

Catalogue of S-rings over alternating group A_5 of order 60

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**Supplement to the preprint
“Enumeration of Schur rings over the group A_5 ”
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Using computer packages GAP and COCO-II we enumerated all S-rings over the alternating group A_5 of order 60. The enumeration took about 1 month on a single 3GHz CPU.

Overall there are 2848 S-rings over A_5 in 163 orbits under the action of $Aut(A_5) = S_5$.

In this supplement we present 163 orbits representatives together with some information about them.

In the first table we list the mapping of elements of A_5 to numbers from 0 to 59 as used in this supplement.

Next is a listing of 163 representatives of orbits, together with some information about the S-ring, the orbit size and the automorphism group. The basic sets of each sets are provided as mergings in COCO format. If the automorphism group is small, its structure (as calculated by GAP command `StructureDescription` is provided), if the group is a wreath product of smaller groups, the presentation as wreath product is given. In this wreath decomposition, group name from GAP transitive groups catalogue are used. The last table gives some information about those groups.

A file containing 163 representatives in machine readable form (for GAP) is at <http://www.math.bgu.ac.il/~zivav/math/a5.gap>.

Enumeration of elements of A_5 used in the catalogue:

0	()	15	(1,3,5,2,4)	30	(1,4,5,2,3)	45	(1,2,5)
1	(1,4,2,5,3)	16	(2,5,3)	31	(2,4,3)	46	(2,4,5)
2	(2,4)(3,5)	17	(1,2,3,5,4)	32	(1,5,3,2,4)	47	(3,5,4)
3	(1,2,3,4,5)	18	(1,2)(4,5)	33	(2,3,4)	48	(1,3)(2,5)
4	(1,2,3)	19	(1,4)(3,5)	34	(1,3)(4,5)	49	(1,3,2,5,4)
5	(1,3,5,4,2)	20	(2,5)(3,4)	35	(1,2,4,5,3)	50	(1,5,2,3,4)
6	(1,5,4)	21	(2,5,4)	36	(1,4)(2,5)	51	(1,4,5,3,2)
7	(1,5,4,3,2)	22	(1,3,2)	37	(1,2,4,3,5)	52	(1,4)(2,3)
8	(1,4,3,2,5)	23	(1,5,4,2,3)	38	(1,4,3,5,2)	53	(1,3,4)
9	(1,2,4)	24	(3,4,5)	39	(1,3,5)	54	(1,5)(2,4)
10	(1,5,3,4,2)	25	(1,5)(2,3)	40	(2,3)(4,5)	55	(1,4,2)
11	(1,3,4,2,5)	26	(1,5,2,4,3)	41	(1,3)(2,4)	56	(1,2)(3,4)
12	(1,5,2)	27	(1,4,5)	42	(1,2,5,4,3)	57	(1,5,3)
13	(1,5)(3,4)	28	(1,4,3)	43	(2,3,5)	58	(1,2)(3,5)
14	(1,3,4,5,2)	29	(1,3,2,4,5)	44	(1,4,2,3,5)	59	(1,2,5,3,4)

Information about 163 orbits of S-rings

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Number: 0
Rank: 60
Orbit size: 1
Valencies: [ 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
  1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
  1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1 ]
Order Aut: 60
Structure Aut: A5
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [ ]
Merging:

Number: 1
Rank: 33
Orbit size: 10
Valencies: [ 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2,
  2, 2, 1, 2, 2, 2, 1, 1, 2, 2, 2, 2, 2, 2, 1 ]
Order Aut: 120
Structure Aut: S5
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [ 0 ]
Merging: (1,5)(2,41)(3,50)(4,43)(6,27)(7,8)(9,46)(10,11)(12,45)*
(14,59)(15,35)(16,22)(17,30)(18,36)(19,34)(20,56)(21,55)(23,44)*
(24,53)(26,37)(28,47)(29,32)(38,42)(39,57)(40,52)(48,58)(49,51)*

Number: 2
Rank: 32
Orbit size: 15
Valencies: [ 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 1, 2, 2, 2, 2, 2, 2,
  2, 2, 2, 2, 2, 1, 2, 2, 2, 2, 2, 1, 2 ]
Order Aut: 120
Structure Aut: C2 x A5
Schurian: true
Commutative: false
Symmetric: false
Rational: false

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Maximal Merging in: [0]
 Merging: (1,8)(2,13)(3,5)(4,22)(6,46)(7,35)(9,12)(10,37)(11,44)*
 (14,17)(15,50)(16,28)(19,20)(21,27)(23,29)(24,47)(25,41)(26,32)*
 (30,49)(31,57)(33,39)(34,40)(38,59)(42,51)(43,53)(45,55)(48,52)*
 (56,58)

Number: 3
 Rank: 22
 Orbit size: 10
 Valencies: [1, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 1,
 3, 3, 1]
 Order Aut: 180
 Structure Aut: GL(2,4)
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [0]
 Merging: (1,8,42)(2,18,25)(3,5,32)(4,31,55)(6,24,39)(7,35,44)*
 (9,22,33)(10,17,29)(11,49,59)(12,43,46)(13,19,34)(14,15,50)*
 (16,21,45)(20,36,48)(23,37,51)(26,30,38)(27,47,57)(40,54,58)*
 (41,52,56)

Number: 4
 Rank: 20
 Orbit size: 15
 Valencies: [1, 4, 4, 4, 4, 2, 4, 2, 4, 2, 4, 4, 1, 4, 4, 4, 4, 1, 2,
 1]
 Order Aut: 1920
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [2]
 Merging: (1,4,24,50)(2,17,25,51)(3,10,23,35)(5,7,29,37)(6,55)*
 (8,15,22,47)(9,27)(11,26,34,56)(12,21)(13,14,41,42)(16,19,43,52)*
 (20,28,48,53)(30,33,57,59)(31,38,39,49)(32,40,44,58)(45,46)*

Number: 5
 Rank: 19
 Orbit size: 30
 Valencies: [1, 4, 4, 4, 4, 4, 4, 4, 4, 2, 2, 4, 2, 4, 4, 4, 2, 1, 2]
 Order Aut: 3840
 Schurian: true
 Commutative: false

Symmetric: false
Rational: false
Maximal Merging in: [2]
Merging: (1,4,24,50)(2,17,25,51)(3,10,23,35)(5,7,29,37)(6,45,46,55)*
(8,15,22,47)(9,12,21,27)(11,26,34,56)(13,41)(14,42)(16,19,43,52)*
(18,54)(20,28,48,53)(30,33,57,59)(31,38,39,49)(32,44)(40,58)

Number: 6
Rank: 19
Orbit size: 15
Valencies: [1, 4, 2, 4, 4, 4, 4, 4, 2, 4, 4, 4, 2, 4, 4, 4, 2, 2, 1]
Order Aut: 240
Structure Aut: C2 x S5
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [1, 2]
Merging: (1,5,15,35)(2,41)(3,7,8,50)(4,28,43,47)(6,12,27,45)*
(9,21,46,55)(10,11,29,32)(13,25)(14,49,51,59)(16,22,24,53)*
(17,30,38,42)(18,36)(19,34,48,58)(20,40,52,56)(23,26,37,44)*
(31,33)(39,57)

Number: 7
Rank: 18
Orbit size: 15
Valencies: [1, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 1, 4, 4, 4, 4, 1, 1]
Order Aut: 1966080
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [4]
Merging: (1,4,24,50)(2,17,25,51)(3,10,23,35)(5,7,29,37)(6,45,46,55)*
(8,15,22,47)(9,12,21,27)(11,26,34,56)(13,14,41,42)(16,19,43,52)*
(20,28,48,53)(30,33,57,59)(31,38,39,49)(32,40,44,58)

Number: 8
Rank: 18
Orbit size: 30
Valencies: [1, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 2, 2, 2, 4, 4, 4, 1]
Order Aut: 61440
Schurian: true
Commutative: false
Symmetric: false
Rational: false

Maximal Merging in: [2]
Merging: (1,4,24,50)(2,17,25,51)(3,10,23,35)(5,7,29,37)(6,45,46,55)*
(8,15,22,47)(9,12,21,27)(11,26,34,56)(13,14,41,42)(16,19,43,52)*
(18,54)(20,48)(28,53)(30,33,57,59)(31,38,39,49)(32,40,44,58)*

Number: 9
Rank: 18
Orbit size: 5
Valencies: [1, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 1, 4, 4, 4, 4, 1, 1]
Order Aut: 240
Structure Aut: C2 x C2 x A5
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [2]
Merging: (1,8,15,50)(2,13,25,41)(3,5,7,35)(4,22,24,47)(6,45,46,55)*
(9,12,21,27)(10,23,29,37)(11,26,32,44)(14,17,42,51)(16,28,43,53)*
(19,20,48,52)(30,38,49,59)(31,33,39,57)(34,40,56,58)

Number: 10
Rank: 17
Orbit size: 15
Valencies: [1, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 2, 4, 4, 1]
Order Aut: 240
Structure Aut: A5 : C4
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [2]
Merging: (1,3,7,15)(2,13,18,48)(4,9,28,31)(5,10,11,14)(6,16,27,43)*
(8,17,30,32)(12,21,24,39)(19,25,36,40)(20,34,54,58)(22,33,53,55)*
(23,29,38,59)(26,35,37,42)(41,56)(44,49,50,51)(45,46,47,57)*

Number: 11
Rank: 17
Orbit size: 15
Valencies: [1, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 2, 4, 4, 4, 4, 1]
Order Aut: 64424509440
Wreath Decomposition: [[t30n9, S2]]
Schurian: true
Commutative: false
Symmetric: false

Rational: false
Maximal Merging in: [5, 7, 8]
Merging: (1,4,24,50)(2,17,25,51)(3,10,23,35)(5,7,29,37)(6,45,46,55)*
(8,15,22,47)(9,12,21,27)(11,26,34,56)(13,14,41,42)(16,19,43,52)*
(18,54)(20,28,48,53)(30,33,57,59)(31,38,39,49)(32,40,44,58)*

Number: 12
Rank: 16
Orbit size: 6
Valencies: [1, 1, 5, 1, 5, 5, 5, 1, 5, 5, 5, 5, 1, 5, 5]
Order Aut: 300
Structure Aut: C5 x A5
Schurian: true
Commutative: true
Symmetric: false
Rational: false
Maximal Merging in: [0]
Merging: (2,19,36,41,48)(4,24,27,33,45)(5,26,32,38,49)(6,12,22,31,47)*
(8,10,23,42,51)(9,39,43,46,53)(11,30,35,44,59)(13,18,25,40,56)*
(14,17,29,37,50)(16,21,28,55,57)(20,34,52,54,58)

Number: 13
Rank: 15
Orbit size: 5
Valencies: [1, 16, 1, 16, 16, 1, 1, 1, 1, 1, 1, 1, 1, 1]
Order Aut: 61440
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [0]
Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(3,7,8,9,14*,
,19,30,39,41,42,49,50,54,55,57,58)(5,12,13,17,23,28,29,32,35,36*,
,44,45,48,51,53,56)

Number: 14
Rank: 14
Orbit size: 10
Valencies: [1, 6, 3, 6, 6, 6, 6, 3, 3, 6, 6, 3, 3, 2]
Order Aut: 360
Structure Aut: GL(2,4) : C2
Schurian: true
Commutative: false
Symmetric: false
Rational: false

Maximal Merging in: [1, 3]
Merging: (1,5,10,11,23,44)(2,41,54)(3,38,42,49,50,51)(4,12,16,22,43,45)*
(6,24,27,28,47,53)(7,8,14,17,30,59)(9,31,46)(13,19,34)*
(15,26,29,32,35,37)(18,20,36,40,52,56)(21,33,55)(25,48,58)*
(39,57)

Number: 15
Rank: 14
Orbit size: 15
Valencies: [1, 8, 1, 8, 8, 8, 8, 8, 2, 1, 2, 2, 2, 1]
Order Aut: 1920
Schurian: false
Commutative: false
Symmetric: false
Rational: false

Maximal Merging in: [4]
Merging: (1,4,6,10,15,22,27,37)(3,7,8,14,30,42,49,50)(5,12,28,32,35*,
,44,45,53)(9,19,39,41,54,55,57,58)(11,18,25,26,34,38,52,59)*
(13,17,23,29,36,48,51,56)(16,47)(21,31)(24,43)(33,46)

Number: 16
Rank: 13
Orbit size: 30
Valencies: [1, 8, 8, 4, 8, 8, 4, 8, 4, 2, 2, 1, 2]
Order Aut: 122880
Schurian: true
Commutative: false
Symmetric: false
Rational: false

Maximal Merging in: [6, 8]
Merging: (1,2,11,15,20,26,36,54)(3,7,17,25,51,52,56,58)(4,18,22,40)*
(5,12,14,23,30,33,43,55)(6,24,27,28,39,47,53,57)(8,32,37,59)*
(9,16,29,31,35,42,45,49)(10,38,44,50)(13,19)(21,46)(41,48)

Number: 17
Rank: 13
Orbit size: 15
Valencies: [1, 8, 8, 4, 8, 8, 4, 8, 4, 1, 1, 4, 1]
Order Aut: 3932160
Schurian: true
Commutative: false
Symmetric: false
Rational: false

Maximal Merging in: [7]
Merging: (1,2,11,15,20,26,36,54)(3,7,17,25,51,52,56,58)(4,18,22,40)*
(5,12,14,23,30,33,43,55)(6,24,27,28,39,47,53,57)(8,32,37,59)*

(9,16,29,31,35,42,45,49)(10,38,44,50)(21,41,46,48)

Number: 18
Rank: 13
Orbit size: 15
Valencies: [1, 8, 8, 4, 8, 4, 4, 8, 4, 2, 4, 4, 1]
Order Aut: 3840
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [4, 6]
Merging: (1,2,11,15,20,26,36,54)(3,7,17,25,51,52,56,58)(4,18,22,40)*
(5,12,14,23,30,33,43,55)(6,24,27,47)(8,32,37,59)(9,16,29,31,35*
,42,45,49)(10,38,44,50)(13,19)(21,41,46,48)(28,39,53,57)*

Number: 19
Rank: 13
Orbit size: 5
Valencies: [1, 48, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1]
Order Aut: 29859840
Wreath Decomposition: [[S5, A_4(12)]]
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [13]
Merging: (1,2,3,5,6,7,8,9,10,11,13,14,15,17,18,19,20,21,23,24,26*
,27,28,29,30,31,32,33,34,35,36,37,38,40,41,42,44,46,47,49,50,51*
,52,53,54,55,56,59)

Number: 20
Rank: 13
Orbit size: 10
Valencies: [1, 6, 3, 6, 6, 6, 1, 6, 6, 6, 6, 6, 1]
Order Aut: 360
Structure Aut: C3 x S5
Schurian: true
Commutative: true
Symmetric: false
Rational: false
Maximal Merging in: [1, 3]
Merging: (1,5,10,38,44,51)(2,19,58)(3,26,29,42,49,50)(4,6,31,45,46,53)*
(7,8,11,14,23,30)(12,21,22,27,28,33)(13,20,25,34,40,48)*
(15,17,32,35,37,59)(16,24,39,43,47,57)(18,36,41,52,54,56)*

Number: 21
 Rank: 13
 Orbit size: 15
 Valencies: [1, 8, 8, 4, 8, 4, 4, 8, 4, 2, 4, 4, 1]
 Order Aut: 1920
 Schurian: false
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [4]
 Merging: (1,2,11,15,20,26,36,54)(3,7,17,25,51,52,56,58)(4,18,22,40)*
 (5,12,14,23,30,33,43,55)(6,24,53,57)(8,32,37,59)(9,16,29,31,35*
 ,42,45,49)(10,38,44,50)(13,19)(21,41,46,48)(27,28,39,47)*

Number: 22
 Rank: 13
 Orbit size: 10
 Valencies: [1, 6, 3, 6, 2, 6, 6, 6, 6, 3, 3, 6, 6]
 Order Aut: 360
 Structure Aut: A5 x S3
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [2, 3]
 Merging: (1,8,10,15,37,50)(2,13,36)(3,5,7,30,35,49)(4,22)*
 (6,21,24,27,46,47)(9,12,16,28,33,39)(11,26,32,38,44,59)*
 (14,17,23,29,42,51)(18,34,40)(19,20,54)(25,41,48,52,56,58)*
 (31,43,45,53,55,57)

Number: 23
 Rank: 12
 Orbit size: 20
 Valencies: [1, 9, 9, 1, 9, 9, 9, 3, 3, 1, 3, 3]
 Order Aut: 14580
 Structure Aut: C3 x ((C3 x C3 x C3 x C3) : A5)
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [3]
 Merging: (1,2,8,10,13,15,36,37,50)(3,14,24,27,29,30,35,46,51)*
 (5,6,7,17,21,23,42,47,49)(9,28,31,33,41,52,53,55,56)*

(11,19,20,26,32,38,44,54,59)(12,16,39)(18,34,40)(25,48,58)*
(43,45,57)

Number: 24
Rank: 12
Orbit size: 15
Valencies: [1, 8, 1, 8, 8, 8, 8, 8, 4, 1, 4, 1]
Order Aut: 3932160
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [7, 9, 15]
Merging: (1,4,6,10,15,22,27,37)(3,7,8,14,30,42,49,50)(5,12,28,32,35*,
,44,45,53)(9,19,39,41,54,55,57,58)(11,18,25,26,34,38,52,59)*
(13,17,23,29,36,48,51,56)(16,33,46,47)(21,24,31,43)

Number: 25
Rank: 12
Orbit size: 10
Valencies: [1, 9, 9, 1, 9, 9, 9, 9, 1, 1, 1, 1]
Order Aut: 3542940
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [0]
Merging: (1,2,8,10,13,15,36,37,50)(3,14,24,27,29,30,35,46,51)*
(5,6,7,17,21,23,42,47,49)(9,28,31,33,41,52,53,55,56)*
(11,19,20,26,32,38,44,54,59)(12,16,25,39,43,45,48,57,58)*

Number: 26
Rank: 12
Orbit size: 6
Valencies: [1, 1, 25, 1, 25, 1, 1, 1, 1, 1, 1, 1]
Order Aut: 1875000
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [0]
Merging: (2,4,6,8,10,12,14,17,19,22,23,24,27,29,31,33,36,37,41,42,45*,
,47,48,50,51)(5,9,11,13,16,18,21,25,26,28,30,32,35,38,39,40,43*,
,44,46,49,53,55,56,57,59)

Number: 27
 Rank: 12
 Orbit size: 15
 Valencies: [1, 8, 8, 4, 8, 8, 4, 8, 4, 2, 4, 1]
 Order Aut: 128849018880
 Wreath Decomposition: [[t30n27, S2]]
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [11, 16, 17, 18, 21]
 Merging: (1,2,11,15,20,26,36,54)(3,7,17,25,51,52,56,58)(4,18,22,40)*
 (5,12,14,23,30,33,43,55)(6,24,27,28,39,47,53,57)(8,32,37,59)*
 (9,16,29,31,35,42,45,49)(10,38,44,50)(13,19)(21,41,46,48)*

Number: 28
 Rank: 11
 Orbit size: 20
 Valencies: [1, 18, 9, 1, 9, 9, 3, 3, 3, 1, 3]
 Order Aut: 29160
 Structure Aut: C3 x (((C3 x C3 x C3 x C3) : A5) : C2)
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [23]
 Merging: (1,2,5,10,11,14,15,20,26,35,37,38,41,42,48,56,58,59)*
 (3,4,17,23,30,33,43,44,50)(7,8,16,22,29,31,32,49,51)*
 (9,12,18,21,36,45,46,54,55)(13,19,34)(24,28,39)(25,40,52)*
 (47,53,57)

Number: 29
 Rank: 11
 Orbit size: 6
 Valencies: [1, 1, 50, 1, 1, 1, 1, 1, 1, 1, 1]
 Order Aut: 720000000
 Wreath Decomposition: [[S6, D(10)=5:2]]
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [26]
 Merging: (2,4,5,6,8,9,10,11,12,13,14,16,17,18,19,21,22,23,24,25,26*
 ,27,28,29,30,31,32,33,35,36,37,38,39,40,41,42,43,44,45,46,47,48*
 ,49,50,51,53,55,56,57,59)

Number: 30
 Rank: 11
 Orbit size: 15
 Valencies: [1, 8, 4, 8, 8, 8, 8, 2, 8, 4, 1]
 Order Aut: 480
 Structure Aut: (C2 x C2 x A5) : C2
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [6, 9, 10]
 Merging: (1,3,5,7,8,15,35,50)(2,13,25,41)(4,16,22,24,28,43,47,53)*
 (6,9,12,21,27,45,46,55)(10,11,23,26,29,32,37,44)(14,17,30,38,42*,
 49,51,59)(18,36)(19,20,34,40,48,52,56,58)(31,33,39,57)*

Number: 31
 Rank: 11
 Orbit size: 10
 Valencies: [1, 9, 9, 18, 9, 9, 1, 1, 1, 1, 1]
 Order Aut: 7085880
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [25]
 Merging: (1,4,23,26,28,30,35,42,57)(2,16,20,24,31,33,40,43,47)*
 (3,7,8,10,13,17,19,25,32,37,38,44,50,51,52,56,58,59)*
 (5,11,14,15,22,29,39,49,53)(6,9,12,18,27,36,45,54,55)*

Number: 32
 Rank: 11
 Orbit size: 15
 Valencies: [1, 8, 1, 8, 8, 8, 8, 8, 4, 2, 4]
 Order Aut: 128849018880
 Wreath Decomposition: [[t30n29, S2]]
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [11, 24]
 Merging: (1,4,6,10,15,22,27,37)(3,7,8,14,30,42,49,50)(5,12,28,32,35*,
 44,45,53)(9,19,39,41,54,55,57,58)(11,18,25,26,34,38,52,59)*
 (13,17,23,29,36,48,51,56)(16,33,46,47)(20,40)(21,24,31,43)

Number: 33
Rank: 11
Orbit size: 30
Valencies: [1, 4, 8, 8, 8, 8, 8, 8, 4, 2, 1]
Order Aut: 7680
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [5, 10]
Merging: (1,3,7,15)(2,9,18,19,24,47,55,56)(4,12,16,22,39,43,45,57)*
(5,6,28,33,37,46,51,59)(8,11,23,26,29,30,49,50)(10,17,21,27,31*
,35,38,53)(13,14,32,36,40,41,42,44)(20,34,52,54)(25,48)*

Number: 34
Rank: 11
Orbit size: 15
Valencies: [1, 16, 1, 16, 16, 2, 1, 2, 2, 1, 2]
Order Aut: 1966080
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [13, 15]
Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(3,7,8,9,14*
,19,30,39,41,42,49,50,54,55,57,58)(5,12,13,17,23,28,29,32,35,36*
,44,45,48,51,53,56)(16,33)(21,24)(31,43)(46,47)

Number: 35
Rank: 11
Orbit size: 15
Valencies: [1, 8, 8, 4, 8, 8, 8, 8, 4, 2, 1]
Order Aut: 1920
Schurian: false
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [4]
Merging: (1,3,7,15,20,34,52,54)(2,9,18,19,24,47,55,56)(4,12,22,45)*
(5,6,28,33,37,46,51,59)(8,11,23,26,29,30,49,50)(10,17,21,27,31*
,35,38,53)(13,14,32,36,40,41,42,44)(16,39,43,57)(25,48)*

Number: 36

Rank: 11
 Orbit size: 15
 Valencies: [1, 8, 8, 8, 4, 8, 8, 8, 8, 4, 2, 1]
 Order Aut: 3840
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [4, 10]
 Merging: (1,3,7,15,20,34,52,54)(2,9,18,19,24,47,55,56)(4,12,43,57)*
 (5,6,28,33,37,46,51,59)(8,11,23,26,29,30,49,50)(10,17,21,27,31*
 ,35,38,53)(13,14,32,36,40,41,42,44)(16,22,39,45)(25,48)*

Number: 37
 Rank: 11
 Orbit size: 15
 Valencies: [1, 8, 8, 8, 8, 8, 8, 8, 1, 1, 1]
 Order Aut: 3932160
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [7]
 Merging: (1,3,7,15,20,34,52,54)(2,9,18,19,24,47,55,56)(4,12,16,22,39*
 ,43,45,57)(5,6,28,33,37,46,51,59)(8,11,23,26,29,30,49,50)*
 (10,17,21,27,31,35,38,53)(13,14,32,36,40,41,42,44)

Number: 38
 Rank: 10
 Orbit size: 30
 Valencies: [1, 9, 9, 2, 9, 9, 9, 9, 1, 2]
 Order Aut: 3627970560
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [25]
 Merging: (1,2,8,10,13,15,36,37,50)(3,14,24,27,29,30,35,46,51)*
 (4,22)(5,6,7,17,21,23,42,47,49)(9,28,31,33,41,52,53,55,56)*
 (11,19,20,26,32,38,44,54,59)(12,16,25,39,43,45,48,57,58)*
 (34,40)

Number: 39
 Rank: 10
 Orbit size: 15

Valencies: [1, 8, 16, 8, 8, 8, 8, 1, 1, 1]
 Order Aut: 3932160
 Schurian: false
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [37]
 Merging: (1,3,7,15,20,34,52,54)(2,8,9,11,18,19,23,24,26,29,30,47,49*
 ,50,55,56)(4,12,16,22,39,43,45,57)(5,6,28,33,37,46,51,59)*
 (10,17,21,27,31,35,38,53)(13,14,32,36,40,41,42,44)

Number: 40
 Rank: 10
 Orbit size: 10
 Valencies: [1, 9, 18, 1, 18, 9, 1, 1, 1, 1]
 Order Aut: 7085880
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [25]
 Merging: (1,2,8,10,13,15,36,37,50)(3,5,6,7,14,17,21,23,24,27,29,30*
 ,35,42,46,47,49,51)(9,12,16,25,28,31,33,39,41,43,45,48,52,53,55*
 ,56,57,58)(11,19,20,26,32,38,44,54,59)

Number: 41
 Rank: 10
 Orbit size: 20
 Valencies: [1, 9, 9, 2, 9, 9, 9, 6, 3, 3]
 Order Aut: 466560
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [23]
 Merging: (1,2,8,10,13,15,36,37,50)(3,14,24,27,29,30,35,46,51)*
 (4,22)(5,6,7,17,21,23,42,47,49)(9,28,31,33,41,52,53,55,56)*
 (11,19,20,26,32,38,44,54,59)(12,16,39,43,45,57)(18,34,40)*
 (25,48,58)

Number: 42
 Rank: 10
 Orbit size: 24
 Valencies: [1, 1, 11, 1, 11, 11, 1, 11, 11, 1]
 Order Aut: 1320
 Structure Aut: PSL(2,11) : C2

Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [0]
 Merging: (2,5,10,12,18,20,35,37,39,45,57)(4,9,17,19,22,25,32,34,44,51*,55)(6,11,13,21,23,26,27,29,41,46,52)(8,16,31,33,36,38,43,50,54*,56,59)(14,24,28,30,40,42,47,48,49,53,58)

Number: 43
 Rank: 10
 Orbit size: 6
 Valencies: [1, 10, 5, 10, 10, 10, 5, 2, 5, 2]
 Order Aut: 600

Structure Aut: A5 x D10
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [2, 12]
 Merging: (1,8,10,14,15,17,37,42,50,51)(2,13,18,48,52)(3,5,7,11,26,30*,32,35,44,49)(4,6,21,22,27,31,33,39,46,57)(9,12,16,24,28,43,45*,47,53,55)(19,20,36,56,58)(23,29)(25,34,40,41,54)(38,59)

Number: 44
 Rank: 10
 Orbit size: 30
 Valencies: [1, 4, 16, 8, 8, 8, 8, 4, 2, 1]
 Order Aut: 7680

Schurian: false
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [33]
 Merging: (1,3,7,15)(2,8,9,11,18,19,23,24,26,29,30,47,49,50,55,56)*
 (4,12,16,22,39,43,45,57)(5,6,28,33,37,46,51,59)(10,17,21,27,31*,35,38,53)(13,14,32,36,40,41,42,44)(20,34,52,54)(25,48)*

Number: 45
 Rank: 10
 Orbit size: 15
 Valencies: [1, 8, 16, 4, 8, 8, 8, 4, 2, 1]
 Order Aut: 3840

Schurian: false
 Commutative: false

Symmetric: false
Rational: false
Maximal Merging in: [36]
Merging: (1,3,7,15,20,34,52,54)(2,8,9,11,18,19,23,24,26,29,30,47,49*,50,55,56)(4,12,43,57)(5,6,28,33,37,46,51,59)(10,17,21,27,31,35*,38,53)(13,14,32,36,40,41,42,44)(16,22,39,45)(25,48)

Number: 46
Rank: 10
Orbit size: 10
Valencies: [1, 9, 9, 1, 9, 9, 9, 9, 3, 1]
Order Aut: 209207064060
Wreath Decomposition: [[t20n15, A3]]
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [23, 25]
Merging: (1,2,8,10,13,15,36,37,50)(3,14,24,27,29,30,35,46,51)*
(5,6,7,17,21,23,42,47,49)(9,28,31,33,41,52,53,55,56)*
(11,19,20,26,32,38,44,54,59)(12,16,25,39,43,45,48,57,58)*
(18,34,40)

Number: 47
Rank: 10
Orbit size: 15
Valencies: [1, 8, 16, 4, 8, 8, 8, 4, 2, 1]
Order Aut: 1920
Schurian: false
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [35]
Merging: (1,3,7,15,20,34,52,54)(2,8,9,11,18,19,23,24,26,29,30,47,49*,50,55,56)(4,12,22,45)(5,6,28,33,37,46,51,59)(10,17,21,27,31,35*,38,53)(13,14,32,36,40,41,42,44)(16,39,43,57)(25,48)

Number: 48
Rank: 10
Orbit size: 15
Valencies: [1, 8, 8, 8, 8, 8, 8, 8, 2, 1]
Order Aut: 128849018880
Wreath Decomposition: [[t30n22, S2]]
Schurian: true
Commutative: false
Symmetric: false

Rational: false
Maximal Merging in: [11, 33, 35, 36, 37]
Merging: (1,3,7,15,20,34,52,54)(2,9,18,19,24,47,55,56)(4,12,16,22,39*,
43,45,57)(5,6,28,33,37,46,51,59)(8,11,23,26,29,30,49,50)*
(10,17,21,27,31,35,38,53)(13,14,32,36,40,41,42,44)(25,48)*

Number: 49
Rank: 9
Orbit size: 15
Valencies: [1, 8, 16, 8, 8, 8, 2, 1]
Order Aut: 128849018880
Wreath Decomposition: [[t30n22, S2]]
Schurian: false
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [39, 44, 45, 47, 48]
Merging: (1,3,7,15,20,34,52,54)(2,8,9,11,18,19,23,24,26,29,30,47,49*,
50,55,56)(4,12,16,22,39,43,45,57)(5,6,28,33,37,46,51,59)*
(10,17,21,27,31,35,38,53)(13,14,32,36,40,41,42,44)(25,48)*

Number: 50
Rank: 9
Orbit size: 15
Valencies: [1, 8, 16, 16, 8, 8, 1, 1, 1]
Order Aut: 7864320
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [17, 24, 37]
Merging: (1,5,14,15,35,38,42,59)(2,10,11,17,18,19,20,26,30,34,36,37,41*,
49,51,56)(3,7,8,9,21,23,24,28,29,32,44,46,47,50,53,55)*
(4,12,16,22,39,43,45,57)(6,13,27,31,33,40,52,54)

Number: 51
Rank: 9
Orbit size: 15
Valencies: [1, 16, 8, 8, 16, 4, 2, 1, 4]
Order Aut: 3840
Schurian: false
Commutative: true
Symmetric: true
Rational: true

Maximal Merging in: [15, 18, 35]
Merging: (1,4,12,15,17,21,22,31,32,33,38,44,45,46,51,59)(2,9,16,36,43*,52,55,58)(3,7,11,14,23,26,29,42)(5,8,10,18,20,25,30,35,37,40*,41,48,49,50,54,56)(6,27,28,53)(13,34)(24,39,47,57)

Number: 52
Rank: 9
Orbit size: 15
Valencies: [1, 16, 8, 8, 16, 4, 2, 1, 4]
Order Aut: 3840
Schurian: false
Commutative: true
Symmetric: false
Rational: false

Maximal Merging in: [15, 21, 36]
Merging: (1,4,12,15,17,21,22,31,32,33,38,44,45,46,51,59)(2,9,16,36,43*,52,55,58)(3,7,11,14,23,26,29,42)(5,8,10,18,20,25,30,35,37,40*,41,48,49,50,54,56)(6,28,47,57)(13,34)(24,27,39,53)

Number: 53
Rank: 9
Orbit size: 30
Valencies: [1, 9, 9, 18, 9, 9, 2, 1, 2]
Order Aut: 7255941120
Schurian: true
Commutative: false
Symmetric: false
Rational: false

Maximal Merging in: [1, 31, 38]
Merging: (1,4,23,26,28,30,35,42,57)(2,16,20,24,31,33,40,43,47)*(3,7,8,10,13,17,19,25,32,37,38,44,50,51,52,56,58,59)*(5,11,14,15,22,29,39,49,53)(6,9,12,18,27,36,45,54,55)*(21,46)(41,48)

Number: 54
Rank: 9
Orbit size: 20
Valencies: [1, 18, 9, 2, 9, 9, 3, 6, 3]
Order Aut: 933120
Schurian: true
Commutative: false
Symmetric: false
Rational: false

Maximal Merging in: [14, 28, 41]
Merging: (1,2,5,10,11,14,15,20,26,35,37,38,41,42,48,56,58,59)*(3,4,17,23,30,33,43,44,50)(6,27)(7,8,16,22,29,31,32,49,51)*

(9,12,18,21,36,45,46,54,55)(13,19,34)(24,28,39,47,53,57)*
(25,40,52)

Number: 55
Rank: 9
Orbit size: 15
Valencies: [1, 8, 24, 8, 8, 8, 1, 1, 1]
Order Aut: 23592960
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [39]
Merging: (1,3,7,15,20,34,52,54)(2,4,8,9,11,12,16,18,19,22,23,24,26*,
,29,30,39,43,45,47,49,50,55,56,57)(5,6,28,33,37,46,51,59)*
(10,17,21,27,31,35,38,53)(13,14,32,36,40,41,42,44)

Number: 56
Rank: 9
Orbit size: 20
Valencies: [1, 16, 3, 16, 16, 1, 3, 3, 1]
Order Aut: 477757440
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [13]
Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(2,20,40)*
(3,7,8,9,14,19,30,39,41,42,49,50,54,55,57,58)(5,12,13,17,23*,
,28,29,32,35,36,44,45,48,51,53,56)(21,24,31)(33,46,47)*

Number: 57
Rank: 9
Orbit size: 30
Valencies: [1, 16, 2, 32, 2, 2, 2, 2, 1]
Order Aut: 122880
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [1, 13]
Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(2,20)*
(3,5,7,8,9,12,13,14,17,19,23,28,29,30,32,35,36,39,41,42,44*,
,45,48,49,50,51,53,54,55,56,57,58)(16,31)(21,46)(24,47)*
(33,43)

Number: 58
 Rank: 9
 Orbit size: 10
 Valencies: [1, 18, 18, 18, 1, 1, 1, 1, 1]
 Order Aut: 14171760
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [1, 31, 40]
 Merging: (1,4,5,11,14,15,22,23,26,28,29,30,35,39,42,49,53,57)*
 (2,6,9,12,16,18,20,24,27,31,33,36,40,43,45,47,54,55)*
 (3,7,8,10,13,17,19,25,32,37,38,44,50,51,52,56,58,59)*

Number: 59
 Rank: 9
 Orbit size: 10
 Valencies: [1, 9, 9, 2, 9, 9, 9, 9, 3]
 Order Aut: 219369506403778560
 Wreath Decomposition: [[t20n15, S3]]
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [38, 41, 46]
 Merging: (1,2,8,10,13,15,36,37,50)(3,14,24,27,29,30,35,46,51)*
 (4,22)(5,6,7,17,21,23,42,47,49)(9,28,31,33,41,52,53,55,56)*
 (11,19,20,26,32,38,44,54,59)(12,16,25,39,43,45,48,57,58)*
 (18,34,40)

Number: 60
 Rank: 9
 Orbit size: 10
 Valencies: [1, 12, 6, 12, 6, 2, 12, 6, 3]
 Order Aut: 720
 Structure Aut: S5 x S3
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [6, 14, 20, 22]
 Merging: (1,5,10,11,14,15,26,35,37,38,42,59)(2,20,41,48,56,58)*
 (3,7,8,17,23,29,30,32,44,49,50,51)(4,16,22,31,33,43)*
 (6,27)(9,12,21,24,28,39,45,46,47,53,55,57)(13,18,19,34,36,54)*

(25,40,52)

Number: 61
Rank: 9
Orbit size: 5
Valencies: [1, 16, 1, 16, 16, 4, 1, 4, 1]
Order Aut: 64424509440
Wreath Decomposition: [[A_5(15), E(4) = 2[x]2]]
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [24, 34]
Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(3,7,8,9,14*,19,30,39,41,42,49,50,54,55,57,58)(5,12,13,17,23,28,29,32,35,36*,44,45,48,51,53,56)(16,33,46,47)(21,24,31,43)

Number: 62
Rank: 9
Orbit size: 15
Valencies: [1, 48, 2, 2, 2, 1, 2, 1, 1]
Order Aut: 955514880
Wreath Decomposition: [[S5, A_4(12)x2]]
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [19, 34]
Merging: (1,2,3,5,6,7,8,9,10,11,13,14,15,17,18,19,20,21,23,24,26*,27,28,29,30,31,32,33,34,35,36,37,38,40,41,42,44,46,47,49,50,51*,52,53,54,55,56,59)(4,12)(16,39)(22,45)(43,57)

Number: 63
Rank: 9
Orbit size: 30
Valencies: [1, 4, 24, 8, 8, 8, 4, 2, 1]
Order Aut: 46080
Schurian: true
Commutative: false
Symmetric: false
Rational: false
Maximal Merging in: [44]
Merging: (1,3,7,15)(2,4,8,9,11,12,16,18,19,22,23,24,26,29,30,39,43*,45,47,49,50,55,56,57)(5,6,28,33,37,46,51,59)(10,17,21,27,31,35*,38,53)(13,14,32,36,40,41,42,44)(20,34,52,54)(25,48)

Number: 64
 Rank: 9
 Orbit size: 10
 Valencies: [1, 18, 9, 1, 9, 9, 9, 3, 1]
 Order Aut: 418414128120
 Wreath Decomposition: [[t20n30, A3]]
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [28, 31, 46]
 Merging: (1,2,5,10,11,14,15,20,26,35,37,38,41,42,48,56,58,59)*
 (3,4,17,23,30,33,43,44,50)(7,8,16,22,29,31,32,49,51)*
 (9,12,18,21,36,45,46,54,55)(13,19,24,28,34,39,47,53,57)*
 (25,40,52)

Number: 65
 Rank: 9
 Orbit size: 60
 Valencies: [1, 16, 1, 32, 2, 2, 2, 2, 2]
 Order Aut: 122880
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [13]
 Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(3,5,7,8,9*,
 ,12,13,14,17,19,23,28,29,30,32,35,36,39,41,42,44,45,48,49,50,51*,
 ,53,54,55,56,57,58)(16,43)(20,40)(21,33)(24,47)(31,46)

Number: 66
 Rank: 8
 Orbit size: 15
 Valencies: [1, 16, 1, 16, 16, 4, 2, 4]
 Order Aut: 2111062325329920
 Wreath Decomposition: [[t30n2240, S2], [A_5(15), D(4)]]
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [32, 61]
 Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(3,7,8,9,14*,
 ,19,30,39,41,42,49,50,54,55,57,58)(5,12,13,17,23,28,29,32,35,36*,
 ,44,45,48,51,53,56)(16,33,46,47)(20,40)(21,24,31,43)

Number: 67

Rank: 8
 Orbit size: 5
 Valencies: [1, 12, 12, 12, 4, 12, 4, 3]
 Order Aut: 720
 Structure Aut: A5 x A4
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [3, 9]
 Merging: (1,8,10,14,15,17,23,29,37,42,50,51)(2,13,18,19,20,25,34,36,40*,48,54,58)(3,5,7,11,26,30,32,35,38,44,49,59)(4,31,53,55)*(6,12,16,21,24,27,39,43,45,46,47,57)(9,22,28,33)(41,52,56)

Number: 68
 Rank: 8
 Orbit size: 10
 Valencies: [1, 9, 18, 1, 18, 9, 3, 1]
 Order Aut: 418414128120
 Wreath Decomposition: [[t20n36, A3]]
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [40, 46]
 Merging: (1,2,8,10,13,15,36,37,50)(3,5,6,7,14,17,21,23,24,27,29,30*,35,42,46,47,49,51)(9,12,16,25,28,31,33,39,41,43,45,48,52,53,55*,56,57,58)(11,19,20,26,32,38,44,54,59)(18,34,40)

Number: 69
 Rank: 8
 Orbit size: 15
 Valencies: [1, 16, 16, 16, 8, 1, 1, 1]
 Order Aut: 7864320
 Schurian: false
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [39, 50]
 Merging: (1,2,3,7,11,15,17,20,25,26,36,51,52,54,56,58)(4,8,10,18,21*,22,32,37,38,40,41,44,46,48,50,59)(5,9,12,14,16,23,29,30,31,33*,35,42,43,45,49,55)(6,24,27,28,39,47,53,57)

Number: 70
 Rank: 8
 Orbit size: 30

Valencies: [1, 9, 18, 2, 18, 9, 1, 2]
 Order Aut: 7255941120
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [2, 38, 40]
 Merging: (1,2,8,10,13,15,36,37,50)(3,5,6,7,14,17,21,23,24,27,29,30*
 ,35,42,46,47,49,51)(4,22)(9,12,16,25,28,31,33,39,41,43,45,48,52*
 ,53,55,56,57,58)(11,19,20,26,32,38,44,54,59)(34,40)

Number: 71
 Rank: 8
 Orbit size: 6
 Valencies: [1, 1, 25, 1, 25, 1, 1, 5]
 Order Aut: 29296875000
 Wreath Decomposition: [[[2]L(6)_6, C(5) = 5]]
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [12, 26]
 Merging: (2,4,6,8,10,12,14,17,19,22,23,24,27,29,31,33,36,37,41,42,45*
 ,47,48,50,51)(5,9,11,13,16,18,21,25,26,28,30,32,35,38,39,40,43*
 ,44,46,49,53,55,56,57,59)(20,34,52,54,58)

Number: 72
 Rank: 8
 Orbit size: 15
 Valencies: [1, 16, 8, 8, 16, 8, 2, 1]
 Order Aut: 257698037760
 Wreath Decomposition: [[t30n58, S2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [27, 30, 32, 48, 50, 51, 52]
 Merging: (1,4,12,15,17,21,22,31,32,33,38,44,45,46,51,59)(2,9,16,36,43*
 ,52,55,58)(3,7,11,14,23,26,29,42)(5,8,10,18,20,25,30,35,37,40*
 ,41,48,49,50,54,56)(6,24,27,28,39,47,53,57)(13,34)

Number: 73
 Rank: 8
 Orbit size: 15
 Valencies: [1, 8, 24, 8, 8, 8, 2, 1]
 Order Aut: 773094113280

Wreath Decomposition: [[t30n164, S2]]
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [49, 55, 63]
 Merging: (1,3,7,15,20,34,52,54)(2,4,8,9,11,12,16,18,19,22,23,24,26*,
 29,30,39,43,45,47,49,50,55,56,57)(5,6,28,33,37,46,51,59)*
 (10,17,21,27,31,35,38,53)(13,14,32,36,40,41,42,44)(25,48)*

Number: 74
 Rank: 8
 Orbit size: 10
 Valencies: [1, 18, 36, 1, 1, 1, 1, 1]
 Order Aut: 7255941120
 Wreath Decomposition: [[S_5(10d), D_6(6) = [3]2]]
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [58]
 Merging: (1,2,5,10,11,14,15,20,26,35,37,38,41,42,48,56,58,59)*
 (3,4,7,8,9,12,13,16,17,18,19,21,22,23,24,28,29,30,31,32,33*,
 34,36,39,43,44,45,46,47,49,50,51,53,54,55,57)

Number: 75
 Rank: 8
 Orbit size: 30
 Valencies: [1, 20, 20, 5, 5, 4, 1, 4]
 Order Aut: 14400
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [2]
 Merging: (1,2,4,8,13,14,15,16,17,22,23,28,29,42,43,50,51,53,56,58)*
 (3,5,7,11,24,26,31,32,33,34,35,38,39,40,44,47,48,52,57,59)*
 (6,21,27,46,54)(9,12,36,45,55)(10,30,37,49)(19,20,25,41)

Number: 76
 Rank: 8
 Orbit size: 10
 Valencies: [1, 18, 9, 2, 9, 9, 9, 3]
 Order Aut: 438739012807557120
 Wreath Decomposition: [[t20n30, S3]]

Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [53, 54, 59, 64]
 Merging: (1,2,5,10,11,14,15,20,26,35,37,38,41,42,48,56,58,59)*
 (3,4,17,23,30,33,43,44,50)(6,27)(7,8,16,22,29,31,32,49,51)*
 (9,12,18,21,36,45,46,54,55)(13,19,24,28,34,39,47,53,57)*
 (25,40,52)

Number: 77
 Rank: 8
 Orbit size: 15
 Valencies: [1, 16, 16, 16, 4, 2, 4, 1]
 Order Aut: 3840
 Schurian: false
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [47, 51]
 Merging: (1,2,3,7,11,15,17,20,25,26,36,51,52,54,56,58)(4,8,10,18,21*
 ,22,32,37,38,40,41,44,46,48,50,59)(5,9,12,14,16,23,29,30,31,33*
 ,35,42,43,45,49,55)(6,24,27,47)(13,19)(28,39,53,57)

Number: 78
 Rank: 8
 Orbit size: 30
 Valencies: [1, 25, 25, 2, 1, 2, 2, 2]
 Order Aut: 120000000
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [2, 26]
 Merging: (1,2,4,6,8,13,14,15,16,17,21,22,23,27,28,29,42,43,46,50,51*
 ,53,54,56,58)(3,5,7,9,11,12,24,26,31,32,33,34,35,36,38,39,40*
 ,44,45,47,48,52,55,57,59)(10,37)(19,20)(25,41)(30,49)

Number: 79
 Rank: 8
 Orbit size: 30
 Valencies: [1, 48, 2, 2, 2, 2, 2, 1]
 Order Aut: 955514880
 Wreath Decomposition: [[S5, S_4(12d)]]
 Schurian: true
 Commutative: false

Symmetric: false
Rational: false
Maximal Merging in: [19, 57, 65]
Merging: (1,2,3,5,6,7,8,10,11,12,13,14,15,16,17,18,19,20,21,23,24*
,25,26,27,29,30,32,34,35,36,37,38,39,40,42,43,44,45,46,47,48,49*
,50,51,54,57,58,59)(4,9)(22,55)(28,53)(31,33)(41,52)

Number: 80
Rank: 8
Orbit size: 15
Valencies: [1, 16, 16, 16, 4, 2, 4, 1]
Order Aut: 3840
Schurian: false
Commutative: true
Symmetric: false
Rational: false
Maximal Merging in: [45, 52]
Merging: (1,2,3,7,11,15,17,20,25,26,36,51,52,54,56,58)(4,8,10,18,21*
,22,32,37,38,40,41,44,46,48,50,59)(5,9,12,14,16,23,29,30,31,33*
,35,42,43,45,49,55)(6,24,53,57)(13,19)(27,28,39,47)

Number: 81
Rank: 7
Orbit size: 6
Valencies: [1, 1, 50, 1, 1, 1, 5]
Order Aut: 11250000000000
Wreath Decomposition: [[[2^6]S(6)=2wrS(6), C(5) = 5],
[S6, [5^2]2]]
Schurian: true
Commutative: true
Symmetric: false
Rational: false
Maximal Merging in: [29, 71]
Merging: (2,4,5,6,8,9,10,11,12,13,14,16,17,18,19,21,22,23,24,25,26*
,27,28,29,30,31,32,33,35,36,37,38,39,40,41,42,43,44,45,46,47,48*
,49,50,51,53,55,56,57,59)(20,34,52,54,58)

Number: 82
Rank: 7
Orbit size: 20
Valencies: [1, 48, 3, 3, 3, 1, 1]
Order Aut: 232190115840
Wreath Decomposition: [[S5, S(4)[x]C(3)]]
Schurian: true
Commutative: true
Symmetric: false

Rational: false
Maximal Merging in: [19, 28, 56]
Merging: (1,2,3,5,6,7,8,9,10,11,13,14,15,17,18,19,20,21,23,24,26*,
,27,28,29,30,31,32,33,34,35,36,37,38,40,41,42,44,46,47,49,50,51*,
,52,53,54,55,56,59)(4,12,16)(22,43,45)(25,48,58)

Number: 83
Rank: 7
Orbit size: 15
Valencies: [1, 16, 1, 32, 8, 1, 1]
Order Aut: 128849018880
Wreath Decomposition: [[S_5(15), E(4) = 2[x]2]]
Schurian: true
Commutative: true
Symmetric: true
Rational: true

Maximal Merging in: [61, 69]
Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(3,5,7,8,9*,
,12,13,14,17,19,23,28,29,30,32,35,36,39,41,42,44,45,48,49,50,51*,
,53,54,55,56,57,58)(16,21,24,31,33,43,46,47)

Number: 84
Rank: 7
Orbit size: 10
Valencies: [1, 9, 18, 2, 18, 9, 3]
Order Aut: 438739012807557120
Wreath Decomposition: [[t20n36, S3]]
Schurian: true
Commutative: true
Symmetric: true
Rational: false
Maximal Merging in: [22, 59, 68, 70]
Merging: (1,2,8,10,13,15,36,37,50)(3,5,6,7,14,17,21,23,24,27,29,30*,
,35,42,46,47,49,51)(4,22)(9,12,16,25,28,31,33,39,41,43,45,48,52*,
,53,55,56,57,58)(11,19,20,26,32,38,44,54,59)(18,34,40)

Number: 85
Rank: 7
Orbit size: 30
Valencies: [1, 16, 2, 32, 4, 1, 4]
Order Aut: 3932160
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [34, 65]

Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(2,40)*
(3,5,7,8,9,12,13,14,17,19,23,28,29,30,32,35,36,39,41,42,44*
,45,48,49,50,51,53,54,55,56,57,58)(16,21,43,46)(24,31,33,47)

Number: 86
Rank: 7
Orbit size: 30
Valencies: [1, 18, 18, 18, 2, 1, 2]
Order Aut: 14511882240
Schurian: true
Commutative: true
Symmetric: true
Rational: true

Maximal Merging in: [6, 53, 58, 70]
Merging: (1,4,5,11,14,15,22,23,26,28,29,30,35,39,42,49,53,57)*
(2,6,9,12,16,18,20,24,27,31,33,36,40,43,45,47,54,55)*
(3,7,8,10,13,17,19,25,32,37,38,44,50,51,52,56,58,59)*
(21,46)(41,48)

Number: 87
Rank: 7
Orbit size: 10
Valencies: [1, 54, 1, 1, 1, 1, 1]
Order Aut: 219419659468800
Wreath Decomposition: [[S10, D_6(6) = [3]2]]
Schurian: true
Commutative: false
Symmetric: false
Rational: false

Maximal Merging in: [74]
Merging: (1,3,4,5,6,7,8,10,11,12,13,14,15,16,17,18,20,21,22,23,24*
,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45*
,46,47,48,49,50,51,52,53,54,56,57,59)

Number: 88
Rank: 7
Orbit size: 15
Valencies: [1, 16, 2, 32, 4, 4, 1]
Order Aut: 3932160
Schurian: true
Commutative: true
Symmetric: false
Rational: false

Maximal Merging in: [34, 80]
Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(2,20)*
(3,5,7,8,9,12,13,14,17,19,23,28,29,30,32,35,36,39,41,42,44*

,45,48,49,50,51,53,54,55,56,57,58)(16,21,24,33)(31,43,46,47)*

Number: 89
Rank: 7
Orbit size: 10
Valencies: [1, 18, 18, 18, 1, 3, 1]
Order Aut: 836828256240
Wreath Decomposition: [[t20n65, A3]]
Schurian: true
Commutative: true
Symmetric: false
Rational: false
Maximal Merging in: [20, 58, 64, 68]
Merging: (1,4,5,11,14,15,22,23,26,28,29,30,35,39,42,49,53,57)*
(2,6,9,12,16,18,20,24,27,31,33,36,40,43,45,47,54,55)*
(3,7,8,10,13,17,19,25,32,37,38,44,50,51,52,56,58,59)*
(34,41,48)

Number: 90
Rank: 7
Orbit size: 30
Valencies: [1, 16, 1, 32, 4, 2, 4]
Order Aut: 3932160
Schurian: true
Commutative: true
Symmetric: false
Rational: false
Maximal Merging in: [34]
Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(3,5,7,8,9*
,12,13,14,17,19,23,28,29,30,32,35,36,39,41,42,44,45,48,49,50,51*
,53,54,55,56,57,58)(16,21,31,47)(20,40)(24,33,43,46)

Number: 91
Rank: 7
Orbit size: 15
Valencies: [1, 16, 16, 16, 8, 2, 1]
Order Aut: 257698037760
Wreath Decomposition: [[t30n58, S2]]
Schurian: false
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [49, 69, 72, 77, 80]
Merging: (1,2,3,7,11,15,17,20,25,26,36,51,52,54,56,58)(4,8,10,18,21*
,22,32,37,38,40,41,44,46,48,50,59)(5,9,12,14,16,23,29,30,31,33*

,35,42,43,45,49,55)(6,24,27,28,39,47,53,57)(13,19)

Number: 92
Rank: 7
Orbit size: 15
Valencies: [1, 16, 24, 16, 1, 1, 1]
Order Aut: 47185920
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [55, 69]
Merging: (1,2,3,7,11,15,17,20,25,26,36,51,52,54,56,58)(4,6,8,10,18*,
21,22,24,27,28,32,37,38,39,40,41,44,46,47,48,50,53,57,59)*
(5,9,12,14,16,23,29,30,31,33,35,42,43,45,49,55)

Number: 93
Rank: 7
Orbit size: 30
Valencies: [1, 50, 2, 1, 2, 2, 2]
Order Aut: 4608000000
Wreath Decomposition: [[S6, D_10(10)=[D(5)]2]]
Schurian: true
Commutative: true
Symmetric: true
Rational: false
Maximal Merging in: [5, 29, 78]
Merging: (1,3,4,5,6,7,8,9,10,11,12,14,15,16,17,19,20,21,22,24,25*,
26,27,28,30,31,32,33,34,35,36,37,39,40,41,42,43,44,45,46,47,49*,
50,51,53,54,55,56,57,58)(2,13)(23,29)(38,59)(48,52)

Number: 94
Rank: 7
Orbit size: 15
Valencies: [1, 16, 2, 32, 4, 4, 1]
Order Aut: 3932160
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [34, 57, 77]
Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(2,20)*
(3,5,7,8,9,12,13,14,17,19,23,28,29,30,32,35,36,39,41,42,44*,
45,48,49,50,51,53,54,55,56,57,58)(16,31,33,43)(21,24,46,47)*

Number: 95
 Rank: 7
 Orbit size: 5
 Valencies: [1, 24, 12, 4, 12, 4, 3]
 Order Aut: 720
 Structure Aut: A5 x A4
 Schurian: false
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [67]
 Merging: (1,3,5,7,8,10,11,14,15,17,23,26,29,30,32,35,37,38,42,44,49*
 ,50,51,59)(2,13,18,19,20,25,34,36,40,48,54,58)(4,31,53,55)*
 (6,12,16,21,24,27,39,43,45,46,47,57)(9,22,28,33)(41,52,56)

Number: 96
 Rank: 7
 Orbit size: 5
 Valencies: [1, 48, 1, 4, 1, 4, 1]
 Order Aut: 31310311587840
 Wreath Decomposition:
 [[S5, [E(4)^3]3=E(4)wr3], [[3^5]S(5)=3wrS(5), E(4) = 2[x]2]]
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [61, 62]
 Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,22,23,25,26*
 ,27,28,29,30,32,34,35,36,37,38,39,41,42,44,45,48,49,50,51,52,53*
 ,54,55,56,57,58,59)(16,33,46,47)(21,24,31,43)

Number: 97
 Rank: 7
 Orbit size: 5
 Valencies: [1, 16, 3, 16, 16, 4, 4]
 Order Aut: 30291436977362766397440
 Wreath Decomposition: [[A_5(15), S4]]
 Schurian: true
 Commutative: false
 Symmetric: false
 Rational: false
 Maximal Merging in: [56, 66]
 Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(2,20,40)*
 (3,7,8,9,14,19,30,39,41,42,49,50,54,55,57,58)(5,12,13,17,23*
 ,28,29,32,35,36,44,45,48,51,53,56)(16,33,46,47)(21,24,31,43)

Number: 98
 Rank: 7
 Orbit size: 5
 Valencies: [1, 12, 12, 12, 8, 12, 3]
 Order Aut: 720
 Structure Aut: A5 x A4
 Schurian: false
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [67]
 Merging: (1,8,10,14,15,17,23,29,37,42,50,51)(2,13,18,19,20,25,34,36,40*,48,54,58)(3,5,7,11,26,30,32,35,38,44,49,59)(4,9,22,28,31,33*,53,55)(6,12,16,21,24,27,39,43,45,46,47,57)(41,52,56)

Number: 99
 Rank: 6
 Orbit size: 30
 Valencies: [1, 16, 1, 32, 8, 2]
 Order Aut: 4222124650659840
 Wreath Decomposition: [[t30n2525, S2], [S_5(15), D(4)]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [66, 83, 85, 90]
 Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(3,5,7,8,9*,12,13,14,17,19,23,28,29,30,32,35,36,39,41,42,44,45,48,49,50,51*,53,54,55,56,57,58)(16,21,24,31,33,43,46,47)(20,40)

Number: 100
 Rank: 6
 Orbit size: 15
 Valencies: [1, 24, 32, 1, 1, 1]
 Order Aut: 773094113280
 Wreath Decomposition: [[S_6(15), E(4) = 2[x]2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [83, 92]
 Merging: (1,4,5,6,12,13,14,15,16,22,27,31,33,35,38,39,40,42,43,45,52*,54,57,59)(2,3,7,8,9,10,11,17,18,19,20,21,23,24,26,28,29,30*,32,34,36,37,41,44,46,47,49,50,51,53,55,56)

Number: 101

Rank: 6
 Orbit size: 30
 Valencies: [1, 8, 40, 5, 5, 1]
 Order Aut: 230400
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [4, 75]
 Merging: (1,3,7,15,20,34,52,54)(2,5,6,8,9,10,11,13,14,17,18,19,21*,
 ,23,24,26,27,28,29,30,31,32,33,35,36,37,38,40,41,42,44,46,47,49*,
 ,50,51,53,55,56,59)(4,12,22,45,48)(16,25,39,43,57)

Number: 102
 Rank: 6
 Orbit size: 30
 Valencies: [1, 25, 25, 4, 1, 4]
 Order Aut: 358318080000000
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [75, 78]
 Merging: (1,2,4,6,8,13,14,15,16,17,21,22,23,27,28,29,42,43,46,50,51*,
 ,53,54,56,58)(3,5,7,9,11,12,24,26,31,32,33,34,35,36,38,39,40*,
 ,44,45,47,48,52,55,57,59)(10,30,37,49)(19,20,25,41)

Number: 103
 Rank: 6
 Orbit size: 6
 Valencies: [1, 1, 55, 1, 1, 1]
 Order Aut: 116943750000000000
 Wreath Decomposition: [[S12, C(5) = 5]]
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [42, 81]
 Merging: (2,4,5,6,8,9,10,11,12,13,14,16,17,18,19,20,21,22,23,24,25*,
 ,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46*,
 ,47,48,49,50,51,52,53,54,55,56,57,58,59)

Number: 104
 Rank: 6
 Orbit size: 30
 Valencies: [1, 18, 36, 2, 1, 2]

Order Aut: 7430083706880
 Wreath Decomposition: [[S_5(10d), D(6) = S(3)[x]2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [16, 74, 86]
 Merging: (1,2,5,10,11,14,15,20,26,35,37,38,41,42,48,56,58,59)*
 (3,4,7,8,9,12,13,16,17,18,19,21,22,23,24,28,29,30,31,32,33*
 ,34,36,39,43,44,45,46,47,49,50,51,53,54,55,57)(6,27)*
 (40,52)

Number: 105
 Rank: 6
 Orbit size: 60
 Valencies: [1, 16, 3, 32, 6, 2]
 Order Aut: 955514880
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [56, 57, 65]
 Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(2,20,40)*
 (3,5,7,8,9,12,13,14,17,19,23,28,29,30,32,35,36,39,41,42,44*
 ,45,48,49,50,51,53,54,55,56,57,58)(16,21,24,43,46,47)*
 (31,33)

Number: 106
 Rank: 6
 Orbit size: 15
 Valencies: [1, 16, 24, 16, 2, 1]
 Order Aut: 1546188226560
 Wreath Decomposition: [[t30n261, S2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [73, 91, 92]
 Merging: (1,2,3,7,11,15,17,20,25,26,36,51,52,54,56,58)(4,6,8,10,18*
 ,21,22,24,27,28,32,37,38,39,40,41,44,46,47,48,50,53,57,59)*
 (5,9,12,14,16,23,29,30,31,33,35,42,43,45,49,55)(13,19)*

Number: 107
 Rank: 6
 Orbit size: 6

Valencies: [1, 20, 5, 20, 10, 4]
 Order Aut: 1200
 Structure Aut: (C5 x A5) : C4
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [10, 43]
 Merging: (1,3,5,7,8,10,11,14,15,17,26,30,32,35,37,42,44,49,50,51)*
 (2,13,18,48,52)(4,6,9,12,16,21,22,24,27,28,31,33,39,43,45,46*
 ,47,53,55,57)(19,20,25,34,36,40,41,54,56,58)(23,29,38,59)

Number: 108
 Rank: 6
 Orbit size: 15
 Valencies: [1, 48, 4, 4, 2, 1]
 Order Aut: 30576476160
 Wreath Decomposition: [[S5, S_4(12d)x2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [62, 79, 85, 94]
 Merging: (1,2,3,5,6,7,8,10,11,12,13,14,15,16,17,18,19,20,21,23,24*
 ,25,26,27,29,30,32,34,35,36,37,38,39,40,42,43,44,45,46,47,48,49*
 ,50,51,54,57,58,59)(4,9,22,55)(28,31,33,53)(41,52)

Number: 109
 Rank: 6
 Orbit size: 5
 Valencies: [1, 24, 12, 8, 12, 3]
 Order Aut: 1440
 Structure Aut: (A5 x A4) : C2
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [14, 30, 95, 98]
 Merging: (1,3,5,7,8,10,11,14,15,17,23,26,29,30,32,35,37,38,42,44,49*
 ,50,51,59)(2,13,18,19,20,25,34,36,40,48,54,58)(4,9,22,28,31,33*
 ,53,55)(6,12,16,21,24,27,39,43,45,46,47,57)(41,52,56)

Number: 110
 Rank: 6
 Orbit size: 15
 Valencies: [1, 48, 1, 4, 2, 4]

Order Aut: 1025976290110341120
 Wreath Decomposition: [[t30n4886, S2], [S5, [D(4)^4]3=D(4)wr3],
 [[3^5]S(5)=3wrS(5), D(4)]]
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [66, 96]
 Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,22,23,25,26*,
 ,27,28,29,30,32,34,35,36,37,38,39,41,42,44,45,48,49,50,51,52,53*,
 ,54,55,56,57,58,59)(16,33,46,47)(20,40)(21,24,31,43)

Number: 111
 Rank: 6
 Orbit size: 10
 Valencies: [1, 18, 18, 18, 2, 3]
 Order Aut: 877478025615114240
 Wreath Decomposition: [[t20n65, S3]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [60, 76, 84, 86, 89]
 Merging: (1,4,5,11,14,15,22,23,26,28,29,30,35,39,42,49,53,57)*
 (2,6,9,12,16,18,20,24,27,31,33,36,40,43,45,47,54,55)*
 (3,7,8,10,13,17,19,25,32,37,38,44,50,51,52,56,58,59)*
 (21,46)(34,41,48)

Number: 112
 Rank: 6
 Orbit size: 120
 Valencies: [1, 22, 22, 11, 2, 2]
 Order Aut: 1320
 Structure Aut: PSL(2,11) : C2
 Schurian: false
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [42]
 Merging: (1,2,3,4,5,7,9,15,22,23,24,25,29,31,33,34,35,40,47,48,55*,
 ,58)(6,8,12,13,16,17,18,19,20,21,27,30,38,41,43,45,46,49,50,51*,
 ,52,59)(10,11,26,28,36,37,39,53,54,56,57)(14,42)(32,44)

Number: 113
 Rank: 6
 Orbit size: 15

Valencies: [1, 48, 4, 4, 2, 1]
 Order Aut: 30576476160
 Wreath Decomposition: [[S5, [2]S_4(6)_2]]
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [62, 88, 90]
 Merging: (1,2,3,5,6,7,8,10,11,12,13,14,15,16,17,18,19,20,21,23,24*
 ,25,26,27,29,30,32,34,35,36,37,38,39,40,42,43,44,45,46,47,48,49*
 ,50,51,54,57,58,59)(4,9,28,31)(22,33,53,55)(41,56)

Number: 114
 Rank: 6
 Orbit size: 15
 Valencies: [1, 16, 2, 32, 8, 1]
 Order Aut: 4222124650659840
 Wreath Decomposition: [[S_5(15), D(4)], [t30n2525, S2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [66, 83, 88, 91, 94]
 Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(2,20)*
 (3,5,7,8,9,12,13,14,17,19,23,28,29,30,32,35,36,39,41,42,44*
 ,45,48,49,50,51,53,54,55,56,57,58)(16,21,24,31,33,43,46,47)*

Number: 115
 Rank: 6
 Orbit size: 30
 Valencies: [1, 8, 40, 5, 5, 1]
 Order Aut: 1920
 Schurian: false
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [4]
 Merging: (1,3,7,15,20,34,52,54)(2,5,6,8,9,10,11,13,14,17,18,19,21*
 ,23,24,26,27,28,29,30,31,32,33,35,36,37,38,40,41,42,44,46,47,49*
 ,50,51,53,55,56,59)(4,12,22,25,45)(16,39,43,48,57)

Number: 116
 Rank: 6
 Orbit size: 30
 Valencies: [1, 40, 4, 10, 4, 1]

Order Aut: 5529600
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [44, 75]
 Merging: (1,3,5,6,7,8,10,11,12,14,15,16,17,19,20,21,24,25,26,27,30*,
 ,32,34,35,36,37,39,40,42,43,44,45,46,47,49,50,51,54,57,58)*
 (2,13,18,48)(4,9,22,28,31,33,41,53,55,56)(23,29,38,59)*

Number: 117
 Rank: 6
 Orbit size: 6
 Valencies: [1, 25, 25, 2, 5, 2]
 Order Aut: 120000000000000
 Wreath Decomposition: [[[2]L(6)_6, D(5) = 5:2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [43, 71, 78]
 Merging: (1,2,4,6,8,13,14,15,16,17,21,22,23,27,28,29,42,43,46,50,51*,
 ,53,54,56,58)(3,5,7,9,11,12,24,26,31,32,33,34,35,36,38,39,40*,
 ,44,45,47,48,52,55,57,59)(10,37)(18,19,20,25,41)(30,49)

Number: 118
 Rank: 6
 Orbit size: 10
 Valencies: [1, 18, 36, 1, 3, 1]
 Order Aut: 428456067194880
 Wreath Decomposition:
 [[t20n808, A3], [S_5(10d), F_18(6) = [3^2]2 = 3 wr 2]]
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [74, 89]
 Merging: (1,2,5,10,11,14,15,20,26,35,37,38,41,42,48,56,58,59)*
 (3,4,7,8,9,12,13,16,17,18,19,21,22,23,24,28,29,30,31,32,33*,
 ,34,36,39,43,44,45,46,47,49,50,51,53,54,55,57)(25,40,52)*

Number: 119
 Rank: 6
 Orbit size: 5

Valencies: [1, 48, 1, 8, 1, 1]
 Order Aut: 1001929970810880
 Wreath Decomposition: [[S5, [E(4)^3]S(3)=E(4)wrS(3)],
 [[S(3)^5]S(5)=S(3)wrS(5), E(4) = 2[x]2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [83, 96]
 Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,22,23,25,26*,
 ,27,28,29,30,32,34,35,36,37,38,39,41,42,44,45,48,49,50,51,52,53*,
 ,54,55,56,57,58,59)(16,21,24,31,33,43,46,47)

Number: 120
 Rank: 5
 Orbit size: 6
 Valencies: [1, 25, 25, 4, 5]
 Order Aut: 1069932053790720000000000000
 Wreath Decomposition: [[[2]L(6)_6, S5]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [102, 117]
 Merging: (1,2,4,6,8,13,14,15,16,17,21,22,23,27,28,29,42,43,46,50,51*,
 ,53,54,56,58)(3,5,7,9,11,12,24,26,31,32,33,34,35,36,38,39,40*,
 ,44,45,47,48,52,55,57,59)(10,30,37,49)(18,19,20,25,41)

Number: 121
 Rank: 5
 Orbit size: 5
 Valencies: [1, 48, 4, 4, 3]
 Order Aut: 14721638370998304469155840
 Wreath Decomposition:
 [[S5, [S(4)^3]3=S(4)wr3], [[3^5]S(5)=3wrS(5), S4]]
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [82, 95, 97, 110]
 Merging: (1,2,3,5,6,7,8,9,10,11,13,14,15,17,18,19,20,21,23,24,26*,
 ,27,28,29,30,31,32,33,34,35,36,37,38,40,41,42,44,46,47,49,50,51*,
 ,52,53,54,55,56,59)(4,12,16,39)(22,43,45,57)(25,48,58)

Number: 122
 Rank: 5

Orbit size: 30
 Valencies: [1, 24, 32, 2, 1]
 Order Aut: 25332747903959040
 Wreath Decomposition: [[S₆(15), D(4)], [t_{30n3397}, S₂]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [99, 100]
 Merging: (1,4,5,6,12,13,14,15,16,22,27,31,33,35,38,39,40,42,43,45,52*,
 ,54,57,59)(2,3,7,8,9,10,11,17,18,19,20,21,23,24,26,28,29,30*,
 ,32,34,36,37,41,44,46,47,49,50,51,53,55,56)(25,48)

Number: 123
 Rank: 5
 Orbit size: 10
 Valencies: [1, 54, 3, 1, 1]
 Order Aut: 12956511471973171200
 Wreath Decomposition: [[S₁₀, F₁₈(6) = [3²]₂ = 3 wr 2],
 [t_{20n1110}, A₃]]
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [87, 118]
 Merging: (1,3,4,5,6,7,8,10,11,12,13,14,15,16,17,18,20,21,22,23,24*,
 ,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45*,
 ,46,47,48,49,50,51,52,53,54,56,57,59)(2,19,58)

Number: 124
 Rank: 5
 Orbit size: 20
 Valencies: [1, 48, 6, 2, 3]
 Order Aut: 7430083706880
 Wreath Decomposition: [[S₅, S(4)[x]S(3)]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [54, 79, 82, 105]
 Merging: (1,2,3,5,6,7,8,10,11,12,13,14,15,16,17,18,19,20,21,23,24*,
 ,25,26,27,29,30,32,34,35,36,37,38,39,40,42,43,44,45,46,47,48,49*,
 ,50,51,54,57,58,59)(4,9,22,28,53,55)(31,33)(41,52,56)

Number: 125
 Rank: 5

Orbit size: 15
Valencies: [1, 48, 1, 8, 2]
Order Aut: 32831241283530915840
Wreath Decomposition:
[[t30n5322, S2], [S5, [D(4)^4]S(3)=D(4)wrS(3)],
[[S(3)^5]S(5)=S(3)wrS(5), D(4)]]
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [99, 108, 110, 113, 114, 119]
Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,22,23,25,26*,
,27,28,29,30,32,34,35,36,37,38,39,41,42,44,45,48,49,50,51,52,53*,
,54,55,56,57,58,59)(16,21,24,31,33,43,46,47)(20,40)

Number: 126
Rank: 5
Orbit size: 5
Valencies: [1, 56, 1, 1, 1]
Order Aut: 1404104661094367232000
Wreath Decomposition: [[S15, E(4) = 2[x]2]]
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [100, 119]
Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,21,22,23*,
,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,41,42,43,44,45*,
,46,47,48,49,50,51,52,53,54,55,56,57,58,59)

Number: 127
Rank: 5
Orbit size: 15
Valencies: [1, 16, 3, 32, 8]
Order Aut: 60582873954725532794880
Wreath Decomposition: [[S_5(15), S4]]
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [97, 99, 105, 114]
Merging: (1,4,6,10,11,15,18,22,25,26,27,34,37,38,52,59)(2,20,40)*
(3,5,7,8,9,12,13,14,17,19,23,28,29,30,32,35,36,39,41,42,44*,
,45,48,49,50,51,53,54,55,56,57,58)(16,21,24,31,33,43,46,47)

Number: 128

Rank: 5
 Orbit size: 30
 Valencies: [1, 18, 36, 4, 1]
 Order Aut: 7791007453025402880
 Wreath Decomposition: [[S_5(10d), 2S_4(6) = [2^3]S(3) = 2 wr S(3)],
 [t30n5185, S2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [27, 104]
 Merging: (1,2,5,10,11,14,15,20,26,35,37,38,41,42,48,56,58,59)*
 (3,4,7,8,9,12,13,16,17,18,19,21,22,23,24,28,29,30,31,32,33*
 ,34,36,39,43,44,45,46,47,49,50,51,53,54,55,57)(6,25,27,40)*

Number: 129
 Rank: 5
 Orbit size: 20
 Valencies: [1, 48, 9, 1, 1]
 Order Aut: 3331674378507386880
 Wreath Decomposition: [[S5, [3^4]S(4)=3wrS(4)], [t20n1101, A3]]
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [64, 82]
 Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,22,23,25,26*
 ,27,28,29,30,32,34,35,36,37,38,39,41,42,44,45,48,49,50,51,52,53*
 ,54,55,56,57,58,59)(2,16,20,21,24,40,43,46,47)

Number: 130
 Rank: 5
 Orbit size: 30
 Valencies: [1, 4, 50, 4, 1]
 Order Aut: 773094113280000000
 Wreath Decomposition: [[S6, [2^5]D(5)], [t30n4839, S2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [11, 93]
 Merging: (1,15,20,54)(2,4,5,6,8,9,10,11,12,13,14,16,17,18,19,21,22*
 ,23,24,25,26,27,28,29,30,31,32,33,35,36,37,38,39,40,41,42,43,44*
 ,45,46,47,48,49,50,51,53,55,56,57,59)(3,7,52,58)

Number: 131
 Rank: 5
 Orbit size: 10
 Valencies: [1, 18, 36, 2, 3]
 Order Aut: 449268749114938490880
 Wreath Decomposition:
 [[t20n808, S3], [S_5(10d), F_36(6):2 = [S(3)^2]2 = S(3) wr 2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [104, 111, 118]
 Merging: (1,2,5,10,11,14,15,20,26,35,37,38,41,42,48,56,58,59)*
 (3,4,7,8,9,12,13,16,17,18,19,21,22,23,24,28,29,30,31,32,33*
 ,34,36,39,43,44,45,46,47,49,50,51,53,54,55,57)(6,27)*
 (25,40,52)

Number: 132
 Rank: 5
 Orbit size: 30
 Valencies: [1, 48, 5, 1, 5]
 Order Aut: 2985984000000
 Wreath Decomposition: [[S5, [2]L(6)_6]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [62, 101, 115]
 Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,22,23,25,26*
 ,27,28,29,30,32,34,35,36,37,38,39,41,42,44,45,48,49,50,51,52,53*
 ,54,55,56,57,58,59)(2,16,21,43,46)(24,31,33,40,47)

Number: 133
 Rank: 5
 Orbit size: 30
 Valencies: [1, 50, 4, 4, 1]
 Order Aut: 137594142720000000
 Wreath Decomposition: [[S6, S(5)[x]2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [63, 93, 102, 116]
 Merging: (1,3,4,5,6,7,8,9,10,11,12,14,15,16,17,19,20,21,22,24,25*
 ,26,27,28,30,31,32,33,34,35,36,37,39,40,41,42,43,44,45,46,47,49*
 ,50,51,53,54,55,56,57,58)(2,13,18,48)(23,29,38,59)

Number: 134
 Rank: 5
 Orbit size: 30
 Valencies: [1, 8, 40, 10, 1]
 Order Aut: 92771293593600
 Wreath Decomposition: [[t30n1371, S2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [49, 101, 115, 116]
 Merging: (1,3,7,15,20,34,52,54)(2,5,6,8,9,10,11,13,14,17,18,19,21*,
 ,23,24,26,27,28,29,30,31,32,33,35,36,37,38,40,41,42,44,46,47,49*,
 ,50,51,53,55,56,59)(4,12,16,22,25,39,43,45,48,57)

Number: 135
 Rank: 5
 Orbit size: 15
 Valencies: [1, 24, 32, 1, 2]
 Order Aut: 25332747903959040
 Wreath Decomposition: [[t30n3397, S2], [S_6(15), D(4)]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [100, 106, 114]
 Merging: (1,4,5,6,12,13,14,15,16,22,27,31,33,35,38,39,40,42,43,45,52*,
 ,54,57,59)(2,3,7,8,9,10,11,17,18,19,20,21,23,24,26,28,29,30*,
 ,32,34,36,37,41,44,46,47,49,50,51,53,55,56)(48,58)

Number: 136
 Rank: 5
 Orbit size: 30
 Valencies: [1, 54, 1, 2, 2]
 Order Aut: 224685731296051200
 Wreath Decomposition: [[S10, D(6) = S(3)[x]2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [87, 104]
 Merging: (1,3,4,5,6,7,8,10,11,12,13,14,15,16,17,18,20,21,22,23,24*,
 ,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45*,
 ,46,47,48,49,50,51,52,53,54,56,57,59)(9,55)(19,58)

Number: 137
 Rank: 5
 Orbit size: 1
 Valencies: [1, 12, 15, 12, 20]
 Order Aut: 7200
 Structure Aut: (A5 x A5) : C2
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [22, 43, 98]
 Merging: (1,8,10,14,15,17,23,29,37,42,50,51)(2,13,18,19,20,25,34,36,40*,
 ,41,48,52,54,56,58)(3,5,7,11,26,30,32,35,38,44,49,59)*
 (4,6,9,12,16,21,22,24,27,28,31,33,39,43,45,46,47,53,55,57)

Number: 138
 Rank: 5
 Orbit size: 6
 Valencies: [1, 2, 50, 2, 5]
 Order Aut: 4608000000000000
 Wreath Decomposition: [[[2^6]S(6)=2wrS(6), D(5) = 5:2],
 [S6, [D(5)^2]2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [81, 93, 117]
 Merging: (1,15)(2,4,5,6,8,9,10,11,12,13,14,16,17,18,19,21,22,23,24*,
 ,25,26,27,28,29,30,31,32,33,35,36,37,38,39,40,41,42,43,44,45,46*,
 ,47,48,49,50,51,53,55,56,57,59)(3,7)(20,34,52,54,58)

Number: 139
 Rank: 4
 Orbit size: 120
 Valencies: [1, 11, 44, 4]
 Order Aut: 1320
 Structure Aut: PSL(2,11) : C2
 Schurian: false
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [112]
 Merging: (1,2,4,5,9,15,22,35,40,48,55)(3,6,7,8,10,11,12,13,16,17*,
 ,18,19,20,21,23,24,25,26,27,28,29,30,31,33,34,36,37,38,39,41,43*,
 ,45,46,47,49,50,51,52,53,54,56,57,58,59)(14,32,42,44)

Number: 140
 Rank: 4
 Orbit size: 5
 Valencies: [1, 48, 8, 3]
 Order Aut: 471092427871945743012986880
 Wreath Decomposition: [[S5, [S(4)^3]S(3)=S(4)wrS(3)],
 [[S(3)^5]S(5)=S(3)wrS(5), S4]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [109, 121, 124, 125, 127]
 Merging: (1,2,3,5,6,7,8,10,11,12,13,14,15,16,17,18,19,20,21,23,24*,
 ,25,26,27,29,30,32,34,35,36,37,38,39,40,42,43,44,45,46,47,48,49*,
 ,50,51,54,57,58,59)(4,9,22,28,31,33,53,55)(41,52,56)

Number: 141
 Rank: 4
 Orbit size: 10
 Valencies: [1, 54, 3, 2]
 Order Aut: 13585886973235739964211200
 Wreath Decomposition: [[S10, F_36(6):2 = [S(3)^2]2 = S(3) wr 2],
 [t20n1110, S3]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [123, 131, 136]
 Merging: (1,3,4,5,6,7,8,10,11,12,13,14,15,16,17,18,20,21,22,23,24*,
 ,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45*,
 ,46,47,48,49,50,51,52,53,54,56,57,59)(2,19,58)(9,55)

Number: 142
 Rank: 4
 Orbit size: 60
 Valencies: [1, 29, 29, 1]
 Order Aut: 24360
 Structure Aut: C2 x PSL(2,29)
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [2]
 Merging: (1,2,3,4,5,6,7,8,9,12,15,16,18,22,23,25,27,29,34,35,36*,
 ,38,43,45,50,52,55,58,59)(10,11,13,14,17,19,20,21,24,26,28,30,31*,
 ,32,33,37,39,40,41,42,44,46,47,48,49,51,53,54,57)

Number: 143
 Rank: 4
 Orbit size: 30
 Valencies: [1, 4, 11, 44]
 Order Aut: 57480192000
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [116]
 Merging: (1,3,7,15)(2,16,20,21,24,31,33,40,43,46,47)(4,5,6,8,9,10*,11,12,13,14,17,18,19,22,23,25,26,27,28,29,30,32,34,35,36,37,38*,39,41,42,44,45,48,49,50,51,52,53,54,55,56,57,58,59)

Number: 144
 Rank: 4
 Orbit size: 15
 Valencies: [1, 56, 2, 1]
 Order Aut: 46009701534740225458176000
 Wreath Decomposition: [[S15, D(4)], [t30n5696, S2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [122, 125, 126, 135]
 Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,21,22,23*,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,41,42,43,44,45*,46,47,48,49,50,51,52,53,54,55,56,57,58,59)(2,20)

Number: 145
 Rank: 4
 Orbit size: 30
 Valencies: [1, 8, 50, 1]
 Order Aut: 2308446652748267520000000
 Wreath Decomposition: [[S6, [2^5]S(5)], [t30n5685, S2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [73, 130, 133, 134]
 Merging: (1,3,7,15,20,34,52,54)(2,4,5,6,8,9,10,11,12,13,14,16,17*,18,19,21,22,23,24,25,26,27,28,29,30,31,32,33,35,36,37,38,39,40*,41,42,43,44,45,46,47,48,49,50,51,53,55,56,57,59)

Number: 146

Rank: 4
 Orbit size: 6
 Valencies: [1, 2, 55, 2]
 Order Aut: 47900160000000000000
 Wreath Decomposition: [[S12, D(5) = 5:2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: false
 Maximal Merging in: [103, 112, 138]
 Merging: (1,15)(2,4,5,6,8,9,10,11,12,13,14,16,17,18,19,20,21,22,23*,
 ,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44*,
 ,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)(3,7)

Number: 147
 Rank: 4
 Orbit size: 10
 Valencies: [1, 57, 1, 1]
 Order Aut: 8483004771271882804592640000
 Wreath Decomposition: [[S20, A3]]
 Schurian: true
 Commutative: true
 Symmetric: false
 Rational: false
 Maximal Merging in: [123, 129]
 Merging: (1,2,3,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,23*,
 ,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44*,
 ,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)

Number: 148
 Rank: 4
 Orbit size: 30
 Valencies: [1, 54, 4, 1]
 Order Aut: 235600065379488183091200
 Wreath Decomposition: [[S10, 2S_4(6) = [2^3]S(3) = 2 wr S(3)],
 [t30n5666, S2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [128, 136]
 Merging: (1,3,4,5,6,7,8,10,11,12,13,14,15,16,17,18,20,21,22,23,24*,
 ,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45*,
 ,46,47,48,49,50,51,52,53,54,56,57,59)(2,9,19,55)

Number: 149

Rank: 4
 Orbit size: 20
 Valencies: [1, 48, 9, 2]
 Order Aut: 3493513793117761705082880
 Wreath Decomposition: [[S5, [S(3)^4]S(4)=S(3)wrS(4)],
 [t2On1101, S3]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [76, 124, 129]
 Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,22,23,25,26*,
 ,27,28,29,30,32,34,35,36,37,38,39,41,42,44,45,48,49,50,51,52,53*,
 ,54,55,56,57,58,59)(2,16,20,21,24,40,43,46,47)(31,33)

Number: 150
 Rank: 4
 Orbit size: 15
 Valencies: [1, 24, 32, 3]
 Order Aut: 363497243728353196769280
 Wreath Decomposition: [[S_6(15), S4]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [122, 127, 135]
 Merging: (1,4,5,6,12,13,14,15,16,22,27,31,33,35,38,39,40,42,43,45,52*,
 ,54,57,59)(2,3,7,8,9,10,11,17,18,19,20,21,23,24,26,28,29,30*,
 ,32,34,36,37,41,44,46,47,49,50,51,53,55,56)(25,48,58)

Number: 151
 Rank: 4
 Orbit size: 10
 Valencies: [1, 18, 36, 5]
 Order Aut: 449268749114938490880000000000
 Wreath Decomposition: [[S_5(10d), S6]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [128, 131]
 Merging: (1,2,5,10,11,14,15,20,26,35,37,38,41,42,48,56,58,59)*
 (3,4,7,8,9,12,13,16,17,18,19,21,22,23,24,28,29,30,31,32,33*,
 ,34,36,39,43,44,45,46,47,49,50,51,53,54,55,57)(6,25,27,40,52)

Number: 152

Rank: 4
 Orbit size: 15
 Valencies: [1, 48, 10, 1]
 Order Aut: 24931223849681289216000000
 Wreath Decomposition: [[S5, [2^6]S(6)=2wrS(6)], [t30n5695, S2]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [125, 132, 134]
 Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,22,23,25,26*,
 ,27,28,29,30,32,34,35,36,37,38,39,41,42,44,45,48,49,50,51,52,53*,
 ,54,55,56,57,58,59)(2,16,20,21,24,31,33,43,46,47)

Number: 153
 Rank: 4
 Orbit size: 6
 Valencies: [1, 50, 5, 4]
 Order Aut: 410853908655636480000000000000
 Wreath Decomposition: [[S6, [S(5)^2]2], [[2^6]S(6)=2wrS(6), S5]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [107, 120, 133, 138]
 Merging: (1,3,4,5,6,7,8,9,10,11,12,14,15,16,17,19,20,21,22,24,25*,
 ,26,27,28,30,31,32,33,34,35,36,37,39,40,41,42,43,44,45,46,47,49*,
 ,50,51,53,54,55,56,57,58)(2,13,18,48,52)(23,29,38,59)

Number: 154
 Rank: 4
 Orbit size: 1
 Valencies: [1, 24, 15, 20]
 Order Aut: 14400
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [60, 107, 109, 137]
 Merging: (1,3,5,7,8,10,11,14,15,17,23,26,29,30,32,35,37,38,42,44,49*,
 ,50,51,59)(2,13,18,19,20,25,34,36,40,41,48,52,54,56,58)*
 (4,6,9,12,16,21,22,24,27,28,31,33,39,43,45,46,47,53,55,57)

Number: 155
 Rank: 3
 Orbit size: 5

Valencies: [1, 56, 3]
Parameters: (60,56,52,56)
Order Aut: 660188928419744764258399813632000
Wreath Decomposition: [[S15, S4]]
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [140, 144, 150]
Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,21,22,23*,
,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,41,42,43,44,45*,
,46,47,48,49,50,51,52,53,54,55,56,57,58,59)(2,20,40)

Number: 156
Rank: 3
Orbit size: 15
Valencies: [1, 58, 1]
Parameters: (60,58,56,58)
Order Aut: 284813089515958324736640819941867520000000
Wreath Decomposition: [[S30, S2]]
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [142, 144, 145, 148, 152]
Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22*,
,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43*,
,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)

Number: 157
Rank: 3
Orbit size: 10
Valencies: [1, 57, 2]
Parameters: (60,57,54,57)
Order Aut: 8895075211041185783708532080640000
Wreath Decomposition: [[S20, S3]]
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [141, 147, 149]
Merging: (1,2,3,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,23*,
,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44*,
,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)(4,22)

Number: 158

Rank: 3
 Orbit size: 5
 Valencies: [1, 48, 11]
 Parameters: (60,48,36,48)
 Order Aut: 3025980091991082565958286705898291200000000000
 Wreath Decomposition: [[S5, S12]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [140, 143, 149, 152]
 Merging: (1,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,22,23,25,26*,
 ,27,28,29,30,32,34,35,36,37,38,39,41,42,44,45,48,49,50,51,52,53*,
 ,54,55,56,57,58,59)(2,16,20,21,24,31,33,40,43,46,47)

Number: 159
 Rank: 3
 Orbit size: 6
 Valencies: [1, 9, 50]
 Parameters: (60,9,8,0)
 Order Aut: 16440336169860461873651829964800000000000000
 Wreath Decomposition: [[S6, S10]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [145, 153]
 Merging: (1,3,7,15,20,34,52,54,58)(2,4,5,6,8,9,10,11,12,13,14,16*,
 ,17,18,19,21,22,23,24,25,26,27,28,29,30,31,32,33,35,36,37,38,39*,
 ,40,41,42,43,44,45,46,47,48,49,50,51,53,55,56,57,59)

Number: 160
 Rank: 3
 Orbit size: 6
 Valencies: [1, 4, 55]
 Parameters: (60,4,3,0)
 Order Aut: 427082638047534120960000000000000000
 Wreath Decomposition: [[S12, S5]]
 Schurian: true
 Commutative: true
 Symmetric: true
 Rational: true
 Maximal Merging in: [139, 143, 146, 153]
 Merging: (1,3,7,15)(2,4,5,6,8,9,10,11,12,13,14,16,17,18,19,20,21*,
 ,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42*,
 ,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)

Number: 161
Rank: 3
Orbit size: 10
Valencies: [1, 54, 5]
Parameters: (60,54,48,54)
Order Aut: 13585886973235739964211200000000000
Wreath Decomposition: [[S10, S6]]
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [141, 148, 151]
Merging: (1,3,4,5,6,7,8,10,11,12,13,14,15,16,17,18,20,21,22,23,24*,
,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45*,
,46,47,48,49,50,51,52,53,54,56,57,59)(2,9,19,55,58)

Number: 162
Rank: 2
Orbit size: 1
Valencies: [1, 59]
Order Aut:
8320987112741390144276341183223364380754172606361245952449277696409600\
000000000000
Schurian: true
Commutative: true
Symmetric: true
Rational: true
Maximal Merging in: [154, 155, 156, 157, 158, 159, 160, 161]
Merging: (1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21*,
,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42*,
,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59)

Transitive groups used in wreath products

name	order	structure	degree
S30	30!	S30	30
t30n5695	23219011584000000		30
t30n5685	2149908480000000		30
t30n5666	219419659468800		30
t30n5185	7255941120		30
t30n5696	42849873690624000		30
t30n5322	30576476160		30
t30n4886	955514880		30
t30n3397	23592960		30
t30n2525	3932160		30
t30n2240	1966080		30
t30n4839	720000000		30
t30n1371	86400	S6 x S5	30
S20	20!	S20	20
t20n1101	955514880		20
t20n1110	3715891200		20
t20n808	122880		20
S15	15!	S15	15
S12	12!	S12	12
[2^6]S(6)=			
2wrS(6)	46080		12
[S(3)^5]S(5)=			
S(3)wrS(5)	933120		15
S10	3628800		10
[S(4)^3]S(3)=			
S(4)wrS(3)	82944		12
[S(4)^3]3=			
S(4)wr3	41472		12
t30n164	720	S6	30
[S(5)^2]2	28800		10
[S(3)^4]S(4)=			
S(3)wrS(4)	31104		12
t30n261	1440	C2 x S6	30
[D(4)^4]S(3)=			
D(4)wrS(3)	3072		12
[D(4)^4]3=			
D(4)wr3	1536		12
S6	720	S6	6
[2^5]S(5)	3840		10
[2^5]D(5)	320		10
[3^5]S(5)=			
3wrS(5)	29160	C3 x (((C3 x C3 x C3 x C3) : A5) : C2)	15

Transitive groups used in wreath products (cont.)

name	order	structure	degree
t20n30	120	S5	20
t20n65	240	C2 x S5	20
S5	120	S5	5
F_36(6):2 =			
[S(3)^2]2 =			
S(3) wr 2	72	(S3 x S3) : C2	6
S_6(15)	720	S6	15
[3^4]S(4)=		C3 x (((C3 x ((C3 x C3) :	
3wrS(4)	1944	C2)) : C2) : C3) : C2)	12
[D(5)^2]2	200	(D10 x D10) : C2	10
S(5)[x]2	240	C2 x S5	10
[2]L(6)_6	120	C2 x A5	12
S4	24	S4	4
2S_4(6) =			
[2^3]S(3) =			
2 wr S(3)	48	C2 x S4	6
[E(4)^3]S(3)=			
E(4)wrS(3)	384		12
[E(4)^3]3=			
E(4)wr3	192		12
t20n15	60	A5	20
t20n36	120	C2 x A5	20
S_5(10d)	120	S5	10
t30n29	120	C2 x A5	30
t30n58	240	C2 x S5	30
t30n27	120	S5	30
S(4)[x]S(3)	144	S4 x S3	12
S(4)[x]C(3)	72	C3 x S4	12
t30n9	60	A5	30
t30n22	120	S5	30
S3	6	S3	3
[2]S_4(6)_2	48	A4 : C4	12
D(4)	8	D8	4
F_18(6) =			
[3^2]2 =			
3 wr 2	18	C3 x S3	6
[5^2]2	50	C5 x D10	10
D(5) = 5:2	10	D10	5
A_4(12)x2	24	C2 x A4	12
S_4(12d)x2	48	C2 x S4	12
S_5(15)	120	S5	15

Transitive groups used in wreath products (cont.)

name	order	structure	degree
A_5(15)	60	A5	15
D(6) =			
S(3)[x]2	12	D12	6
D_10(10)=			
[D(5)]2	20	D20	10
S_4(12d)	24	S4	12
S2	2	C2	2
E(4) =			
2[x]2	4	C2 x C2	4
D_6(6) =			
[3]2	6	S3	6
D(10)=5:2	10	D10	10
A3	3	C3	3
C(5) = 5	5	C5	5
A_4(12)	12	A4	12