-5	4-5	5-6	5-6
34	1-2	1-3	1-4	1-6	2-3	2-4	3-4	3-5	4-5	5-6	5-6
37	1-2	1-4	1-6	2-3	2-3	3-4	3-5	4-5	4-6	5-6	5-6
38	1-2	1-2	1-3	1-4	2-3	3-4	3-5	4-5	4-6	5-6	5-6
39	1-2	1-2	1-4	2-3	3-4	3-5	3-6	4-5	4-6	5-6	5-6
40	1-2	1-2	1-4	2-3	2-6	3-4	3-5	4-5	4-6	5-6	5-6
41	1-2	1-2	1-3	1-6	2-3	3-4	3-5	4-5	4-6	5-6	5-6
42	1-2	1-2	1-2	1-6	2-3	3-4	3-5	4-5	4-6	5-6	5-6
43	1-2	I-2	1-2	1-4	2-3	3-4	3-5	4-5	4-6	5-6	5-6
44	1-2	1-2	1-b	2-3	2-6	3-4	3-4	3-4	4-5	5-6	5-6
45	1-2	I-2	1-2	1-6	2-3	3-4	3-4	3-4	4-5	5-6	5-6
46	1-2	1-3	i-6	2-3	2-3	2-4	3-4	4-5	4-6	5-6	5-6
47	1-2	I-2	1-3	1-6	2-4	3-4	3-4	3-6	4-5	5-6	5-6
48	1-2	1-2	1-6	2-3	2-5	3-4	3-4	3-6	4-5	5-6	5-6
49	1-2	1-3	1-6	2-3	2-3	2-4	3-4	4-5	4-6	5-6	5-6
50	1-2	1-3	1-4	2-3	2-4	3-4	3-6	4-5	5-6	5-6	5-6

1-2	1-2	1-4	2-3	3-4	3-4	3-6	4-5	5-6	5-6	5-6

51

1-2	1-3	1-4	2-3	2-3	3-4	4-5	4-6	5-6	5-6	5-6

52

1-2	1-2	1-3	2-3	3-4	3-4	4-5	4-6	5-6	5-6	5-6

53

1-2	1-4	1-6	2-3	2-3	2-3	3-4	4-5	5-6	5-6	5-6

54

1-4	1-6	1-6	2-3	2-3	2-3	2-6	3-4	4-5	4-5	5-6

CATALOG 5   (6 Entries)

1
1-2   1-2   1-2   1-5   2-3   3-4   3-4   3-5   4-5   4-5
2
1-2   1-2   1-5   1-5   2-3   2-3   3-4   3-4   4-5   4-5
3
1-2   1-2   1-5   1-5   2-3   2-5   3-4   3-4   4-5   4-5
4
1-2   1-3   1-4   1-5   2-3   2-3   2-4   3-5   4-5   4-5
5
1-2   1-3   1-4   1-5   2-3   2-4   2-5   3-4   3-5   4-5
6
1-2   1-2   1-2   1-3   2-5   3-4   3-4   3-4   3-5   4-5