Note: This is a preliminary version. Though arrangement of the groups should remain the same, the final version might include some changes. Please contact the second author for more recent information.

ON TRANSITIVE PERMUTATION GROUPS

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Abstract: We assign names and new generators to the transitive groups of degree up to 15, reflecting their structure.

The classification of transitive permutation groups has been pursued for over a century since the Grand Prix of the Académie des Sciences in 1858 [Aca58]. An account of early work is given in [Bur98] and [Mil35], a very readable historical outline can be found in [Sho92, Appendix A].

This work led to a classification of the groups up to degree 15 [Mil96, Mil98, Kuh04]. Having achieved these results development stopped for some time and was taken up again with the arrival of symbolic computation. The last twenty years have seen extensive work in this area [BM83, Roy87, But93] noting errors in earlier tables. Recent work by one of the authors [Hul96] confirms these results and extends the tables to higher degrees.

Previous workers have given arbitrary generators and a few properties of the groups. For practical work it is desirable to give inherently meaningful names to these groups as well as generators reflecting more properties.

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With this aim we have devised a naming scheme for transitive permutation groups and apply it to the groups of degree up to 15. Based on the names we try to find new "better" generators for the groups, simultaneously confirming the correctness of the names.

Finally, the process of finding names is, to some extent, an actual construction process without tests for conjugacy. So the naming process might be regarded as another test for completeness of the lists.

As usual we speak of "the transitive groups", meaning "the equivalence classes up to permutation isomorphism", namely "a set of representatives for the conjugacy classes of transitive groups in the symmetric group".

1 Taxonomy

In this section we present a scheme for assigning names to transitive permutation groups, based on their permutational structure. Whereas the goal of assigning an unique name to each individual transitive permutation group cannot be achieved for all degrees, the scheme presented is powerful enough for individual naming of all groups of degree up to 15. Conversely we do not attempt to give names so explicit that one can deduce a generating set for every group based solely on its name. It should be possible, however, to identify the group belonging to a name in a list of representatives of the transitive groups without having to determine the correspondence of the whole list to the catalogue printed here.

As we need to distinguish between *permutation isomorphism types* and *names* we denote names or parts of names used by enclosing them thus: $\langle\!\langle G \rangle\!\rangle$.

1.1 Modifications to ATLAS notation

As a basis we use the notation of the ATLAS [CCN+85] to which we refer also for the names and definitions of the simple groups. The name of a group reflects its subnormal structure written from left to right in ascending order. The subnormal series is chosen to be compatible with permutational structures, namely kernels of block operations.

Direct products are denoted by '$\times$', split extensions by ':' and nonsplit extensions by '$\cdot$'. A dot itself '.' is used only to separate a normal subgroup and its factor without giving further information about the extension structure.

To such a name, additional information is added in brackets to denote permutation specific information. A group name followed by a number n in round brackets '(n)' denotes that the group operates transitively on n points, respectively that a point stabilizer has index n in the group. Square brackets '$[,]$' denote normal structures corresponding to permutational concepts.

Curly brackets '$\{,\}$' give further information("hints") towards the construction. For example, several nonisomorphic transitive representations of one group might be distinguished by a hint towards the point stabilizer of the form $\langle\!\langle X(n\{stab\})\rangle\!\rangle$. We explain the hints given after a description of the basic names (1.5).

1.2 Natural names

Some families of groups containing one member for each degree are given natural names. A name of the form $\langle\!\langle X(n)\rangle\!\rangle$ denotes the n-th member of this family as a permutation group on n points. The same group is denoted by $\langle\!\langle X_n\rangle\!\rangle$ if it occurs as an abstract group but not necessarily with this action. Exceptions are dihedral and Frobenius groups for which traditionally the *size* is indicated by an index. Thus $\langle\!\langle D(4)\rangle\!\rangle$=$\langle\!\langle D_8(4)\rangle\!\rangle$ is the dihedral group of size 8. We sum up the names used in the following list:

A	Alternating	F	Frobenius	E	Elementary
S	Symmetric	AL	Affine linear	C	Cyclic
M	Mathieu	D	Dihedral		

In addition we use $\langle\!\langle L(n)\rangle\!\rangle$ to denote groups derived from linear groups as defined in table 1.

TABLE 1: The permutation groups $L(n)$

Name	Size	Type
$L(6)$	60	$PSL(2,5) = A_5(6)$
$L(7)$	168	$PSL(3,2)$
$L(8)$	168	$PSL(2,7)$
$L(9)$	504	$PSL(2,8)$
$L(10)$	360	$PSL(2,9)$
$L(11)$	660	$PSL(2,11)(11)$
$L(12)$	660	$PSL(2,11)$
$L(13)$	5616	$PSL(3,3)$
$L(14)$	1092	$PSL(2,13)$
$L(15)$	20160	$PSL(4,2) = A_8(15)$

1.3 Group products

If G acts transitively on Ω, and H on Δ, the direct product has a transitive representation on $\Omega \times \Delta$. This is denoted by $\langle\!\langle G[\times]H\rangle\!\rangle$.

A subdirect product [Rem30] corresponding to two epimorphisms $\alpha\colon G \twoheadrightarrow F$ and $\beta\colon H \twoheadrightarrow F$ with $|F| = m$ is denoted by $\langle\!\langle G[\frac{1}{m}]H\rangle\!\rangle$. If several subdirect products exist, further information is given in hints towards the epimorphisms: $\langle\!\langle G\{\alpha\}[\frac{1}{m}]\{\beta\}H\rangle\!\rangle$. If F is abelian, there is a special subdirect product of n copies of G, which is the "augmentation ideal" construction

$$\langle\!\langle \tfrac{1}{m}(G^n)\rangle\!\rangle = \{(g_1, \ldots, g_n) \mid g_1^{\alpha_1} \cdot \cdots \cdot g_n^{\alpha_n} = 1_F\}$$

Again a hint, $\langle\!\langle \frac{1}{m}\{\alpha\}G^n\rangle\!\rangle$, can be given to the defining homomorphism(s).

We need to describe intransitive actions of (iterated) (sub)direct products: as an intransitive permutation group $G \times H$ — and therefore all subdirect products of G with H — can be represented on the disjoint union $\Omega \uplus \Delta$.

We now take a group A acting on Ω and consider the direct product $A^m = A_1 \times \cdots \times A_m$ acting on $\Omega_1 \uplus \cdots \uplus \Omega_m$. If U is a subgroup of A then $\langle\!\langle U^m\rangle\!\rangle$ is the direct product, acting with each component U_i in the same way on Ω_i. For $k < m$ the group $\langle\!\langle U^k\rangle\!\rangle$ also acts on all orbits in the same way. If $u \in U^k$ acts as u_i on Ω_i (and thus $u = \prod u_i$), then $u_i = u_j^{\alpha_{i,j}}$ where $\alpha_{i,j}$ is a permutation isomorphism (depending only on U^k and not on u) mapping U_j to U_i. So, as an intransitive group, the augmentation ideal is denoted by $\langle\!\langle A^{m-1}\rangle\!\rangle$.

Analogous rules apply to groups of the form $\langle\!\langle U^j.V^k\rangle\!\rangle$ when $U.V$ is a subgroup of A.

1.4 Imprimitive constructions

By the embedding theorem [KK51] imprimitive groups can be embedded into suitable wreath products. We will use these wreath products to describe imprimitive groups: let C be a transitive group of degree l and H a permutation group of degree m, then the wreath product $C \wr H = W$ is a semidirect product $C^m \rtimes H$ with H acting on C^m by permuting the m components according to the permutation action. We denote the complement to C^m in W by $\hat{H}$. It is an intransitive group, acting on l orbits with H acting simultaneously on the points. When embedding an imprimitive group into W, the kernel K of the action on the blocks embeds into C^m as an intransitive group acting on every orbit like a normal subgroup A of C.

For an intransitive subgroup, $\langle\!\langle K\rangle\!\rangle$ of C^m, as defined in the last section $\langle\!\langle [K]H\rangle\!\rangle$ is the split extension $\left\langle K, \hat{H}\right\rangle$; so the permutational wreath product $A \wr H$ is denoted by $\langle\!\langle [A^m]H\rangle\!\rangle$.

When there are epimorphisms $\beta\colon K \twoheadrightarrow F$ and $\gamma\colon H \twoheadrightarrow F$ and $|F| = m$, then $\langle\!\langle \frac{1}{m}[K]H\rangle\!\rangle$ is the subgroup of $[K]H$ consisting of those elements kh for which $k^\beta = h^\gamma$. Again hints can be placed before the groups to give information about β and γ, leading to names of the form $\langle\!\langle \frac{1}{m}\{\beta\}[K]\{\gamma\}H\rangle\!\rangle$.

Other groups with the same action H on the blocks may differ in the part of H for which a complement in $\hat{H}$ exists. This complementable part is called the "bodily part" of H. A group of this type will be called $\langle\!\langle [K]H\{bodily\}\rangle\!\rangle$.

Similarly the kernel of the block operation may partially intersect with the K given in the name (the reason being that the proper kernel is not readily described). This leads to the indication of a bodily part of K and names of the form $\langle\!\langle [K\{bodily\}]H\{bodily\}\rangle\!\rangle$.

When the index of the bodily part suffices to distinguish groups, it is given as an index to the group names, for example $\langle\!\langle [K_i]H_j\rangle\!\rangle$. Instead of writing a number, a division sign '$\div$' can be used as an index to denote "fractional part" if this suffices to distinguish the groups. The bodily part of H is maximized if several possible embeddings exist.

The groups 17-20 of degree 10 may serve as examples: we take subdirect products of the Frobenius group $F(5)$ of order 20 and degree 5 with itself in which we "glue" together the factor groups of order 4. We arrange the points 0-9 in the following scheme

$$\begin{array}{ccccc} 0 & 2 & 4 & 6 & 8 \\ 5 & 7 & 9 & 1 & 3 \end{array}$$

with both factors of the subdirect product acting on one row to get orbits (which will become block systems of a transitive group later) via congruences. According to this scheme, the standard subdirect product is

$$5^2 : 4 = \langle (0,2,4,6,8), (5,7,9,1,3), (2,4,8,6)(7,9,3,1)\rangle\,.$$

If we apply the outer automorphism of the factor group, we get another subdirect product. Its intersection with $5^2 : 4$ has size 50. In other words: the bodily part has index 2. Thus the group is

$$5^2 : 4_2 = \langle (0,2,4,6,8), (5,7,9,1,3), (2,4,8,6)(7,1,3,9)\rangle\,.$$

We extend these two intransitive groups by a factor group of order 2 so that the extension becomes transitive. The standard element of order 2, permuting the blocks, is the complement of the wreath product:

$$a = (0,5)(2,7)(4,9)(6,1)(8,3).$$

Extending both subdirect products by this element gives the groups $[5^2 : 4]2$ and $[5^2 : 4_2]2$.

For both subdirect products we take an element x of the direct product not in the subdirect product such that $(xa)^2$ is contained in the subdirect product. Then extending the subdirect products by xa, we get a group that is transitive while its order has doubled, therefore, the subdirect product is the base group of this new group. The factor group 2 is not bodily as otherwise x would be in the base group. Taking $x = (2,8)(4,6)(7,9,3,1)$ we get the third group $[5^2 : 4]2_2$, for the other subdirect product $x = (7,3)(1,9)$ yields the fourth group $[5^2 : 4_2]2_2$. (Instead of writing $[5^2 : 4_2]2_2$ we could have written $[5^2 : 4_2]2_\div$ instead, but there is no advantage in doing so).

1.5 Hints

Hints are given only if they are necessary to distinguish different groups arising from the same general construction. A hint usually relates to the kernel of an homomorphism, the point stabilizer, or a bodily part. If the index of this subgroup suffices, it is given as an index. If there are two epimorphisms, one which is associated with the identity mapping of the image and one associated with a unique non-identity automorphism of the image, they are distinguished by indices '+' and '−'. (An omitted index always reading as '+'.)

We use single (non-capital) letter abbreviations for other frequent hints referring to subgroups. When standing alone these are written without surrounding hint brackets.

c	central or cyclic	d	odd or dihedral
e	even or elementary		
i	intransitive	t	transitive

The first three letters are reminiscent of the proper normal subgroups of the dihedral group, $D_8(4)$, of order 8, that can be denoted by $4c = \langle(1,2,3,4)\rangle$, $4d = \langle(1,3),(2,4)\rangle$, $4e = \langle(1,2)(3,4),(1,3)(2,4)\rangle$ and $2c = \langle(1,3)(2,4)\rangle$.

A hint of the form $\{n\langle ind\rangle\}$ after the group name indicates that the group has index $\langle ind\rangle$ in its normalizer in the full symmetric group.

2 Lists

2.1 Description of the tables

The points are numbered from 0 to $deg - 1$ – (when groups may not act on 0, one replaces 0 by deg). So we can arrange the numbers to identify one block system per group with congruence classes modulo the number of blocks. For two block systems with coprime block size we can even arrange the numbers to identify both block systems with congruence classes. The example in section 1.4 typifies these arrangements.

We list the groups according to degree in the order in which they were published [BM83], [Roy87] (as used in Magma[CP93]) and [But93]. The same names and arrangements are used in GAP [S+95] since version 3r4p3.

For each group we try to recreate a new set of generators that reflects the structure indicated by its name. We give these generators and ensure that the new generators are correct by testing properties of the groups generated.

The groups and their properties are listed in two sets of tables. The first set lists the groups and their properties: For each group, we give an index number which is in italic if the group is minimally transitive, namely if all its proper subgroups are intransitive. For each group we give its name, size, parity (whether it is subgroup of the alternating group), the identification number of the normalizer in S_n as a transitive permutation group in this list, and the identification number of the 2-closure (the largest subgroup of S_n which has the same orbits on pairs of points, acting by $(x,y)^g := (x^g, y^g)$). The column S gives information about the orbits of the point stabilizer: a fraction $\frac{a}{b}$ denotes an orbit of size a for which the action on this orbit is of type b (as a transitive group of degree a). Fixed points are omitted. Multiplicities are indicated by exponents. Finally we give the generators and – if applicable – representatives for all block systems. To save space we give multiple-use blocks and generators at the beginning of each degree.

For example, let G be the 21st group of degree 8. It is generated by

$$h = (1,5)(3,7), \quad oe = (1,4,5,8)(2,3)(6,7), \quad c = (0,2)(1,3)(4,6)(5,7)$$

It has four block systems, namely

$$\begin{array}{rlrl} 2 = & \{\{0,4\},\{1,5\},\{2,6\},\{3,7\}\}, & x = & \{\{0,2,4,6\},\{1,3,5,7\}\}, \\ x = & \{\{0,3,4,7\},\{1,2,5,6\}\}, & x = & \{\{0,1,4,5\},\{2,3,6,7\}\} \end{array}$$

which are determined by their blocks containing 0. These are abbreviated as 2,4a,4d and 4b respectively. The blocks of size 2 lead to the name $\frac{1}{2}[2^4]E(4)$: Arrange the points 0 to 3 in the first row and 4-7 in the second row of a 2×4 array. The columns correspond to the blocks. The action on the blocks is equivalent to that of $E(4)$, so we can embed G into $2 \wr E(4)$. The base group 2^3 of G is generated by h and its conjugate images. Together with $x = (1,5)$ it generates the whole 2^4. The standard base complement in $2 \wr E(4)$ is generated by $b = (0,1)(2,3)(4,5)(6,7)$ and c. However in G a factor 2 of 2^4 is "glued" with a factor of the $E(4)$. So we get, instead of x and b, the product $xb = oe$ as generator in addition to h and c.

All block systems with blocks of size 4 have a kernel which is a subdirect product of $D(4)$ with itself with a common elementary abelian factor of order 4. As there are different isomorphisms of the factor groups, there are $|GL(2,2)| = 6$ possible subdirect products of this type. The products are generated by the normal subgroup kernels $\langle (0,2)(1,3),(4,6)(5,7) \rangle$ together with representatives of cosets generating the factor group. In the standard subdirect product these coset representatives form a subset of the diagonal. This leads to a group name $[\frac{1}{4}D(4)^2]2$ for the 22nd group of degree 8 but it does not appear in the tables because it already has two better names. In fact, this subdirect product is a kernel of G corresponding to block system 4a; however, in this case, the extension does not split and the factor group is not bodily. So again there is an additional potential name $[\frac{1}{4}D(4)^2]2_2$ which we disregard because there are better ones.

Two of the possible factor isomorphisms yield subdirect products that do not allow a transitive action of the normalizer. The remaining three subdirect products can be identified by the fact that the factor isomorphism identifies only one of the three subgroups of size 4 (denoted by 'c', 'd' and 'e') with itself. For example in the above block arrangement, the product $\frac{1}{4}dD(4)^2$ is generated by

$$\langle (0,2)(1,3),(4,6)(5,7),(1,3)(5,7),(0,3)(1,2)(4,5,6,7)\rangle .$$

This group is permutation isomorphic to the kernel of G corresponding to the block systems 4b and 4d (which fuse under the action of $N_{S_8}(G)$). This explains the second name $[\frac{1}{4}dD(4)^2]2$. (The two remaining products lead to the 15th and 19th group of degree 8.) Of course, the generators cannot reflect this name as well.

The group G is of size 32 and contains elements (namely oe) which are not contained in the alternating group. The normalizer of G in S_8 is of type $2^4D(4)$, the 35th group; the 2-closure is of type $2^4E(4)$, the 31st group of degree 8. The point stabilizer has 3 orbits of size 2 and the action on each orbit is of type S_2. Every proper subgroup is intransitive.

The second set of tables indicates isomorphism classes within the lists. For each group we give the number of isomorphic groups in the list. To improve clarity, entries in a sequence of the same isomorphism type are denoted by a dash (——).

Having defined the names and new generators all further computations were done with the aid of GAP. The tables were then created in an largely automated way to reduce the possibility of errors when copying data. We thank Heiko Theißen for providing a program to compute the 2-closures for degree 15.

2.2 The groups

Degree 2:

Nr	Name	$\|G\|$	p	N	C	S	Generators
1	S_2	$2{=}2!$	$-$	1	1		$(0,1)$

Degree 3:

Nr	Name	$\|G\|$	p	N	C	S	Generators
1	A_3	$3{=}\frac{3!}{2}$	$+$	2	1		$(0,1,2)$
2	S_3	$6{=}3!$	$-$	2	2	$\frac{2}{1}$	$(0,1),\ (0,2)$

Degree 4:

Generator: $a = (0,1,2,3)$
Block: $2 = [0,2]$

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
1	$C(4)$ $= 4$	$4{=}2^2$	$-$	3	1		a	2
2	$E(4)$ $= 2[\times]2$	$4{=}2^2$	$+$	5	2		$(0,1)(2,3)$, $(0,3)(1,2)$	[0,3],2,[0,1]
3	$D(4)$	$8{=}2^3$	$-$	3	3	$\frac{2}{1}$	a, $(1,3)$	2
4	A_4	$12{=}\frac{4!}{2}$	$+$	5	5	$\frac{3}{1}$	$(0,1,2),\ (0,2,3)$	
5	S_4	$24{=}4!$	$-$	5	5	$\frac{3}{2}$	$(0,1),\ (0,2)$, $(0,3)$	

Degree 5:

Generator: $a = (0,1,2,3,4)$

Nr	Name	$\|G\|$	p	N	C	S	Generators
1	$C(5)$ $= 5$	$5{=}5$	$+$	3	1		a
2	$D(5)$ $= 5{:}2$	$10{=}2{\cdot}5$	$+$	3	2	$\frac{2}{1}^{2}$	a, $(1,4)(2,3)$
3	$F(5)$ $= 5{:}4$	$20{=}2^2 5$	$-$	3	5	$\frac{4}{1}$	a, $(1,2,4,3)$
4	A_5	$60{=}\frac{5!}{2}$	$+$	5	5	$\frac{4}{4}$	$(0,1,2),\ (0,2,3)$, $(0,3,4)$
5	S_5	$120{=}5!$	$-$	5	5	$\frac{4}{5}$	$(0,1),\ (0,2)$, $(0,3),\ (0,4)$

Degree 6:

Generators:

$a = (0,2,4)(1,3,5)$
$b = (1,5)(2,4)$
$c = (0,2,4)$
$d = (0,3)(1,4)(2,5)$
$e = (1,4)(2,5)$
$f = (0,3)$
$g = (0,5)(1,4)(2,3)$
$h = (0,1,2,3,4)$
$i = (0,1,2,3,4,5)$

Blocks:

$2 = [0,3]$
$3 = [0,2,4]$

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
1	$C(6)$ $= 6$ $= 3[\times]2$	$6{=}2{\cdot}3$	$-$	3	1		i	3,2
2	$D_6(6) = [3]2$	$6{=}2{\cdot}3$	$-$	9	2		a,g	[0,5],3,2,[0,1]
3	$D(6)$ $= S(3)[\times]2$	$12{=}2^2 3$	$-$	3	3	$\frac{2}{1}^2$	i,g	3,2
4	$A_4(6)$ $= [2^2]3$	$12{=}2^2 3$	$+$	11	6	$\frac{2}{1}^2$	e,a	2
5	$F_{18}(6)$ $= [3^2]2 = 3 \wr 2$	$18{=}2{\cdot}3^2$	$-$	9	5	$\frac{3}{1}$	c,d	3
6	$2A_4(6)$ $= [2^3]3$ $= 2 \wr 3$	$24{=}2^3 3$	$-$	11	6	$\frac{2}{1}^2$	f,a	2
7	$S_4(6d)$ $= [2^2]S(3)$	$24{=}2^3 3$	$+$	11	11	$\frac{4}{2}$	e,a,b	2
8	$S_4(6c)$ $= \frac{1}{2}[2^3]S(3)$	$24{=}2^3 3$	$-$	11	11	$\frac{4}{1}$	e,a,fb	2
9	$F_{18}(6){:}2$ $= [\frac{1}{2}S(3)^2]2$	$36{=}2^2 3^2$	$-$	13	13	$\frac{2}{1}\frac{3}{2}$	c,b,d	3
10	$F_{36}(6)$ $= \frac{1}{2}[S(3)^2]2$	$36{=}2^2 3^2$	$+$	13	13	$\frac{2}{1}\frac{3}{2}$	c,b, $(0,3)(1,4,5,2)$	3
11	$2S_4(6)$ $= [2^3]S(3)$ $= 2 \wr S(3)$	$48{=}2^4 3$	$-$	11	11	$\frac{4}{3}$	f,a,b	2
12	$L(6)$ $= PSL(2,5)$ $= A_5(6)$	$60{=}2^2 3{\cdot}5$	$+$	14	16	$\frac{5}{2}$	h, $(0,5)(1,4)$	
13	$F_{36}(6){:}2$ $= [S(3)^2]2$ $= S(3) \wr 2$	$72{=}2^3 3^2$	$-$	13	13	$\frac{2}{1}\frac{3}{2}$	c, $(2,4)$, d	3

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
14	$L(6){:}2$ $= PGL(2,5)$ $= S_5(6)$	$120{=}2^3 3{\cdot}5$	$-$	14	16	$\frac{5}{3}$	$h, c^{-1}i$	
15	A_6	$360{=}\frac{6!}{2}$	$+$	16	16	$\frac{5}{4}$	$(0,1,2),\ (0,2,3),$ $(0,3,4),\ (0,4,5)$	
16	S_6	$720{=}6!$	$-$	16	16	$\frac{5}{5}$	$(0,1),(0,2),f,(0,4),h^{-1}i$	

Degree 7:

Generator: $a = (0,1,2,3,4,5,6)$

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators
1	$C(7) = 7$	$7{=}7$	$+$	4	1		a
2	$D(7) = 7{:}2$	$14{=}2{\cdot}7$	$-$	4	2	$\frac{2}{1}^3$	$a,\ (1,6)(2,5)(3,4)$
3	$F_{21}(7) = 7{:}3$	$21{=}3{\cdot}7$	$+$	4	3	$\frac{3}{1}^2$	$a,\ (1,2,4)(3,6,5)$
4	$F_{42}(7) = 7{:}6$	$42{=}2{\cdot}3{\cdot}7$	$-$	4	7	$\frac{6}{1}$	$a,\ (1,3,2,6,4,5)$
5	$L(7)$ $= L(3,2)$	$168{=}2^3 3{\cdot}7$	$+$	5	7	$\frac{6}{7}$	$a,\ (1,2)(3,6)$
6	A_7	$2520{=}\frac{7!}{2}$	$+$	7	7	$\frac{6}{15}$	$(0,1,2),\ (0,2,3),\ (0,3,4),$ $(0,4,5),\ (0,5,6)$
7	S_7	$5040{=}7!$	$-$	7	7	$\frac{6}{16}$	$(0,1),\ (0,2),\ (0,3),\ (0,4),$ $(0,5),\ (0,6)$

Degree 8:

Generators: **Blocks:**

$a = (0,4)(1,5)(2,6)(3,7)$		$n = (1,3)(4,5,6,7)$		$2 = [0,4]$	
$b = (0,1)(2,3)(4,5)(6,7)$		$o = (1,3)(5,7)$		$2a = [0,2]$	
$c = (0,2)(1,3)(4,6)(5,7)$		$p = (1,2,6,3,4,5,7)$		$2b = [0,7]$	
$d = (0,1,2,3)(4,5,6,7)$		$q = (1,2,3)$		$2c = [0,1]$	
$e = (0,1,2,3,4,5,6,7)$		$r = (0,7)(1,6)(2,3)(4,5)$		$2d = [0,6]$	
$f = (1,2,3)(4,6,5)$		$s = (0,4)(1,5)$		$2e = [0,3]$	
$g = (0,4)$		$t = (0,2,4,6)(1,3,5,7)$		$2f = [0,5]$	
$h = (1,5)(3,7)$		$u = (0,1,3)(4,5,7)$		$4 = [0,1,2,3]$	
$i = (1,2,3)(5,6,7)$		$v = (0,1,2,3)$		$4a = [0,2,4,6]$	
$j = (2,6)(3,7)$		$w = (0,1,2,3,4,5,6)$		$4b = [0,1,4,5]$	
$k = (0,1)(4,5)$		$x = (2,3)(4,5)$		$4c = [0,2,5,7]$	
$l = (0,7)(1,6)(2,5)(3,4)$		$y = (4,6)(5,7)$		$4d = [0,3,4,7]$	
$m = (0,2)(1,3)$		$z = (4,5)(6,7)$		$4e = [0,1,6,7]$	

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
1	$C(8)$ $= 8$	$8{=}2^3$	$-$	15	1		e	4a,2
2	$4[\times]2$	$8{=}2^3$	$+$	29	2		d,a	4,2a,4c,4a,2,2d
3	$E(8)$ $= 2[\times]2[\times]2$	$8{=}2^3$	$+$	48	3		b,c,a	2e,4,[0,3,5,6],4d, 2a,4c,4a,2f,4b,2, 2b,4e,2d,2c
4	$D_8(8)$ $= [4]2$	$8{=}2^3$	$+$	26	4		d,l	4,2a,4c,4a, 2b,2,2f,2d
5	$Q_8(8)$	$8{=}2^3$	$+$	40	5		d, $(0,4,2,6)(1,7,3,5)$	4,2a,4c,4a
6	$D(8)$	$16{=}2^4$	$-$	15	6	${\frac{2}{1}}^{3}$	e,l	4a,2
7	$\frac{1}{2}[2^3]4$	$16{=}2^4$	$-$	26	7	${\frac{2}{1}}^{2}$	e,h	4a,2
8	$2D_8(8)$ $= [D(4)]2$	$16{=}2^4$	$-$	15	8	${\frac{2}{1}}^{3}$	e, $(1,3)(2,6)(5,7)$	4a,2
9	$E(8){:}2$ $= D(4)[\times]2$	$16{=}2^4$	$+$	29	9	${\frac{2}{1}}^{2}$	b,c,a,z	2e,4,2a,4b,4e,2c
10	$[2^2]4$	$16{=}2^4$	$+$	29	10	${\frac{2}{1}}^{2}$	h,d	2a,4a,2,2d
11	$\frac{1}{2}[2^3]E(4)$ $= Q_8{:}2$	$16{=}2^4$	$+$	26	11	${\frac{2}{1}}^{2}$	h,t,hb	4d,4a,4b,2
12	$2A_4(8)$ $= SL(2,3)$	$24{=}2^3 3$	$+$	23	12	${\frac{3}{1}}^{2}$	t,u	2
13	$E(8){:}3$ $= A(4)[\times]2$	$24{=}2^3 3$	$+$	24	24	${\frac{3}{1}}^{2}$	b,c,a,f	4,2b
14	$S(4)[\frac{1}{2}]2$ $= \frac{1}{2}(S_4[\times]2)$	$24{=}2^3 3$	$+$	24	24	${\frac{3}{1}}^{2}$	c,i,ka	4,2
15	$[\frac{1}{4}cD(4)^2]2$	$32{=}2^5$	$-$	26	35	$\frac{2}{1}\frac{4}{2}$	e,h,l	4a,2
16	$\frac{1}{2}[2^4]4$	$32{=}2^5$	$-$	35	27	${\frac{2}{1}}^{3}$	j,e	4a,2
17	$[4^2]2$	$32{=}2^5$	$-$	26	17	$\frac{4}{1}$	v,a	4,2a
18	$E(8){:}E_4$ $= [2^2]D(4)$	$32{=}2^5$	$+$	41	18	$\frac{4}{2}$	b,c,a,z,y	2e,4,2a,2c
19	$E(8){:}4$ $= [\frac{1}{4}eD(4)^2]2$	$32{=}2^5$	$+$	29	35	$\frac{2}{1}\frac{4}{1}$	b,c,a,n	4,2a
20	$[2^3]4$	$32{=}2^5$	$+$	35	27	${\frac{2}{1}}^{3}$	j,d	4a,2
21	$\frac{1}{2}[2^4]E(4)$ $= [\frac{1}{4}dD(4)^2]2$	$32{=}2^5$	$-$	35	31	${\frac{2}{1}}^{3}$	h,oe,c	4d,4a,4b,2
22	$E(8){:}D_4$ $= [2^3]2^2$	$32{=}2^5$	$+$	44	31	${\frac{2}{1}}^{3}$	b,c,a,x,kb	4,4b,4e,2c
23	$2S_4(8)$ $= GL(2,3)$	$48{=}2^4 3$	$-$	23	44	$\frac{6}{2}$	e,u	2
24	$E(8){:}D_6$ $= S(4)[\times]2$	$48{=}2^4 3$	$+$	24	24	${\frac{3}{2}}^{2}$	b,c,a,f,x	4,2b

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
25	$E(8){:}7$ $= F_{56}(8)$	$56{=}2^3 7$	$+$	36	50	$\frac{7}{1}$	b,c,a,p	
26	$\frac{1}{2}[2^4]eD(4)$	$64{=}2^6$	$-$	35	35	$\frac{2\,4}{1\,3}$	e,s, $(0,4)(1,7)(3,5)$	4a,2
27	$[2^4]4$	$64{=}2^6$	$-$	35	27	$\frac{2\,3}{1}$	g,d	4a,2
28	$\frac{1}{2}[2^4]dD(4)$	$64{=}2^6$	$-$	35	35	$\frac{2\,4}{1\,3}$	j,o,e	4a,2
29	$E(8){:}D_8$ $= [2^3]D(4)$	$64{=}2^6$	$+$	35	35	$\frac{2\,4}{1\,3}$	b,c,a,n,o	4,2a
30	$\frac{1}{2}[2^4]cD(4)$	$64{=}2^6$	$-$	35	35	$\frac{2\,4}{1\,3}$	j,og,d	4a,2
31	$[2^4]E(4)$	$64{=}2^6$	$-$	44	31	$\frac{2\,3}{1}$	g,b,c	4d,4a,4b,2
32	$[2^3]A(4)$	$96{=}2^5 3$	$+$	44	44	$\frac{6}{4}$	b,c,a,f, $(2,5)(3,4)$	2b
33	$E(8){:}A_4$ $= [\frac{1}{3}A(4)^2]2$ $= E(4){:}6$	$96{=}2^5 3$	$+$	41	47	$\frac{3\,4}{1\,4}$	b,c,a,f,y	4
34	$\frac{1}{2}[E(4)^2{:}S_3]2$ $= E(4)^2{:}D_6$	$96{=}2^5 3$	$+$	45	47	$\frac{3\,4}{1\,4}$	zb,i, $(0,4)(1,5)(2,7)(3,6)$	4
35	$[2^4]D(4)$	$128{=}2^7$	$-$	35	35	$\frac{2\,4}{1\,3}$	g,o,d	4a,2
36	$E(8){:}F_{21}$	$168{=}2^3 3{\cdot}7$	$+$	36	50	$\frac{7}{3}$	b,c,a,p,f	
37	$L(8)$ $= PSL(2,7)$	$168{=}2^3 3{\cdot}7$	$+$	43	50	$\frac{7}{3}$	w, $(1,2,4)(3,6,5)$, r	
38	$[2^4]A(4)$	$192{=}2^6 3$	$-$	44	44	$\frac{6}{6}$	g,b,i	2
39	$[2^3]S(4)$	$192{=}2^6 3$	$+$	44	44	$\frac{6}{7}$	b,c,a,f, $(1,6)(2,3,5,4)$	2b
40	$\frac{1}{2}[2^4]S(4)$	$192{=}2^6 3$	$-$	44	44	$\frac{6}{8}$	s,b,i,$e^{-1}u$	2
41	$E(8){:}S_4$ $= [E(4)^2{:}S_3]2$ $= E(4)^2{:}D_{12}$	$192{=}2^6 3$	$+$	41	47	$\frac{3\,4}{2\,5}$	b,c,a,f,n	4
42	$[A(4)^2]2$	$288{=}2^5 3^2$	$+$	45	47	$\frac{3\,4}{1\,4}$	m,q,a	4
43	$L(8){:}2$ $= PGL(2,7)$	$336{=}2^4 3{\cdot}7$	$-$	43	50	$\frac{7}{4}$	w, $(1,3,2,6,4,5)$, r	
44	$[2^4]S(4)$	$384{=}2^7 3$	$-$	44	44	$\frac{6}{11}$	g,k,d	2
45	$[\frac{1}{2}S(4)^2]2$	$576{=}2^6 3^2$	$+$	47	47	$\frac{3\,4}{2\,5}$	m,q,k,a	4
46	$\frac{1}{2}[S(4)^2]2$	$576{=}2^6 3^2$	$-$	47	47	$\frac{3\,4}{2\,5}$	m,q,k, $(0,4)(1,5)(2,7,3,6)$	4
47	$[S(4)^2]2$	$1152{=}2^7 3^2$	$-$	47	47	$\frac{3\,4}{2\,5}$	v, $(2,3)$, a	4
48	$E(8){:}L_7$ $= AL(8)$	$1344{=}2^6 3{\cdot}7$	$+$	48	50	$\frac{7}{5}$	b,c,a,p,f,xf	
49	A_8	$20160{=}\frac{8!}{2}$	$+$	50	50	$\frac{7}{6}$	m/q, $(0,4,5)$, $(0,5,6)$, $q^{-1}m$, $(0,3,4)$, $(0,6,7)$	
50	S_8	$40320{=}8!$	$-$	50	50	$\frac{7}{7}$	$q^{-1}v$, $(0,2)$, q/v,g, $(0,5)$, $(0,6)$, $e^{-1}w$	

Degree 9:

Generators:

$$
\begin{aligned}
a &= (0,3,6)(1,4,7)(2,5,8) \\
b &= (0,1,2)(3,4,5)(6,7,8) \\
c &= (0,1,2) \\
d &= (3,4,5)(6,8,7) \\
e &= (3,6)(4,7)(5,8) \\
f &= (0,1,2,3,4,5,6,7,8) \\
g &= (1,2)(3,6)(4,8)(5,7) \\
h &= (1,2)(3,5)(6,7) \\
i &= (1,2)(4,5)(7,8) \\
j &= (1,8,2,4)(3,5,6,7) \\
k &= (1,6,4,5,2,3,8,7) \\
l &= (4,5)(7,8) \\
m &= (0,1)(2,3)(4,5)(6,7) \\
n &= (1,8)(2,7)(3,6)(4,5) \\
o &= (1,4,7)(2,8,5) \\
p &= (1,2,4,3,6,7,5) \\
q &= (1,2) \\
r &= (0,8)(2,5)(3,6)(4,7)
\end{aligned}
$$

Blocks:

$$
\begin{aligned}
3 &= [0,1,2] \\
3a &= [0,3,6] \\
3b &= [0,4,8] \\
3c &= [0,5,7]
\end{aligned}
$$

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
1	$C(9)$ $= 9$	$9{=}3^2$	+	10	1		f	3a
2	$E(9)$ $= 3[\times]3$	$9{=}3^2$	+	26	2		b,a	3,3c,3a,3b
3	$D(9)$ $= 9{:}2$	$18{=}2{\cdot}3^2$	+	10	3	$\frac{2}{1}^4$	f,n	3a
4	$S(3)[\times]3$	$18{=}2{\cdot}3^2$	−	8	4	$\frac{2}{1}^3$	b,i,a	3,3a
5	$S(3)[\frac{1}{2}]S(3)$ $= 3^2{:}2$	$18{=}2{\cdot}3^2$	+	26	5	$\frac{2}{1}^4$	b,a,g	3,3c,3a,3b
6	$\frac{1}{3}[3^3]3$	$27{=}3^3$	+	21	17	$\frac{3}{1}^2$	o,f	3a
7	$E(9){:}3$ $= [3^2]3$	$27{=}3^3$	+	24	17	$\frac{3}{1}^2$	b,a,d	3
8	$S(3)[\times]S(3)$ $= E(9){:}D_4$	$36{=}2^2 3^2$	−	16	8	$\frac{2}{1}^2\frac{4}{2}$	b,i,a,e	3,3a
9	$E(9){:}4$	$36{=}2^2 3^2$	+	19	16	$\frac{4}{1}^2$	b,a,j	
10	$[3^2]S(3)_6$	$54{=}2{\cdot}3^3$	+	10	31	$\frac{2}{1}\frac{6}{1}$	o,f,n	3a
11	$E(9){:}6$ $= \frac{1}{2}[3^2{:}2]S(3)$	$54{=}2{\cdot}3^3$	+	18	31	$\frac{2}{1}\frac{6}{1}$	b,a,d,g	3
12	$[3^2]S(3)$	$54{=}2{\cdot}3^3$	−	24	20	$\frac{6}{2}$	d,a,e	3

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
13	$E(9){:}D_6$ $= [3^2{:}2]3$ $= [\frac{1}{2}S(3)^2]3$	$54{=}2{\cdot}3^3$	$-$	18	28	$\frac{2}{1}\frac{3}{2}^2$	b,a,d,h	3
14	$M(9)$ $= E(9){:}Q_8$	$72{=}2^3 3^2$	$+$	26	34	$\frac{8}{5}$	b,a,j,$k^{-1}h$	
15	$E(9){:}8$	$72{=}2^3 3^2$	$-$	19	34	$\frac{8}{1}$	b,a,k	
16	$E(9){:}D_8$	$72{=}2^3 3^2$	$-$	19	16	$\frac{4}{3}^2$	b,a,h,jh	
17	$[3^3]3$ $= 3 \wr 3$	$81{=}3^4$	$+$	24	17	$\frac{3}{1}^2$	c,a	3
18	$E(9){:}D_{12}$ $= [3^2{:}2]S(3)$ $= [\frac{1}{2}S(3)^2]S(3)$	$108{=}2^2 3^3$	$-$	18	31	$\frac{2}{1}\frac{6}{3}$	b,a,d,g,h	3
19	$E(9){:}2D_8$	$144{=}2^4 3^2$	$-$	19	34	$\frac{8}{8}$	b,a,k,h	
20	$[3^3]S(3)$ $= 3 \wr S(3)$	$162{=}2{\cdot}3^4$	$-$	24	20	$\frac{6}{5}$	c,a,e	3
21	$\frac{1}{2}[3^3{:}2]S(3)$	$162{=}2{\cdot}3^4$	$+$	24	31	$\frac{2}{1}\frac{6}{5}$	c,a,g	3
22	$[3^3{:}2]3$	$162{=}2{\cdot}3^4$	$-$	24	28	$\frac{2}{1}\frac{3}{2}^2$	c,i,a	3
23	$E(9){:}2A_4$	$216{=}2^3 3^3$	$+$	26	34	$\frac{8}{12}$	b,a,j,d	
24	$[3^3{:}2]S(3)$	$324{=}2^2 3^4$	$-$	24	31	$\frac{2}{1}\frac{6}{9}$	c,i,a,e	3
25	$[\frac{1}{2}S(3)^3]3$	$324{=}2^2 3^4$	$+$	31	28	$\frac{2}{1}\frac{3}{2}^2$	c,l,a	3
26	$E(9){:}2S_4$	$432{=}2^4 3^3$	$-$	26	34	$\frac{8}{23}$	b,a,k,d	
27	$L(9)$ $= PSL(2,8)$	$504{=}2^3 3^2 7$	$+$	32	34	$\frac{8}{25}$	m,p,r	
28	$[S(3)^3]3$ $= S(3) \wr 3$	$648{=}2^3 3^4$	$-$	31	28	$\frac{2}{1}\frac{3}{2}^2$	c,q,a	3
29	$[\frac{1}{2}S(3)^3]S(3)$	$648{=}2^3 3^4$	$-$	31	31	$\frac{2}{1}\frac{6}{13}$	c,l,a,e	3
30	$\frac{1}{2}[S(3)^3]S(3)$	$648{=}2^3 3^4$	$+$	31	31	$\frac{2}{1}\frac{6}{13}$	c,l,a,qe	3
31	$[S(3)^3]S(3)$ $= S(3) \wr S(3)$	$1296{=}2^4 3^4$	$-$	31	31	$\frac{2}{1}\frac{6}{13}$	c,q,a,e	3
32	$L(9){:}3$ $=$ $P\Gamma L(2,8)$	$1512{=}2^3 3^3 7$	$+$	32	34	$\frac{8}{36}$	m,p,r, $(2,4,6)(3,5,7)$	
33	A_9	$181440{=}\frac{9!}{2}$	$+$	34	34	$\frac{8}{49}$	c, $(0,2,3)$, $(0,3,4)$, $(0,4,5)$, $(0,5,6)$, $(0,6,7)$, $(0,7,8)$	
34	S_9	$362880{=}9!$	$-$	34	34	$\frac{8}{50}$	qc,cq, $(0,3)$, $(0,4)$, $(0,5)$, $(0,6)$, $(0,7)$, $(0,8)$	

Degree 10:

Generators:

$$
\begin{aligned}
a &= (0,2,4,6,8)(1,3,5,7,9) & n &= (0,2,4)(5,7,9)\\
b &= (0,2,4,6,8) & o &= (1,7,3,4,2,5,6,8)\\
c &= (0,5)(1,6)(2,7)(3,8)(4,9) & p &= (0,5)(1,6,9,4)(2,3,8,7)\\
d &= (0,5)(2,7) & q &= (1,3,9,7)(2,4,8,6)\\
e &= (1,7,9,3)(2,4,8,6) & r &= (0,2)\\
f &= (0,5) & s &= (3,6)(4,7)(5,8)\\
g &= (0,1,2)(3,4,5)(6,7,8)\\
h &= (0,9)(1,2)(4,7)(5,8)\\
i &= (0,2)(5,7)\\
j &= (1,9)(2,8)(3,7)(4,6)\\
k &= (1,3,2,6)(4,5,8,7)\\
l &= (0,1,2,3,4,5,6,7,8,9)\\
m &= (2,8)(4,6)
\end{aligned}
$$

Blocks:

$$
\begin{aligned}
2 &= [0,5]\\
5 &= [0,2,4,6,8]
\end{aligned}
$$

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
1	$C(10)$ $= 5[\times]2$	10=2·5	–	5	1		l	5,2
2	$D(10)$ $= 5{:}2$	10=2·5	–	17	2		a,jc	[0,9],5,[0,7], 2,[0,3],[0,1]
3	$D_{10}(10)$ $= [D(5)]2$	$20{=}2^2 5$	–	5	3	${\frac{2}{1}}^{4}$	l,lj	5,2
4	$\frac{1}{2}[F(5)]2$	$20{=}2^2 5$	–	5	4	${\frac{2}{1}}^{4}$	a,ec	5,2
5	$F(5)[\times]2$	$40{=}2^3 5$	–	5	22	${\frac{4}{1}}^{2}$	l,e	5,2
6	$[5^2]2$	$50{=}2{\cdot}5^2$	–	17	6	$\frac{5}{1}$	b,c	5
7	$A_5(10)$	$60{=}2^2 3{\cdot}5$	+	13	13	$\frac{3}{2}\frac{6}{2}$	a, $(0,5)(1,9)(3,4)(6,7)$	
8	$[2^4]5$	$80{=}2^4 5$	+	29	14	${\frac{2}{1}}^{4}$	d,a	2
9	$[\frac{1}{2}D(5)^2]2$	$100{=}2^2 5^2$	–	27	21	${\frac{2}{1}}^{2}\frac{5}{2}$	b,j,c	5
10	$\frac{1}{2}[D(5)^2]2$	$100{=}2^2 5^2$	–	27	21	${\frac{2}{1}}^{2}\frac{5}{2}$	b,p	5
11	$A(5)[\times]2$	$120{=}2^3 3{\cdot}5$	–	22	22	${\frac{4}{4}}^{2}$	a,n,c	5,2
12	$\frac{1}{2}[S(5)]2$ $= S_5(10a)$	$120{=}2^3 3{\cdot}5$	–	22	22	${\frac{4}{4}}^{2}$	a, $(0,5)(1,4)(2,7)(3,8)(6,9)$	5,2
13	$S_5(10d)$	$120{=}2^3 3{\cdot}5$	–	13	13	$\frac{3}{2}\frac{6}{3}$	a, $(1,2)(3,7)(8,9)$	
14	$[2^5]5$	$160{=}2^5 5$	–	29	14	${\frac{2}{1}}^{4}$	f,a	2
15	$[2^4]D(5)$	$160{=}2^5 5$	+	29	23	${\frac{4}{3}}^{2}$	d,a,j	2

Nr	Name	$\lvert G \rvert$	p	N	C	S	Generators	Blocks
16	$\frac{1}{2}[2^5]D(5)$	$160{=}2^5 5$	$-$	29	23	$\frac{4}{3}^{2}$	d,a,jf	2
17	$[5^2{:}4]2$	$200{=}2^3 5^2$	$-$	27	43	$\frac{4}{1}\frac{5}{3}$	b,e,c	5
18	$[5^2{:}4]2_2$	$200{=}2^3 5^2$	$+$	28	43	$\frac{4}{1}\frac{5}{3}$	b,e, $(0,5)(1,4,3,2,9,6,7,8)$	5
19	$[5^2{:}4_2]2$	$200{=}2^3 5^2$	$-$	33	43	$\frac{4}{1}\frac{5}{3}$	b,q,c	5
20	$[5^2{:}4_2]2_2$	$200{=}2^3 5^2$	$-$	33	43	$\frac{4}{1}\frac{5}{3}$	b,q,p	5
21	$[D(5)^2]2$	$200{=}2^3 5^2$	$-$	27	21	$\frac{2}{1}^{2}\frac{5}{2}$	b,m,c	5
22	$S(5)[\times]2$	$240{=}2^4 3{\cdot}5$	$-$	22	22	$\frac{4}{5}^{2}$	a,i,c	5,2
23	$[2^5]D(5)$	$320{=}2^6 5$	$-$	29	23	$\frac{4}{3}^{2}$	f,a,j	2
24	$[2^4]F(5)$	$320{=}2^6 5$	$+$	29	39	$\frac{8}{20}$	d,a,e	2
25	$\frac{1}{2}[2^5]F(5)$	$320{=}2^6 5$	$-$	29	39	$\frac{8}{16}$	d,a,fe	2
26	$L(10)$ $= PSL(2,9)$	$360{=}2^3 3^2 5$	$+$	35	45	$\frac{9}{9}$	g,k,h	
27	$[\frac{1}{2}F(5)^2]2$	$400{=}2^4 5^2$	$-$	33	43	$\frac{4}{1}\frac{5}{3}$	b,m,e,c	5
28	$\frac{1}{2}[F(5)^2]2$	$400{=}2^4 5^2$	$+$	33	43	$\frac{4}{1}\frac{5}{3}$	b,m, $(0,5)(1,6,7,2,9,4,3,8)$	5
29	$[2^5]F(5)$	$640{=}2^7 5$	$-$	29	39	$\frac{8}{27}$	f,a,e	2
30	$L(10){:}2$ $= PGL(2,9)$	$720{=}2^4 3^2 5$	$-$	35	45	$\frac{9}{15}$	g,o,h	
31	$M(10)$ $= L(10)'2$	$720{=}2^4 3^2 5$	$+$	35	45	$\frac{9}{14}$	g,k,h,os	
32	$S_6(10)$ $= L(10){:}2$	$720{=}2^4 3^2 5$	$-$	35	45	$\frac{9}{16}$	g,k,h,s	
33	$[F(5)^2]2$	$800{=}2^5 5^2$	$-$	33	43	$\frac{4}{1}\frac{5}{3}$	b, $(2,4,8,6)$, c	5
34	$[2^4]A(5)$	$960{=}2^6 3{\cdot}5$	$+$	39	39	$\frac{8}{32}$	d,a,n	2
35	$L(10).2^2$ $=$ $P\Gamma L(2,9)$	$1440{=}2^5 3^2 5$	$-$	35	45	$\frac{9}{19}$	g,o,h,s	
36	$[2^5]A(5)$	$1920{=}2^7 3{\cdot}5$	$-$	39	39	$\frac{8}{38}$	f,a,n	2
37	$[2^4]S(5)$	$1920{=}2^7 3{\cdot}5$	$+$	39	39	$\frac{8}{39}$	d,a,i	2
38	$\frac{1}{2}[2^5]S(5)$	$1920{=}2^7 3{\cdot}5$	$-$	39	39	$\frac{8}{40}$	d,a, $(0,5)(2,4)(7,9)$	2
39	$[2^5]S(5)$	$3840{=}2^8 3{\cdot}5$	$-$	39	39	$\frac{8}{44}$	f,a,i	2
40	$[A(5)^2]2$	$7200{=}2^5 3^2 5^2$	$-$	41	43	$\frac{4}{4}\frac{5}{4}$	b, $(0,2,4)$, c	5
41	$[\frac{1}{2}S(5)^2]2$ $= [A(5){:}2]2$	$14400{=}2^6 3^2 5^2$	$-$	43	43	$\frac{4}{5}\frac{5}{5}$	b,i,c	5

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
42	$\frac{1}{2}[S(5)^2]2$	$14400{=}2^6 3^2 5^2$	$+$	43	43	$\frac{4}{5}\frac{5}{5}$	b,rc	5
43	$[S(5)^2]2$	$28800{=}2^7 3^2 5^2$	$-$	43	43	$\frac{4}{5}\frac{5}{5}$	b,r,c	5
44	A_{10}	$1814400{=}\frac{10!}{2}$	$+$	45	45	$\frac{9}{33}$	$(0,1,2)$, $(0,2,3)$, $(0,3,4)$, $(0,4,5)$, $(0,5,6)$, $(0,6,7)$, $(0,7,8)$, $(0,8,9)$	
45	S_{10}	$3628800{=}10!$	$-$	45	45	$\frac{9}{34}$	$(0,1)$, r, $(0,3)$, $(0,4)$, f, $(0,6)$, $(0,7)$, $(0,8)$, $(0,9)$	

Degree 11:

Generators:

$$\begin{aligned} a &= (0,1,2,3,4,5,6,7,8,9,10) \\ b &= (1,3,9,5,4)(2,6,7,10,8) \end{aligned}$$

Nr	Name	$\|G\|$	p	N	C	S	Generators
1	$C(11)$ $= 11$	$11{=}11$	$+$	4	1		a
2	$D(11)$ $= 11{:}2$	$22{=}2{\cdot}11$	$-$	4	2	$\frac{2^5}{1}$	a, $(1,10)(2,9)(3,8)(4,7)(5,6)$
3	$F_{55}(11)$ $= 11{:}5$	$55{=}5{\cdot}11$	$+$	4	3	$\frac{5^2}{1}$	a,b
4	$F_{110}(11)$ $= 11{:}10$	$110{=}2{\cdot}5{\cdot}11$	$-$	4	8	$\frac{10}{1}$	a, $(1,2,4,8,5,10,9,7,3,6)$
5	$L(11)$ $= PSL(2,11)(11)$	$660{=}2^2 3{\cdot}5{\cdot}11$	$+$	5	8	$\frac{10}{7}$	a, $(2,10)(3,4)(5,9)(6,7)$
6	$M(11)$	$7920{=}2^4 3^2 5{\cdot}11$	$+$	6	8	$\frac{10}{31}$	a,b, $(2,6,10,7)(3,9,4,5)$
7	A_{11}	$19958400{=}\frac{11!}{2}$	$+$	8	8	$\frac{10}{44}$	$(0,1,2)$, $(0,2,3)$, $(0,3,4)$, $(0,4,5)$, $(0,5,6)$, $(0,6,7)$, $(0,7,8)$, $(0,8,9)$, $(0,9,10)$
8	S_{11}	$39916800{=}11!$	$-$	8	8	$\frac{10}{45}$	$(0,1)$, $(0,2)$, $(0,3)$, $(0,4)$, $(0,5)$, $(0,6)$, $(0,7)$, $(0,8)$, $(0,9)$, $(0,10)$

Degree 12:

Generators:

$a = (0,4,8)(1,5,9)(2,6,10)(3,7,11)$
$b = (1,5)(2,10)(4,8)(7,11)$
$c = (0,1)(2,3)$
$d = (0,4,8)$
$e = (0,3,6,9)(1,4,7,10)(2,5,8,11)$
$f = (0,1)(2,3)(4,5)(6,7)(8,9)(10,11)$
$g = (0,6)(3,9)$
$h = (0,6)(1,7)(2,8)(3,9)(4,10)(5,11)$
$i = (0,3)(1,10)(2,5)(4,7)(6,9)(8,11)$
$j = (0,4,8)(2,6,10)(3,7,11)$
$k = (1,7)(3,9)(5,11)$
$l = (0,3)(6,9)$
$m = (2,10)(3,11)(4,8)(5,9)$
$n = (2,10)(4,8)$
$o = (1,7,10)(2,5,11)(3,6,9)$
$p = (0,2,4,6,8,10)(1,3,5,7,9,11)$
$q = (0,3,6)(2,8,11)(4,7,10)$
$r = (0,4,8)(2,6,10)$
$s = (2,8)(3,9)(4,10)(5,11)$
$t = (0,4,8)(1,5,9)$
$u = (0,1)(2,3)(4,5)$
$v = (0,1)(2,3)(6,7)(8,9)$
$w = (1,11)(2,10)(3,9)(4,8)(5,7)$
$x = (0,1)$
$y = (0,3,6,9)$
$z = (0,1)(4,5)$
$A = (0,1)(6,7)$
$B = (1,10)(2,5)(6,9)$
$C = (0,3)(1,10)(4,7)(6,9)$
$D = (0,1)(8,9)$
$E = (0,2,4,6,8)(1,3,5,7,9)$
$F = (2,4,6,8,10)(3,5,7,9,11)$
$G = (0,3,6)$
$H = (3,6,9)$
$I = (0,10)(1,11)(2,8)(3,9)(4,6)(5,7)$
$J = (0,6)(1,7)(2,10)(3,11)(4,8)(5,9)$
$K = (0,6)(1,7)(2,8,10,4)(3,9,11,5)$
$L = (0,3)(1,2)(4,11)(5,10)(6,9)(7,8)$
$M = (2,6,10)(3,7,11)$
$N = (0,6)(1,7)(3,9)(4,10)$
$O = (0,10)(1,11)(2,4)(3,5)(6,8)(7,9)$
$P = (0,3,6,9)(1,10,7,4)$
$Q = (0,2)(1,3)(4,10)(5,11)(6,8)(7,9)$
$R = (0,2)(1,3)$
$S = (0,2,4)(1,3,5)$
$T = (2,8)(4,10)$
$U = (0,3,6)(4,10,7)$
$V = (4,8)(7,11)$
$W = (4,8)$
$X = (0,4,8)(1,11,6)(2,9,7)(3,10,5)$
$Y = (0,11,10)(1,9,5)(2,4,3)(6,8,7)$
$Z = (0,3,6,9)(1,8,7,2)(4,11,10,5)$
$\mathcal{A} = (1,7)(3,9)$
$\mathcal{B} = (0,6)(1,7)$
$\mathcal{C} = (0,2,4,6,8)$
$\mathcal{D} = (0,10)(1,11)(2,8)(3,9)$
$\mathcal{E} = (0,3)(1,7)(2,11)(4,10)(5,8)(6,9)$
$\mathcal{F} = (1,7,5,11)(2,10)(3,9)(4,8)$
$\mathcal{G} = (1,7,3,9,5)(2,4,6,8,10)$
$\mathcal{H} = (0,6,3,9)(1,4,2,11,5,8,10,7)$
$\mathcal{I} = (0,1,3,6)(2,4,7,10)(5,8,11,9)$
$\mathcal{J} = (0,2,4)(1,3,5)(7,9,11)$
$\mathcal{K} = (0,2,4,10,8,6)(1,3,5,11,9,7)$
$\mathcal{L} = (1,2)(3,5)(4,6)(7,9)(8,10)$
$\mathcal{M} = (1,2)(4,8)(5,10)(6,9)(7,11)$
$\mathcal{N} = (2,11)(3,6)(7,10)$
$\mathcal{O} = (0,6)(2,8)(4,10)$
$\mathcal{P} = (0,2,4)$
$\mathcal{Q} = (2,4,6,8,10)$
$\mathcal{R} = (0,6)$

$\mathcal{S} = (6,10)(7,11)(8,9)$

$\mathcal{T} = (0,1)(2,3)(4,11)(5,10)(6,9)(7,8)$

$\mathcal{U} = (0,10,4,2,8,6)(1,11,5,3,9,7)$

$\mathcal{V} = (0,11,1,10)(2,8)(3,9)(4,6)(5,7)$

$\mathcal{W} = (0,11)(1,10)(2,5)(3,7)(4,8)(6,9)$

$\mathcal{X} = (1,10,7)(3,6,9)$

$\mathcal{Y} = (0,11)(1,9)(2,7)(3,5)(4,10)(6,8)$

$\mathcal{Z} = (0,6)(1,7,5,11)(2,8,10,4)(3,9)$

$\mathfrak{b} = (0,6,8,2,4,10)(1,7,9,3,5,11)$

$\mathfrak{c} = (0,6,10)(1,7,11)(2,4,8)(3,5,9)$

$\mathfrak{d} = (1,5)(2,7)(4,8)(6,9)(10,11)$

$\mathfrak{e} = (0,3,6,9)(1,4,11,10,5,8,7,2)$

$\mathfrak{f} = (0,2)(1,3)(4,6,8,10)(5,7,9,11)$

$\mathfrak{g} = (0,2,10)(1,3,11)(4,6,8)(5,7,9)$

$\mathfrak{h} = (0,3,1,2)(4,10,5,11)(6,8,7,9)$

$\mathfrak{i} = (0,1,2,3,4,5,6,7,8,9,10)$

$\mathfrak{j} = (0,2)$

$\mathfrak{k} = (0,4,8)(2,10,6)$

$\mathfrak{m} = (2,8)(3,9)(4,10)(5,11)(6,7)$

$\mathfrak{n} = (2,6)(3,7)(4,8)(5,9)$

$\mathfrak{p} = (2,4)(3,5)(6,7)(8,11)(9,10)$

$\mathfrak{q} = (2,4)(3,5)(8,11)(9,10)$

$\mathfrak{s} = (0,10,11)(2,3,4)(6,7,8)$

$\mathfrak{t} = (2,3)(4,10)(5,11)(6,8)(7,9)$

$\mathfrak{u} = (2,3)(4,8)(5,9)(6,11)(7,10)$

$\mathfrak{w} = (2,3)(4,8)(5,9)(6,10)(7,11)$

$\mathfrak{x} = (2,3)(5,9)(6,11)(7,10)$

$\mathfrak{z} = (2,3)(6,11)(7,10)$

$\mathfrak{A} = (0,3)(4,7)(8,11)$

$\mathfrak{B} = (0,3)(4,7)$

$\mathfrak{C} = (3,9)$

$\mathfrak{D} = (4,10)(5,11)(6,7)(8,9)$

$\mathfrak{E} = (4,8)(5,9)(6,10)(7,11)$

$\mathfrak{F} = (4,8)(5,9)$

$\mathfrak{G} = (4,7)(6,9)(8,11)$

$\mathfrak{H} = (6,9)$

Blocks:

$2 = [0,1]$

$2a = [0,6]$

$2b = [0,3]$

$2c = [0,9]$

$2d = [0,7]$

$2e = [0,10]$

$2f = [0,11]$

$2g = [0,2]$

$3 = [0,4,8]$

$4 = [0,3,6,9]$

$4a = [0,1,6,7]$

$4b = [0,1,2,3]$

$4c = [0,5,6,11]$

$4d = [0,1,10,11]$

$4e = [0,3,5,11]$

$6 = [0,2,4,6,8,10]$

$6a = [0,1,4,5,8,9]$

$6b = [0,3,4,7,8,11]$

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
1	$C(4)[\times]C(3)$	$12{=}2^23$	$-$	28	1		e,a	6,4,3,2a
2	$E(4)[\times]C(3)$ $=6\times2$	$12{=}2^23$	$+$	83	2		i,h,a	6b,6,2c,6a,4,3,2a,2b
3	$D_6(6)[\times]2$ $=\frac{1}{2}[3{:}2]E(4)$	$12{=}2^23$	$+$	81	3		a,I,f	2b,4b,6b,2g,6,6a,3, 2d,4a,2a,2f,4d,2e,2
4	$A_4(12)$	$12{=}2^23$	$+$	127	4		Y,X	[0,1,2],[0,10,11],2a,4,3,[0,5,7],2b,2c
5	$\frac{1}{2}[3{:}2]4$	$12{=}2^23$	$-$	81	5		a,h,Z	4c,6,4,3,4a,2a
6	$A_4(12)\times2$	$24{=}2^33$	$+$	49	6	$\frac{2}{1}{}^{4}$	Y,X,$\mathcal{E}$	2a,4,2b,2c
7	$A_4(6)[\times]2$ $=[\frac{1}{8}2^6]3$	$24{=}2^33$	$+$	48	25	$\frac{2}{1}{}^{4}$	s,a,f	6,2d,4a,2a,2
8	$S_4(12d)$	$24{=}2^33$	$-$	22	8	$\frac{2}{1}{}^{5}$	$\mathcal{L}$,$\mathcal{I}$	[0,8,10],[0,7,9],4e,2f
9	$\frac{1}{2}[\frac{1}{8}2^6]S(3)$ $=S_4(12e)$	$24{=}2^33$	$+$	48	21	$\frac{2}{1}{}^{4}$	N,a,L	4c,6,2c,4,4a,2a,2b
10	$S(3)[\times]E(4)$	$24{=}2^33$	$+$	83	10	$\frac{2}{1}{}^{4}$	a,b,i,h	6b,6,2c,6a,4,3,2a,2b
11	$S(3)[\times]C(4)$	$24{=}2^33$	$-$	28	11	$\frac{2}{1}{}^{4}$	a,b,e	6,4,3,2a
12	$\frac{1}{2}[3{:}2]cD(4)$	$24{=}2^33$	$-$	28	12	$\frac{2}{1}{}^{5}$	a,e,w	6,4,3,2a
13	$\frac{1}{2}[3{:}2]eD(4)$	$24{=}2^33$	$-$	28	13	$\frac{2}{1}{}^{5}$	a,i,h,w	6,4,3,2a
14	$D(4)[\times]C(3)$	$24{=}2^33$	$-$	28	14	$\frac{2}{1}{}^{3}$	e,k,a	6,4,3,2a
15	$\frac{1}{2}[3{:}2]dD(4)$	$24{=}2^33$	$-$	81	15	$\frac{2}{1}{}^{3}$	a,$\mathcal{O}$,k,L	4c,6,4,3,4a,2a
16	$[3^2]E(4)$	$36{=}2^23^2$	$+$	156	16	$\frac{3}{1}{}^{2}$	$\mathfrak{k}$,i,h	6b,2e,6,6a,3,2g,2a
17	$[3^2]4$	$36{=}2^23^2$	$-$	156	17	$\frac{3}{1}{}^{2}$	$\mathfrak{k}$,e	2e,6,3,2g,2a
18	$[3^2]E(4)$	$36{=}2^23^2$	$+$	81	18	$\frac{3}{1}{}^{2}$	r,i,h	6b,6,6a,3,2a
19	$[3^2]4$	$36{=}2^23^2$	$-$	81	19	$\frac{3}{1}{}^{2}$	r,e	6,3,2a
20	$A(4)[\times]C(3)$	$36{=}2^23^2$	$+$	83	45	$\frac{3}{1}{}^{3}$	q,o,a	4,3
21	$\frac{1}{2}[\frac{1}{4}2^6]S(3)$	$48{=}2^43$	$+$	86	21	$\frac{2}{1}{}^{4}$	g,a,L	4c,6,2c,4,4a,2a,2b
22	$S_4(12d)\times2$	$48{=}2^43$	$-$	49	22	$\frac{2}{1}\frac{4}{2}{}^{2}$	$\mathcal{L}$,$\mathcal{I}$,$\mathcal{Y}$	4e,2f

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
23	$S_4(6d)[\times]2$ $=[\frac{1}{8}2^6]S(3)$	$48{=}2^4 3$	$+$	48	48	${\frac{4}{2}}^2$	s,a,m,f	6,2d,4a,2a,2
24	$S_4(6c)[\times]2$	$48{=}2^4 3$	$+$	48	48	${\frac{4}{1}}^2$	s,a,J,f	6,2d,4a,2a,2
25	$2A_4(6)[\times]2$ $=[\frac{1}{4}2^6]3$	$48{=}2^4 3$	$+$	86	25	${\frac{2}{1}}^4$	$\mathcal{B}$,a,f	6,2d,4a,2a,2
26	$A_4(12)\times 2^2$	$48{=}2^4 3$	$+$	127	90	${\frac{4}{2}}^2$	Y,X,$\mathcal{E}$, $(0,6)(1,4)(2,5)(3,9)(7,10)(8,11)$	2a,4,2b,2c
27	$[2]S_4(6)_2$	$48{=}2^4 3$	$-$	49	27	$\frac{2}{1}{\frac{4}{1}}^2$	$\mathcal{E}$,Y,X, $(0,2,3,11)(1,4,7,10)(5,6,8,9)$	4,2b
28	$D(4)[\times]S(3)$	$48{=}2^4 3$	$-$	28	28	${\frac{2}{1}}^3\frac{4}{2}$	e,k,a,b	6,4,3,2a
29	$[\frac{1}{2}4^2]3$	$48{=}2^4 3$	$-$	86	29	${\frac{2}{1}}^4$	N,e,a	6,4,2a
30	$\frac{1}{2}[\frac{1}{4}4^3]S(3)$	$48{=}2^4 3$	$-$	86	30	${\frac{2}{1}}^4$	g,a,Z	4c,6,4,4a,2a
31	$[4^2]3$	$48{=}2^4 3$	$+$	185	94	${\frac{4}{1}}^2$	P,a	4,2a
32	$[E(4)^2]3$	$48{=}2^4 3$	$+$	239	90	${\frac{4}{2}}^2$	C,N,a	2c,4,2a,2b
33	$A_5(12)$	$60{=}2^2 3{\cdot}5$	$+$	124	76	${\frac{5}{1}}^2$	E, $(0,10,4)(1,11,5)(2,7,9)(3,6,8)$	2
34	$F_{36}{:}2(12e)$	$72{=}2^3 3^2$	$+$	77	77	${\frac{2}{1}}^2{\frac{3}{2}}^2$	p, $(0,9)(1,8)(2,3)(4,5)(6,7)(10,11)$	6b,6,6a,3,2
35	$[D_6^2]2 = D_6 \wr 2$	$72{=}2^3 3^2$	$-$	156	35	$\frac{6}{2}$	r, $(0,10)(2,8)(4,6)$, f	2g,6,3,2a,2e
36	$F_{36}{:}2(12d)$	$72{=}2^3 3^2$	$-$	78	125	${\frac{2}{1}}^2\frac{6}{1}$	p, $(0,8)(1,9)(2,3)(6,7)(10,11)$	6a,3,2
37	$[3^2{:}2]E(4)$	$72{=}2^3 3^2$	$+$	125	77	${\frac{2}{1}}^2{\frac{3}{2}}^2$	r,b,i,h	6b,6,6a,3,2a
38	$\frac{1}{2}[3^2{:}2]cD(4)$	$72{=}2^3 3^2$	$-$	81	125	${\frac{2}{1}}^2\frac{6}{2}$	r,e,w	6,3,2a
39	$[3^2{:}2]4$	$72{=}2^3 3^2$	$-$	125	79	${\frac{2}{1}}^2{\frac{3}{2}}^2$	r,b,e	6,3,2a
40	$F_{36}(6)[\times]2$	$72{=}2^3 3^2$	$+$	125	77	${\frac{2}{1}}^2{\frac{3}{2}}^2$	t,m,K,f	6b,6,6a,3,2
41	$\frac{1}{2}[(\frac{1}{4}2^3)^2]F_{36}(6)$	$72{=}2^3 3^2$	$-$	125	79	${\frac{2}{1}}^2{\frac{3}{2}}^2$	f,t,m,$\mathcal{U}\mathfrak{z}$	6a,3,2
42	$[3^2]D(4) = 6 \wr 2$	$72{=}2^3 3^2$	$-$	81	42	$\frac{6}{1}$	r,e,k	6,3,2a
43	$A(4)[\times]S(3)$	$72{=}2^3 3^2$	$+$	83	83	$\frac{2}{1}\frac{3}{1}\frac{6}{1}$	q,o,a,b	4,3
44	$\frac{1}{2}[3{:}2]S(4)$	$72{=}2^3 3^2$	$-$	83	83	$\frac{2}{1}\frac{3}{2}\frac{6}{2}$	a,q,o,w	4,3
45	$S(4)[\times]C(3)$	$72{=}2^3 3^2$	$-$	83	45	${\frac{3}{2}}^3$	e,B,a	4,3

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
46	$[(\frac{1}{3}3^3){:}2]4_4$	$72{=}2^3 3^2$	$+$	84	264	$\frac{2}{1}\frac{3}{2}^3$	j,b,$\mathcal{H}$	6b,3
47	$[(\frac{1}{3}3^3){:}2]E(4)_4$	$72{=}2^3 3^2$	$+$	157	261	$\frac{2}{1}\frac{3}{2}^3$	j,b,$\mathcal{H}\mathcal{H}$, $(0,9)(1,4,5,8)(2,7,10,11)(3,6)$	6b,6,6a,3
48	$2S_4(6)[\times]2$ $=[\frac{1}{4}2^6]S(3)$	$96{=}2^5 3$	$+$	86	48	$\frac{4}{3}^2$	$\mathcal{B}$,a,m,f	6,2d,4a,2a,2
49	$[2]2S_4(6)_2$	$96{=}2^5 3$	$-$	49	250	$\frac{2}{1}\frac{8}{4}$	$\mathcal{Y}$,$\mathcal{L}$,$\mathcal{I}$, $(0,3,11,5)(1,2,9,7)(4,8,10,6)$	4e,2f
50	$\frac{1}{2}e[1/16.D(4)^3]S(3)$	$96{=}2^5 3$	$-$	86	135	$\frac{2}{1}^5$	g,k,a,L	4c,6,4,4a,2a
51	$[1/16.D(4)^3]3$	$96{=}2^5 3$	$-$	86	134	$\frac{2}{1}^5$	g,i,k,a	6,4,2a
52	$\frac{1}{2}c[1/16.D(4)^3]S(3)$	$96{=}2^5 3$	$-$	86	193	$\frac{2}{1}\frac{4}{3}^2$	g,i,a,w	6,4,2a
53	$[\frac{1}{2}4^2]S(3)$	$96{=}2^5 3$	$-$	86	53	$\frac{4}{3}^2$	N,e,a,b	6,4,2a
54	$[(\frac{1}{2}2^2)^3]D(6)_4$	$96{=}2^5 3$	$-$	86	193	$\frac{2}{1}\frac{4}{3}^2$	c,a, $(2,3)(4,9)(5,8)(6,10)(7,11)$, L	4b,6a,2
55	$[\frac{1}{2}4^3]3$	$96{=}2^5 3$	$+$	185	94	$\frac{4}{1}^2$	g,P,a	4,2a
56	$[\frac{1}{2}2^6]3$	$96{=}2^5 3$	$+$	186	90	$\frac{4}{2}^2$	g,C,a	2c,4,2a,2b
57	$[(\frac{1}{2}2^2)^3]A_4(6)_4$	$96{=}2^5 3$	$+$	143	222	$\frac{2}{1}\frac{4}{1}\frac{4}{2}$	c,a, $(0,3,1,2)(4,7)(5,6)(8,9)$	4b,2
58	$[2^4]6$	$96{=}2^5 3$	$+$	136	134	$\frac{2}{1}^5$	z,D,p	6a,4a,2
59	$[2^3]A_4(6)$	$96{=}2^5 3$	$-$	137	222	$\frac{2}{1}\frac{4}{3}^2$	v,u,s,a	4a,2
60	$[\frac{1}{2}[\frac{1}{2}2^2]^3]2A_4(6)_4$	$96{=}2^5 3$	$+$	138	222	$\frac{2}{1}\frac{4}{3}^2$	v,p,$\mathfrak{D}$	4a,2
61	$[2^3]A_4(6)_4$	$96{=}2^5 3$	$-$	140	222	$\frac{2}{1}\frac{4}{3}^2$	v,u,a, $(2,8)(3,9)(4,11)(5,10)(6,7)$	4a,2
62	$[4^2]S(3)$	$96{=}2^5 3$	$+$	185	150	$\frac{8}{4}$	P,a,b	4,2a
63	$[\frac{1}{2}[\frac{1}{2}2^2]^3]S_4(6d)_8 b$	$96{=}2^5 3$	$+$	185	150	$\frac{8}{5}$	v,a,$\mathfrak{D}L$	4a,2
64	$[\frac{1}{2}[\frac{1}{2}2^2]^3]S_4(6d)_8 a$	$96{=}2^5 3$	$-$	140	250	$\frac{2}{1}\frac{8}{2}$	v,a, $(0,3)(1,2)(4,5)(6,9)(7,8)$	4a,2
65	$[\frac{1}{2}[\frac{1}{2}2^2]^3]S_4(6c)_4$	$96{=}2^5 3$	$+$	138	250	$\frac{2}{1}\frac{8}{1}$	v,a,Q, $(0,4)(1,5)(2,9)(3,8)(6,11)(7,10)$	4a,2
66	$[\frac{1}{2}[\frac{1}{2}2^2]^3]S_4(6d)_2$	$96{=}2^5 3$	$-$	137	250	$\frac{2}{1}\frac{8}{4}$	v,a,IJ,$\mathfrak{p}$	4a,2
67	$[E(4)^2]S(3)$	$96{=}2^5 3$	$+$	239	139	$\frac{8}{3}$	C,N,a,b	2c,4,2a,2b
68	$[\frac{1}{2}[\frac{1}{2}2^2]^3]S_4(6c)$	$96{=}2^5 3$	$+$	186	139	$\frac{8}{2}$	v,s,a,J	2d,4a,2a,2
69	$[2^4]D_6(6)$	$96{=}2^5 3$	$+$	195	135	$\frac{2}{1}^5$	z,D,a,I	4b,6a,4a,4d,2

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
70	$\frac{1}{2}[3^3{:}2]E(4)$	$108{=}2^2 3^3$	+	156	130	${\frac{3}{1}}^{3}$	j,L,h	6b,6,6a,3
71	$[3^3]E(4)$	$108{=}2^2 3^3$	+	258	130	${\frac{3}{1}}^{3}$	j,i,h	6b,6,6a,3
72	$[3^3]4$	$108{=}2^2 3^3$	−	217	131	${\frac{3}{1}}^{3}$	j,e	6,3
73	$\frac{1}{2}[3^3{:}2]4$	$108{=}2^2 3^3$	−	156	131	${\frac{3}{1}}^{3}$	j,h,Z	6,3
74	$S_5(12)$	$120{=}2^3 3{\cdot}5$	+	123	219	${\frac{5}{2}}^{2}$	F, $(0,3)(1,10)(2,7)(4,5)(6,11)(8,9)$	6,2
75	$L(6)[\times]2$	$120{=}2^3 3{\cdot}5$	+	123	219	${\frac{5}{2}}^{2}$	E,$\mathcal{D}$,f	6,2
76	$[2]L(6)_6$	$120{=}2^3 3{\cdot}5$	+	124	76	${\frac{5}{2}}^{2}$	f,F,$\mathcal{T}f$, $(0,3)(1,2)(4,11)(5,10)$	2
77	$[S(3)^2]E(4)$	$144{=}2^4 3^2$	+	125	77	${\frac{2}{1}}^{2}\,{\frac{3}{2}}^{2}$	r,n,i,h	6b,6,6a,3,2a
78	$[2]F_{36}{:}2_2\{S_3^2\}$	$144{=}2^4 3^2$	−	125	125	${\frac{2}{1}}^{2}\,\frac{6}{3}$	f,p,$\mathcal{K}$,$\mathfrak{z}$	6a,3,2
79	$[S(3)^2]4$	$144{=}2^4 3^2$	−	125	79	${\frac{2}{1}}^{2}\,{\frac{3}{2}}^{2}$	r,n,e	6,3,2a
80	$[2]F_{36}{:}2_2\{3^2{:}4\}$	$144{=}2^4 3^2$	−	125	125	${\frac{2}{1}}^{2}\,\frac{6}{3}$	f,M,$\mathfrak{f}$,$\mathfrak{z}$	6a,3,2
81	$[3^2{:}2]D(4)$	$144{=}2^4 3^2$	−	125	125	${\frac{2}{1}}^{2}\,\frac{6}{3}$	r,b,e,k	6,3,2a
82	$[(\frac{1}{4}2^3)^2]F_{36}(6)$	$144{=}2^4 3^2$	−	125	125	${\frac{2}{1}}^{2}\,\frac{6}{3}$	$(0,1)(4,5)(8,9)$, t,m,K	6a,3,2
83	$S(4)[\times]S(3)$	$144{=}2^4 3^2$	−	83	83	$\frac{2}{1}\,\frac{3}{2}\,\frac{6}{3}$	e,B,a,b	4,3
84	$[(\frac{1}{3}3^3){:}2]D(4)_4$	$144{=}2^4 3^2$	+	84	274	$\frac{2}{1}\,\frac{3}{2}\,\frac{6}{3}$	j,b,$\mathcal{H}$, $(0,7)(3,4)(6,10)(8,11)$	6b,3
85	$[\frac{1}{4}E(4)^3{:}3]3$	$144{=}2^4 3^2$	+	165	292	$\frac{3}{1}\,{\frac{4}{4}}^{2}$	C,o,a	4
86	$[1/16.D(4)^3]S(3)$	$192{=}2^6 3$	−	86	193	$\frac{2}{1}\,{\frac{4}{3}}^{2}$	g,i,k,a,b	6,4,2a
87	$[2^5]6$	$192{=}2^6 3$	+	193	134	${\frac{2}{1}}^{5}$	c,p	6a,4a,2
88	$[2^4]A_4(6)$	$192{=}2^6 3$	−	186	222	$\frac{2}{1}\,{\frac{4}{3}}^{2}$	A,u,a,$\mathfrak{g}$	4a,2
89	$[(\frac{1}{2}2^2)^3]2A_4(6)_4\{n4\}$	$192{=}2^6 3$	+	185	222	$\frac{2}{1}\,{\frac{4}{3}}^{2}$	c,$\mathfrak{b}$, $(0,1)(4,6)(5,7)(10,11)$	4b,2
90	$[E(4)^3]3 = E(4) \wr 3$	$192{=}2^6 3$	+	239	90	${\frac{4}{2}}^{2}$	l,g,a	2c,4,2a,2b
91	$[(\frac{1}{2}2^2)^3]2A_4(6)_4\{n2\}$	$192{=}2^6 3$	+	143	222	$\frac{2}{1}\,\frac{4}{1}\,\frac{4}{3}$	c,$\mathfrak{b}$, $(6,7)(8,10,9,11)$	4b,2
92	$[2^4]A_4(6)_4\{n4\}$	$192{=}2^6 3$	−	185	222	$\frac{2}{1}\,{\frac{4}{3}}^{2}$	A,u,a,$\mathfrak{m}$	4a,2
93	$[2^4]A_4(6)_4\{n2\}$	$192{=}2^6 3$	−	143	222	$\frac{2}{1}\,{\frac{4}{3}}^{2}$	A,u,a, $(2,8,3,9)(4,10)(5,11)$	4a,2
94	$[4^3]3 = 4 \wr 3$	$192{=}2^6 3$	−	185	94	${\frac{4}{1}}^{2}$	y,a	4,2a

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
95	$[\frac{1}{2}4^3]S(3)$	$192{=}2^6 3$	$+$	185	150	$\frac{8}{11}$	g,P,a,b	4,2a
96	$[(\frac{1}{2}2^2)^3]S_4(6d)_8$	$192{=}2^6 3$	$-$	185	250	$\frac{2}{1}\frac{8}{11}$	c,a,$\mathfrak{t}$	4b,2
97	$[(\frac{1}{2}2^2)^3]S_4(6c)_4$	$192{=}2^6 3$	$+$	185	250	$\frac{2}{1}\frac{8}{7}$	c,a, $(0,2)(1,3)(4,8)(5,9)(6,11)(7,10)$	4b,2
98	$\frac{1}{2}[4^3]S(3)$	$192{=}2^6 3$	$-$	185	150	$\frac{8}{7}$	g,P,a,Z	4,2a
99	$[(\frac{1}{2}2^2)^3]2A_4(6)_2$	$192{=}2^6 3$	$-$	186	222	$\frac{2}{1}\frac{4}{3}^2$	c,a,$\mathfrak{wt}$, $(2,3)(4,5)(8,10,9,11)$	4b,2
100	$[(\frac{1}{2}2^2)^3]S_4(6d)_2$	$192{=}2^6 3$	$-$	186	250	$\frac{2}{1}\frac{8}{9}$	c,a,$\mathfrak{c}$,$\mathfrak{u}$	4b,2
101	$[\frac{1}{2}2^6]S(3)$	$192{=}2^6 3$	$+$	186	139	$\frac{8}{9}$	g,C,a,b	2c,4,2a,2b
102	$[(\frac{1}{2}2^2)^3]S_4(6c)_2$	$192{=}2^6 3$	$-$	186	250	$\frac{2}{1}\frac{8}{10}$	c,a,$\mathfrak{c}$, $(0,3,1,2)(4,8,5,9)(6,11,7,10)$	4b,2
103	$\frac{1}{2}[E(4)^3]S(3)$	$192{=}2^6 3$	$+$	186	139	$\frac{8}{10}$	l,N,a,hb	2c,4,2a,2b
104	$[(\frac{1}{2}2^2)^3]2A_4(6)_8$	$192{=}2^6 3$	$-$	143	222	$\frac{2}{1}\frac{4}{2}\frac{4}{3}$	c,a, $(6,7)(8,10)(9,11)$	4b,2
105	$\frac{1}{2}[2^6]6$	$192{=}2^6 3$	$-$	193	134	$\frac{2}{1}^5$	c,$\mathcal{V}m$	6a,4a,2
106	$[2^5]D_6(6)$	$192{=}2^6 3$	$+$	240	135	$\frac{2}{1}^5$	c,z,A,a,I	4b,6a,4a,4d,2
107	$\frac{1}{2}[2^6]D_6$	$192{=}2^6 3$	$-$	240	135	$\frac{2}{1}^5$	c,z,A,a,$\mathcal{V}$	4b,6a,4a,4d,2
108	$\frac{1}{2}[2^5]D(6)$	$192{=}2^6 3$	$+$	136	193	$\frac{2}{1}\frac{4}{1}\frac{4}{3}$	z,D,p,cI	6a,4a,2
109	$[2^4]D(6)$	$192{=}2^6 3$	$+$	136	193	$\frac{2}{1}\frac{4}{2}\frac{4}{3}$	z,D,p,I	6a,4a,2
110	$[2^3]S_4(6d)$	$192{=}2^6 3$	$-$	137	250	$\frac{2}{1}\frac{8}{9}$	v,u,s,a,m	4a,2
111	$[2^3]S_4(6)_2$	$192{=}2^6 3$	$-$	137	250	$\frac{2}{1}\frac{8}{11}$	v,u,a,$\mathfrak{g}$,$\mathfrak{p}$	4a,2
112	$[\frac{1}{2}[\frac{1}{2}2^2]^3]2S_4(6)_8$	$192{=}2^6 3$	$+$	138	250	$\frac{2}{1}\frac{8}{8}$	v,a,Q, $(2,3)(4,10)(5,11)(6,7)$	4a,2
113	$[\frac{1}{2}[\frac{1}{2}2^2]^3]2S_4(6)_4$	$192{=}2^6 3$	$+$	138	250	$\frac{2}{1}\frac{8}{6}$	v,p,Q,$\mathfrak{D}$	4a,2
114	$[2^3]S_4(6)_4$	$192{=}2^6 3$	$-$	140	250	$\frac{2}{1}\frac{8}{9}$	v,u,a,m,$\mathfrak{q}$	4a,2
115	$[2^3]S_4(6)_8$	$192{=}2^6 3$	$-$	140	250	$\frac{2}{1}\frac{8}{11}$	v,u,a,$\mathfrak{m}m$	4a,2
116	$[3^3]D(4)$	$216{=}2^3 3^3$	$-$	217	167	$\frac{3}{1}\frac{6}{5}$	j,e,k	6,3
117	$[3^3{:}2]E(4)$	$216{=}2^3 3^3$	$+$	213	261	$\frac{2}{1}\frac{3}{2}^3$	j,b,i,h	6b,6,6a,3
118	$\frac{1}{2}[3^3{:}2]eD(4)$	$216{=}2^3 3^3$	$-$	156	274	$\frac{2}{1}\frac{3}{2}\frac{6}{5}$	j,i,h,w	6,3

Nr	Name	$\lvert G \rvert$	p	N	C	S	Generators	Blocks
119	$[3^3{:}2]4$	$216{=}2^3 3^3$	$-$	156	264	$\frac{2}{1}\frac{3}{2}^{3}$	j,b,e	6,3
120	$\frac{1}{2}[3^3{:}2]cD(4)$	$216{=}2^3 3^3$	$-$	156	274	$\frac{2}{1}\frac{3}{2}\frac{6}{5}$	j,e,w	6,3
121	$\frac{1}{2}[3^3{:}2]dD(4)$	$216{=}2^3 3^3$	$-$	156	167	$\frac{3}{1}\frac{6}{5}$	$j,\mathcal{O},k,L$	6,3
122	$[(\frac{1}{3}3^3){:}2]A(4)_4$	$216{=}2^3 3^3$	$+$	157	289	$\frac{2}{1}\frac{9}{4}$	$j,b,\mathfrak{s},q^{-1}\mathcal{Z}$	3
123	$L(6){:}2[\times]2$	$240{=}2^4 3{\cdot}5$	$+$	123	219	$\frac{5}{3}^{2}$	E,O,f	6,2
124	$[2]L(6){:}2_{12}$	$240{=}2^4 3{\cdot}5$	$-$	124	293	$\frac{10}{4}$	$f,F,\ (0,2,1,3)(4,6,5,7)(8,11,9,10)$	2
125	$[S(3)^2]D(4)$ $= D(6) \wr 2$	$288{=}2^5 3^2$	$-$	125	125	$\frac{2}{1}^{2}\frac{6}{3}$	r,n,e,k	6,3,2a
126	$[A_4^2]2 = A_4 \wr 2$	$288{=}2^5 3^2$	$+$	195	208	$\frac{2}{1}^{2}\frac{6}{4}$	T,r,f	6,2a
127	$[\frac{1}{4}E(4)^3{:}3]S(3)_2$	$288{=}2^5 3^2$	$-$	165	294	$\frac{3}{2}\frac{8}{14}$	$C,o,a,\mathcal{M}$	4
128	$[\frac{1}{4}E(4)^3{:}3]S(3)$	$288{=}2^5 3^2$	$+$	165	294	$\frac{3}{1}\frac{8}{13}$	C,o,a,b	4
129	$[\frac{1}{4}E(4)^3{:}3{:}2]3$	$288{=}2^5 3^2$	$-$	165	292	$\frac{3}{2}\frac{4}{5}^{2}$	$C,o,\mathfrak{G},a$	4
130	$[3^4]E(4)$ $= 3 \wr E(4)$	$324{=}2^2 3^4$	$+$	258	130	$\frac{3}{1}^{3}$	d,i,h	6b,6,6a,3
131	$[3^4]4 = 3 \wr 4$	$324{=}2^2 3^4$	$-$	217	131	$\frac{3}{1}^{3}$	d,e	6,3
132	$\frac{1}{3}[3^4]A(4)$	$324{=}2^2 3^4$	$+$	233	231	$\frac{9}{6}$	j,i,h,od	3
133	$[3^3]A(4)$	$324{=}2^2 3^4$	$+$	258	231	$\frac{9}{7}$	j,q,o	3
134	$[2^6]6 = 2 \wr 6$	$384{=}2^7 3$	$-$	193	134	$\frac{2}{1}^{5}$	x,p	6a,4a,2
135	$[2^6]D_6$ $= 2 \wr D_6(6)$	$384{=}2^7 3$	$-$	240	135	$\frac{2}{1}^{5}$	x,a,I	4b,6a,4a,4d,2
136	$[2^5]D(6)$	$384{=}2^7 3$	$+$	193	193	$\frac{2}{1}\frac{4}{3}^{2}$	c,p,I	6a,4a,2
137	$[2^4]S_4(6d)$	$384{=}2^7 3$	$-$	186	250	$\frac{2}{1}\frac{8}{22}$	A,u,s,a,m	4a,2
138	$[(\frac{1}{2}2^2)^3]2S_4(6)_4$	$384{=}2^7 3$	$+$	185	250	$\frac{2}{1}\frac{8}{15}$	$c,\mathcal{U},\mathfrak{E},\ (4,10)(5,11)(6,9)(7,8)$	4b,2
139	$[E(4)^3]S(3) = E(4) \wr S(3)$	$384{=}2^7 3$	$+$	239	139	$\frac{8}{18}$	l,g,a,b	2c,4,2a,2b
140	$[2^4]S_4(6d)_4$	$384{=}2^7 3$	$-$	185	250	$\frac{2}{1}\frac{8}{22}$	$A,u,a,m,\mathfrak{q}$	4a,2
141	$[\frac{1}{4}cD(4)^3]3$	$384{=}2^7 3$	$-$	185	222	$\frac{2}{1}\frac{4}{3}^{2}$	y,k,a	4,2a

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
142	$[\frac{1}{4}eD(4)^3]3$	$384{=}2^7 3$	$-$	186	222	$\frac{2}{1}\frac{4}{3}^{2}$	l,g,k,a	4,2a
143	$[2^4]2A_4(6)_4$	$384{=}2^7 3$	$-$	143	222	$\frac{2}{1}\frac{4}{3}^{2}$	A,u,p, $(4,10)(5,11)(6,7)$	4a,2
144	$[2^5]A_4(6)$	$384{=}2^7 3$	$+$	250	222	$\frac{2}{1}\frac{4}{3}^{2}$	c,s,a	4a,2
145	$\frac{1}{2}[2^6]D(6)$	$384{=}2^7 3$	$-$	193	193	$\frac{2}{1}\frac{4}{3}^{2}$	c,p,$\mathcal{V}$	6a,4a,2
146	$[2^4]S_4(6c)$	$384{=}2^7 3$	$-$	186	250	$\frac{2}{1}\frac{8}{20}$	A,u,s,a,J	4a,2
147	$[(\frac{1}{2}2^2)^3]2S_4(6)_8$	$384{=}2^7 3$	$-$	185	250	$\frac{2}{1}\frac{8}{15}$	c,$\mathcal{U}$,$\mathfrak{t}$	4b,2
148	$\frac{1}{2}[\frac{1}{4}eD(4)^3]S(3)$	$384{=}2^7 3$	$-$	186	250	$\frac{2}{1}\frac{8}{18}$	l,a,w	4,2a
149	$[2^4]S_4(6c)_4$	$384{=}2^7 3$	$-$	185	250	$\frac{2}{1}\frac{8}{16}$	A,u,a,Q,$\mathfrak{m}$	4a,2
150	$[4^3]S(3) = 4 \wr S(3)$	$384{=}2^7 3$	$-$	185	150	$\frac{8}{17}$	y,a,b	4,2a
151	$\frac{1}{2}[\frac{1}{4}cD(4)^3]S(3)$	$384{=}2^7 3$	$-$	185	250	$\frac{2}{1}\frac{8}{17}$	y,a,w	4,2a
152	$[(\frac{1}{2}2^2)^3]2S_4(6)_2\{S_4(6c)\}$	$384{=}2^7 3$	$-$	186	250	$\frac{2}{1}\frac{8}{19}$	c,a,$\mathcal{UD}$,$\mathfrak{u}$	4b,2
153	$[(\frac{1}{2}2^2)^3]2S_4(6)_2\{S_4(6d)\}$	$384{=}2^7 3$	$-$	186	250	$\frac{2}{1}\frac{8}{19}$	c,a,$\mathcal{D}a$, $(0,3,1,2)(4,6,5,7)(8,10,9,11)$	4b,2
154	$[2^5]D(6)_2t$	$384{=}2^7 3$	$-$	193	193	$\frac{2}{1}\frac{4}{3}^{2}$	c,a,Q,$\mathfrak{w}$	4b,6a,2
155	$[2^5]D(6)_2i$	$384{=}2^7 3$	$-$	193	193	$\frac{2}{1}\frac{4}{3}^{2}$	c,a,$\mathfrak{E}$,$\mathfrak{h}$	4b,6a,2
156	$[3^3{:}2]D(4)$	$432{=}2^4 3^3$	$-$	156	274	$\frac{2}{1}\frac{3}{2}\frac{6}{9}$	j,b,e,k	6,3
157	$[(\frac{1}{3}3^3){:}2]S(4)_4$	$432{=}2^4 3^3$	$+$	157	289	$\frac{2}{1}\frac{9}{8}$	j,b,$\mathcal{H}$,$\mathfrak{s}$	3
158	$[2^5]F_{18}(6)$	$576{=}2^6 3^2$	$+$	240	208	$\frac{2}{1}^{2}\frac{6}{6}$	c,t,h	6a,2
159	$[2^5]F_{18}(6)_2$	$576{=}2^6 3^2$	$-$	240	208	$\frac{2}{1}^{2}\frac{6}{6}$	c,t,M,$\mathfrak{h}$	6a,2
160	$\frac{1}{2}[S_4(6c)^2]2$	$576{=}2^6 3^2$	$-$	235	260	$\frac{4}{1}\frac{6}{8}$	T,r,J, $(0,7,6,1)(2,11,10,3)(4,9,8,5)$	6,2a
161	$[\frac{1}{2}S_4(6c)^2]2$	$576{=}2^6 3^2$	$+$	235	260	$\frac{4}{1}\frac{6}{8}$	T,r,J,f	6,2a
162	$[2^4]F_{36}(6)$	$576{=}2^6 3^2$	$+$	236	260	$\frac{4}{2}\frac{6}{7}$	z,D,t,m,K	6a,2
163	$[2^4]F_{18}(6){:}2$	$576{=}2^6 3^2$	$+$	236	260	$\frac{4}{2}\frac{6}{7}$	z,D,t,m,h	6a,2
164	$[\frac{1}{9}A(4)^3]3$	$576{=}2^6 3^2$	$+$	268	292	$\frac{3}{1}\frac{4}{4}^{2}$	l,g,q,a	4
165	$[\frac{1}{4}E(4)^3{:}3{:}2]3$	$576{=}2^6 3^2$	$-$	165	294	$\frac{3}{2}\frac{8}{24}$	C,o,$\mathfrak{G}$,a,b	4

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
166	$[\frac{1}{9}A(4)^3]3_3$	$576{=}2^6 3^2$	$+$	254	292	$\frac{3}{1}\frac{4}{4}^{2}$	l,g,q,$a^{-1}H$	4
167	$[3^4]D(4)$ $= 3 \wr D(4)$	$648{=}2^3 3^4$	$-$	217	167	$\frac{3}{1}\frac{6}{5}$	d,e,k	6,3
168	$[3^4{:}2]E(4)$	$648{=}2^3 3^4$	$+$	281	261	$\frac{2}{1}\frac{3}{2}^{3}$	d,b,i,h	6b,6,6a,3
169	$\frac{1}{2}[3^4{:}2]cD(4)$	$648{=}2^3 3^4$	$-$	217	274	$\frac{2}{1}\frac{3}{2}\frac{6}{5}$	d,e,w	6,3
170	$[3^4{:}2]4$	$648{=}2^3 3^4$	$-$	248	264	$\frac{2}{1}\frac{3}{2}^{3}$	d,b,e	6,3
171	$[3^4{:}2]E(4)_2$	$648{=}2^3 3^4$	$+$	267	261	$\frac{2}{1}\frac{3}{2}^{3}$	d,b,i,$\mathcal{Z}$	6b,6,6a,3
172	$\frac{1}{2}[3^4{:}2^2]E(4)$	$648{=}2^3 3^4$	$+$	266	261	$\frac{2}{1}\frac{3}{2}^{3}$	d,b,i,nh	6b,6,6a,3
173	$[3^4{:}2]4_4$	$648{=}2^3 3^4$	$+$	243	264	$\frac{2}{1}\frac{3}{2}^{3}$	d,b,$V\mathfrak{e}$	6,3
174	$[3^4{:}2]E(4)_4$	$648{=}2^3 3^4$	$+$	282	261	$\frac{2}{1}\frac{3}{2}^{3}$	d,b, $(0,3)(1,10,5,2)(4,7,8,11)(6,9)$, $\mathcal{Z}$	6b,6,6a,3
175	$[3^3]S(4)$	$648{=}2^3 3^4$	$-$	258	231	$\frac{9}{12}$	j,e,B	3
176	$[3^3{:}2]A(4)$	$648{=}2^3 3^4$	$+$	213	289	$\frac{2}{1}\frac{9}{13}$	j,b,q,o	3
177	$[3^3]S(4)_6$	$648{=}2^3 3^4$	$-$	177	289	$\frac{2}{1}\frac{9}{10}$	j,i, $(0,11)(3,8)(4,7)(5,9)(6,10)$, $\mathfrak{u}M$	3
178	$\frac{1}{2}[3^3{:}2]S(4)$	$648{=}2^3 3^4$	$-$	213	289	$\frac{2}{1}\frac{9}{11}$	j,q,o,w	3
179	$L(2,11)$	$660{=}2^2 3{\cdot}5{\cdot}11$	$+$	218	301	$\frac{11}{3}$	$\mathfrak{i}$,$\mathcal{W}$	
180	$A(6)[\times]2$	$720{=}2^4 3^2 5$	$+$	219	219	$\frac{5}{4}^{2}$	S,F,f	6,2
181	$M_{10}(12)$ $=$ $[A_6[\frac{1}{360}]\{M_{10}\}A_6]2_2$	$720{=}2^4 3^2 5$	$+$	220	299	$\frac{5}{4}\frac{6}{12}$	$\mathcal{J}$,$\mathcal{G}$, $(0,1)(2,3,4,5)(6,11,8,9)(7,10)$	6
182	$PGL(2,9)(12)$ $= [A_6[\frac{1}{360}]\{M_{10}\}A_6]2$	$720{=}2^4 3^2 5$	$+$	220	299	$\frac{5}{4}\frac{6}{12}$	$\mathcal{J}$,$\mathcal{G}$,$\mathcal{T}$	6
183	$S_6(12)$	$720{=}2^4 3^2 5$	$+$	219	219	$\frac{5}{4}^{2}$	S,F, $(0,1)(2,3)(4,5)(6,7)(8,11)(9,10)$	6,2
184	$[2^5]S_4(6d)$	$768{=}2^8 3$	$+$	250	250	$\frac{2}{1}\frac{8}{31}$	c,s,a,m	4a,2
185	$[\frac{1}{4}cD(4)^3]S(3)$	$768{=}2^8 3$	$-$	185	250	$\frac{2}{1}\frac{8}{26}$	y,k,a,b	4,2a
186	$[\frac{1}{4}eD(4)^3]S(3)$	$768{=}2^8 3$	$-$	186	250	$\frac{2}{1}\frac{8}{29}$	l,g,k,a,b	4,2a
187	$[2^5]2A_4(6)$	$768{=}2^8 3$	$+$	250	222	$\frac{2}{1}\frac{4}{3}^{2}$	c,$\mathcal{B}$,a	4a,2

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
188	$[2^6]A_4$ $= 2 \wr A_4(6)$	$768{=}2^8 3$	$-$	250	222	$\frac{2}{1}\frac{4}{3}^2$	x,s,a	4a,2
189	$[\frac{1}{2}cD(4)^3]3$	$768{=}2^8 3$	$-$	250	222	$\frac{2}{1}\frac{4}{3}^2$	y,$\mathcal{A}$,a	4,2a
190	$\frac{1}{2}[2^6]S_4(6d)$	$768{=}2^8 3$	$-$	250	250	$\frac{2}{1}\frac{8}{31}$	c,s,a,xm	4a,2
191	$[2^5]S_4(6c)$	$768{=}2^8 3$	$+$	250	250	$\frac{2}{1}\frac{8}{27}$	c,s,a,J	4a,2
192	$\frac{1}{2}[2^6]S_4(6c)$	$768{=}2^8 3$	$-$	250	250	$\frac{2}{1}\frac{8}{27}$	c,s,a,xJ	4a,2
193	$[2^6]D(6)$ $= 2 \wr D(6)$	$768{=}2^8 3$	$-$	193	193	$\frac{2}{1}\frac{4}{3}^2$	x,p,I	6a,4a,2
194	$[3^4]A(4)$ $= 3 \wr A(4)$	$972{=}2^2 3^5$	$+$	258	231	$\frac{9}{17}$	d,q,o	3
195	$[2^5]F_{18}(6){:}2$	$1152{=}2^7 3^2$	$+$	260	260	$\frac{4}{3}\frac{6}{11}$	c,t,m,h	6a,2
196	$[2^5]F_{18}{:}2_2$	$1152{=}2^7 3^2$	$-$	240	260	$\frac{4}{3}\frac{6}{11}$	c,t,p,$\mathfrak{w}$	6a,2
197	$\frac{1}{2}[2^6]F_{18}{:}2$	$1152{=}2^7 3^2$	$-$	260	260	$\frac{4}{3}\frac{6}{11}$	c,t,m,xh	6a,2
198	$\frac{1}{2}[2^6]F_{36}$	$1152{=}2^7 3^2$	$-$	260	260	$\frac{4}{3}\frac{6}{11}$	c,t,m,xK	6a,2
199	$[2^5]F_{36}(6)$	$1152{=}2^7 3^2$	$+$	260	260	$\frac{4}{3}\frac{6}{11}$	c,t,m,K	6a,2
200	$[S_4(6c)^2]2$ $= S_4(6c) \wr 2$	$1152{=}2^7 3^2$	$-$	235	260	$\frac{4}{1}\frac{6}{8}$	T,r,$\mathcal{R}n$,f	6,2a
201	$[2^4]F_{36}{:}2_4$	$1152{=}2^7 3^2$	$-$	235	260	$\frac{4}{3}\frac{6}{11}$	z,D,$\mathcal{K}$,M,$\mathcal{S}$	6a,2
202	$[2^4]F_{36}{:}2_2$	$1152{=}2^7 3^2$	$+$	236	260	$\frac{4}{3}\frac{6}{11}$	z,D,$\mathcal{K}$,M,$\mathfrak{n}$, $(2,3)(6,10)(7,11)(8,9)$	6a,2
203	$[S_4(6d)^2]2$ $= S_4(6d) \wr 2$	$1152{=}2^7 3^2$	$+$	236	260	$\frac{4}{2}\frac{6}{7}$	T,r,n,f	6,2a
204	$[\frac{1}{9}A(4)^3]S(3)_2$	$1152{=}2^7 3^2$	$-$	268	294	$\frac{3}{2}\frac{8}{34}$	l,g,q,a,$\mathcal{M}$	4
205	$[E(4)^3{:}3{:}2]3$	$1152{=}2^7 3^2$	$-$	239	292	$\frac{3}{2}\frac{4}{5}^2$	l,g,q,B,a	4
206	$[\frac{1}{9}A(4)^3]S(3)$	$1152{=}2^7 3^2$	$+$	239	294	$\frac{3}{1}\frac{8}{33}$	l,g,q,a,b	4
207	$[\frac{1}{9}A(4)^3]S(3)_6$	$1152{=}2^7 3^2$	$-$	254	294	$\frac{3}{2}\frac{8}{34}$	l,g,q $(1,2)(4,11)(5,7)(6,9)(8,10)$, $(0,4)(1,3)(6,10)(7,9)(8,11)$	4

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
208	$[2A_4^2]2$ $= 2A4 \wr 2$ $= 2 \wr F_{18}(6)$	$1152{=}2^7 3^2$	$-$	240	208	$\frac{2}{1}^2\frac{6}{6}$	$\mathcal{R}$,r,f	6,2a
209	$\frac{1}{2}[3^4{:}2^2]cD(4)$	$1296{=}2^4 3^4$	$-$	248	274	$\frac{2}{1}\frac{3}{2}\frac{6}{9}$	d,b,e,nk	6,3
210	$[3^4{:}2^2]E(4)$	$1296{=}2^4 3^4$	$+$	267	261	$\frac{2}{1}\frac{3}{2}^3$	d,n,i,h	6b,6,6a,3
211	$[3^4{:}2^2]4$	$1296{=}2^4 3^4$	$-$	267	264	$\frac{2}{1}\frac{3}{2}^3$	d,n,e	6,3
212	$[3^4{:}2]D(4)_8$	$1296{=}2^4 3^4$	$+$	243	274	$\frac{2}{1}\frac{3}{2}\frac{6}{9}$	d,b,in,$\mathfrak{x}$	6a,3
213	$[3^3{:}2]S(4)$	$1296{=}2^4 3^4$	$-$	213	289	$\frac{2}{1}\frac{9}{18}$	j,b,e,B	3
214	$[\frac{1}{2}F_{36}^2]2$	$1296{=}2^4 3^4$	$+$	266	261	$\frac{2}{1}\frac{3}{2}^3$	d,n,K,f	6b,6,6a,3
215	$\frac{1}{2}[F_{36}^2]2$	$1296{=}2^4 3^4$	$+$	266	264	$\frac{2}{1}\frac{3}{2}^3$	d,n,K,$\mathfrak{e}^{-1}Q$	6,3
216	$[3^4{:}2]D(4)_4$	$1296{=}2^4 3^4$	$+$	243	274	$\frac{2}{1}\frac{3}{2}\frac{6}{9}$	d,b,h,$\mathfrak{x}$	6a,3
217	$[3^4{:}2]D(4)$	$1296{=}2^4 3^4$	$-$	248	274	$\frac{2}{1}\frac{3}{2}\frac{6}{9}$	d,b,e,k	6,3
218	$PGL(2,11)$	$1320{=}2^3 3{\cdot}5{\cdot}11$	$-$	218	301	$\frac{11}{4}$	$\mathfrak{i}$,$\mathcal{W}$, $(1,2,4,8,5,10,9,7,3,6)$	
219	$S(6)[\times]2$	$1440{=}2^5 3^2 5$	$+$	219	219	$\frac{5}{5}^2$	R,p,f	6,2
220	$M_{10}.2(12)$ $= A_6.E_4(12)$ $= [S_6[\frac{1}{720}]\{M_{10}\}S_6]2$	$1440{=}2^5 3^2 5$	$+$	220	299	$\frac{5}{5}\frac{6}{14}$	$\mathcal{J}$,$\mathcal{G}$, $(0,2)(1,9)(3,7)(5,11)$, $\mathcal{T}$	6
221	$[\frac{1}{2}cD(4)^3]S(3)$	$1536{=}2^9 3$	$-$	250	250	$\frac{2}{1}\frac{8}{35}$	y,$\mathcal{A}$,a,b	4,2a
222	$[D(4)^4]3 = D(4) \wr 3$	$1536{=}2^9 3$	$-$	250	222	$\frac{2}{1}\frac{4}{3}^2$	y,$\mathfrak{C}$,a	4,2a
223	$\frac{1}{2}e[D(4)^3]S(3)$	$1536{=}2^9 3$	$-$	250	250	$\frac{2}{1}\frac{8}{35}$	l,g,$\mathcal{A}$,a,w	4,2a
224	$[2^6]S_4(6c)$ $= 2 \wr S_4(6c)$	$1536{=}2^9 3$	$-$	250	250	$\frac{2}{1}\frac{8}{27}$	x,s,a,J	4a,2
225	$\frac{1}{2}c[D(4)^3]S(3)$	$1536{=}2^9 3$	$-$	250	250	$\frac{2}{1}\frac{8}{35}$	y,$\mathcal{A}$,a,w	4,2a
226	$[2^5]2S_4(6)$	$1536{=}2^9 3$	$+$	250	250	$\frac{2}{1}\frac{8}{35}$	c,$\mathcal{B}$,a,m	4a,2

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
227	$[2^6]S_4(6d) = 2 \wr S_4(6d)$	$1536{=}2^9 3$	$-$	250	250	$\frac{2}{1}\frac{8}{31}$	x,s,a,m	4a,2
228	$\frac{1}{3}[A(4)^3]3$	$1728{=}2^6 3^3$	$+$	276	292	$\frac{3}{1}\frac{4}{4}^2$	l,g,U,Ga	4
229	$[\frac{1}{3}A(4)^3]3$	$1728{=}2^6 3^3$	$+$	283	292	$\frac{3}{1}\frac{4}{4}^2$	l,g,U,a	4
230	$[2^5]L(6)$	$1920{=}2^7 3{\cdot}5$	$+$	270	293	$\frac{10}{15}$	c,E,$\mathcal{D}$	2
231	$[3^4]S(4)$ $= 3 \wr S(4)$	$1944{=}2^3 3^5$	$-$	258	231	$\frac{9}{20}$	d,e,B	3
232	$[3^4{:}2]A(4)_4$	$1944{=}2^3 3^5$	$+$	259	289	$\frac{2}{1}\frac{9}{22}$	d,b,o,Vq	3
233	$\frac{1}{2}[3^4{:}2]S(4)$	$1944{=}2^3 3^5$	$-$	258	289	$\frac{2}{1}\frac{9}{21}$	d,q,o,w	3
234	$[3^4{:}2]A(4)$	$1944{=}2^3 3^5$	$+$	258	289	$\frac{2}{1}\frac{9}{22}$	d,b,q,o	3
235	$[2^5]F_{36}{:}2_2\{S_3^2, t\}$	$2304{=}2^8 3^2$	$-$	260	260	$\frac{4}{3}\frac{6}{11}$	c,M,p,$\mathfrak{n}$,$\mathcal{S}$	6a,2
236	$[2^5]F_{36}(6){:}2$	$2304{=}2^8 3^2$	$+$	260	260	$\frac{4}{3}\frac{6}{11}$	c,t,$\mathfrak{F}$,h	6a,2
237	$[2^5]F_{36}{:}2_2\{S_3^2, i\}$	$2304{=}2^8 3^2$	$-$	260	260	$\frac{4}{3}\frac{6}{11}$	c,M,$\mathfrak{F}$,$\mathcal{K}\mathcal{S}$	6a,2
238	$[2^5]F_{36}{:}2_2\{3^2{:}4\}$	$2304{=}2^8 3^2$	$-$	260	260	$\frac{4}{3}\frac{6}{11}$	c,M,$\mathfrak{f}$,$\mathcal{S}$	6a,2
239	$[E(4)^3{:}3{:}2]3$	$2304{=}2^8 3^2$	$-$	239	294	$\frac{3}{2}\frac{8}{41}$	l,g,q,B,a,b	4
240	$[2^6]F_{18}{:}2$ $= 2 \wr F_{18}(6){:}2$	$2304{=}2^8 3^2$	$-$	260	260	$\frac{4}{3}\frac{6}{11}$	x,t,m,h	6a,2
241	$[2^6]F_{36}$ $= 2 \wr F_{36}(6)$	$2304{=}2^8 3^2$	$-$	260	260	$\frac{4}{3}\frac{6}{11}$	x,t,m,K	6a,2
242	$[3^4{:}2^3]E(4)$	$2592{=}2^5 3^4$	$+$	289	261	$\frac{2}{1}\frac{3}{2}^3$	d,V,n,i,h	6b,6,6a,3
243	$[3^4{:}2^2]D(4)_4$	$2592{=}2^5 3^4$	$+$	266	274	$\frac{2}{1}\frac{3}{2}\frac{6}{9}$	d,n,i, $(1,7)(3,9)(5,11)(6,10)$	6,3
244	$\frac{1}{2}[S(3)^4]4$	$2592{=}2^5 3^4$	$+$	274	264	$\frac{2}{1}\frac{3}{2}^3$	d,n,h,$\mathfrak{e}$	6,3
245	$[3^4{:}2^3]4$	$2592{=}2^5 3^4$	$-$	274	264	$\frac{2}{1}\frac{3}{2}^3$	d,V,e	6,3
246	$\frac{1}{2}[S(3)^4]E(4)$	$2592{=}2^5 3^4$	$-$	274	261	$\frac{2}{1}\frac{3}{2}^3$	d,n,i,Wh	6b,6,6a,3
247	$[3^4{:}2^2]D(4)_2$	$2592{=}2^5 3^4$	$-$	267	274	$\frac{2}{1}\frac{3}{2}\frac{6}{10}$	d,n,e,VL	6,3
248	$[3^4{:}2^2]D(4)$	$2592{=}2^5 3^4$	$-$	267	274	$\frac{2}{1}\frac{3}{2}\frac{6}{9}$	d,n,e,k	6,3
249	$[F_{36}^2]2 = F_{36} \wr 2$	$2592{=}2^5 3^4$	$+$	266	274	$\frac{2}{1}\frac{3}{2}\frac{6}{10}$	d,n,$o\mathcal{H}$,f	6,3

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
250	$[D(4)^4]S(3)$ $= D(4) \wr S(3)$	$3072{=}2^{10}3$	$-$	250	250	$\frac{2}{1}\frac{8}{35}$	$y,\mathfrak{C},a,b$	4,2a
251	$[\frac{1}{3}A(4)^3]S(3)_2$	$3456{=}2^7 3^3$	$-$	268	294	$\frac{3}{2}\frac{8}{42}$	$l,g,U,a,\mathfrak{d}$	4
252	$[\frac{1}{3}A(4)^3]S(3)$	$3456{=}2^7 3^3$	$+$	283	294	$\frac{3}{1}\frac{8}{42}$	l,g,U,a,b	4
253	$[E(4)^3{:}3^2{:}2]3$	$3456{=}2^7 3^3$	$-$	268	292	$\frac{3}{2}\frac{4}{5}^2$	$l,g,\mathcal{X},\mathcal{N},a$	4
254	$[\frac{1}{3}A(4)^3]S(3)_6$	$3456{=}2^7 3^3$	$-$	254	294	$\frac{3}{2}\frac{8}{42}$	$l,g,U,\ (0,4)(1,6)(3,7)(8,11)(9,10),\ \mathfrak{d}$	4
255	$[2^6]L(6)$ $= 2 \wr L(6)$	$3840{=}2^8 3{\cdot}5$	$-$	270	293	$\frac{10}{23}$	$x,E,\mathcal{D}$	2
256	$\frac{1}{2}[2^6]L(6){:}2$	$3840{=}2^8 3{\cdot}5$	$-$	270	293	$\frac{10}{25}$	c,E,xO	2
257	$[2^5]L(6){:}2$	$3840{=}2^8 3{\cdot}5$	$+$	270	293	$\frac{10}{24}$	c,E,O	2
258	$[3^4{:}2]S(4)$	$3888{=}2^4 3^5$	$-$	258	289	$\frac{2}{1}\frac{9}{24}$	d,b,e,B	3
259	$[3^4{:}2]S(4)_8$	$3888{=}2^4 3^5$	$+$	259	289	$\frac{2}{1}\frac{9}{24}$	$d,b,o,\ (0,3)(4,7)(6,10)(8,11)$	3
260	$[2S_4^2]2 = 2S_4 \wr 2$	$4608{=}2^9 3^2$	$-$	260	260	$\frac{4}{3}\frac{6}{11}$	$\mathcal{R},r,n,f$	6,2a
261	$[S(3)^4]E(4)$ $= S(3) \wr E(4)$	$5184{=}2^6 3^4$	$-$	289	261	$\frac{2}{1}\frac{3}{2}^3$	d,W,i,h	6b,6,6a,3
262	$\frac{1}{2}[S(3)^4]dD(4)$	$5184{=}2^6 3^4$	$-$	274	274	$\frac{2}{1}\frac{3}{2}\frac{6}{13}$	$d,n,\mathcal{O},k,\mathfrak{e}$	6,3
263	$\frac{1}{2}[S(3)^4]cD(4)$	$5184{=}2^6 3^4$	$-$	274	274	$\frac{2}{1}\frac{3}{2}\frac{6}{13}$	$d,n,e,\mathcal{F}$	6,3
264	$[S(3)^4]4 = S(3) \wr 4$	$5184{=}2^6 3^4$	$-$	274	264	$\frac{2}{1}\frac{3}{2}^3$	d,W,e	6,3
265	$[A(4)^3]3$ $= A(4) \wr 3$	$5184{=}2^6 3^4$	$+$	283	292	$\frac{3}{1}\frac{4}{4}^2$	G,H,a	4
266	$\frac{1}{2}[S(3)^4]eD(4)$	$5184{=}2^6 3^4$	$+$	274	274	$\frac{2}{1}\frac{3}{2}\frac{6}{13}$	$d,n,i,h,\mathcal{F}$	6,3
267	$[3^4{:}2^3]D(4)$	$5184{=}2^6 3^4$	$-$	274	274	$\frac{2}{1}\frac{3}{2}\frac{6}{13}$	d,V,e,k	6,3
268	$[E(4)^3{:}3^2{:}2]S(3)$	$6912{=}2^8 3^3$	$-$	268	294	$\frac{3}{2}\frac{8}{45}$	$l,g,\mathcal{X},\mathcal{N},a,b$	4
269	$[L(6)^2]2$ $= L(6) \wr 2$	$7200{=}2^5 3^2 5^2$	$+$	279	299	$\frac{5}{2}\frac{6}{12}$	$\mathcal{C},\ (0,10)(2,8),\ f$	6

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
270	$[2^6]L(6){:}2$ $= 2 \wr L(6){:}2$	$7680{=}2^9 3{\cdot}5$	$-$	270	293	$\frac{10}{29}$	x,E,O	2
271	$[3^4{:}2^3]A(4)$	$7776{=}2^5 3^5$	$+$	289	289	$\frac{2}{1}\frac{9}{28}$	d,V,q,o	3
272	$M_{11}(12)$	$7920{=}2^4 3^2 5{\cdot}11$	$+$	272	301	$\frac{11}{5}$	$(0,1,7,3,10,5,9,6)(2,11,8,4)$, $(0,10,4,5,11,8,2,7)(1,6,3,9)$	
273	$[\frac{1}{4}S(4)^3]3$	$10368{=}2^7 3^4$	$-$	283	292	$\frac{3}{2}\frac{4}{5}^2$	$G,H,\mathfrak{A},a$	4
274	$[S(3)^4]D(4)$ $= S(3) \wr D(4)$	$10368{=}2^7 3^4$	$-$	274	274	$\frac{2}{1}\frac{3}{2}\frac{6}{13}$	d,W,e,k	6,3
275	$[A(4)^3]S(3)$ $= A(4) \wr S(3)$	$10368{=}2^7 3^4$	$+$	283	294	$\frac{3}{1}\frac{8}{42}$	G,H,a,b	4
276	$\frac{1}{2}[\frac{1}{4}S(4)^3]S(3)$	$10368{=}2^7 3^4$	$-$	283	294	$\frac{3}{2}\frac{8}{42}$	$G,H,a,\mathfrak{A}b$	4
277	$[2^5]A(6)$	$11520{=}2^8 3^2 5$	$+$	293	293	$\frac{10}{34}$	c,S,F	2
278	$\frac{1}{2}[(L(6){:}2)^2]2$	$14400{=}2^6 3^2 5^2$	$-$	288	299	$\frac{5}{3}\frac{6}{14}$	$\mathcal{C},O,B/\mathfrak{s}$	6
279	$[\frac{1}{2}(L(6){:}2)^2]2$	$14400{=}2^6 3^2 5^2$	$+$	288	299	$\frac{5}{3}\frac{6}{14}$	$\mathcal{C},O,f$	6
280	$[S(3)^4]A(4)$ $= S(3) \wr A(4)$	$15552{=}2^6 3^5$	$-$	289	289	$\frac{2}{1}\frac{9}{28}$	d,W,q,o	3
281	$[3^4{:}2^3]S(4)$	$15552{=}2^6 3^5$	$-$	289	289	$\frac{2}{1}\frac{9}{31}$	$d,V,e,\mathcal{N}$	3
282	$\frac{1}{2}[S(3)^4]S(4)$	$15552{=}2^6 3^5$	$+$	289	289	$\frac{2}{1}\frac{9}{31}$	$d,n,q,o,\mathcal{F}$	3
283	$[\frac{1}{4}S(4)^3]S(3)$	$20736{=}2^8 3^4$	$-$	283	294	$\frac{3}{2}\frac{8}{45}$	$G,H,\mathfrak{A},a,b$	4
284	$[\frac{1}{2}S(4)^3]3$	$20736{=}2^8 3^4$	$+$	294	292	$\frac{3}{2}\frac{4}{5}^2$	$G,H,\mathfrak{B},a$	4
285	$[2^5]S(6)$	$23040{=}2^9 3^2 5$	$+$	293	293	$\frac{10}{37}$	c,R,p	2
286	$[2^6]A(6)$ $= 2 \wr A(6)$	$23040{=}2^9 3^2 5$	$-$	293	293	$\frac{10}{36}$	x,S,F	2
287	$\frac{1}{2}[2^6]S(6)$	$23040{=}2^9 3^2 5$	$-$	293	293	$\frac{10}{38}$	c,S,F,xR	2
288	$[(L(6){:}2)^2]2$ $= L(9){:}2 \wr 2$	$28800{=}2^7 3^2 5^2$	$-$	288	299	$\frac{5}{3}\frac{6}{14}$	$\mathcal{C},\mathfrak{k}\mathcal{O},f$	6

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
289	$[S(3)^4]S(4)$ $= S(3) \wr S(4)$	$31104{=}2^7 3^5$	$-$	289	289	$\frac{2}{1}\frac{9}{31}$	d,W,e,B	3
290	$[\frac{1}{2}S(4)^3]S(3)$	$41472{=}2^9 3^4$	$+$	294	294	$\frac{3}{2}\frac{8}{47}$	G,H,$\mathfrak{B}$,a,b	4
291	$\frac{1}{2}[S(4)^3]S(3)$	$41472{=}2^9 3^4$	$-$	294	294	$\frac{3}{2}\frac{8}{47}$	G,H,$\mathfrak{B}C$,a,$\mathcal{M}$	4
292	$[S(4)^3]3$ $= S(4) \wr 3$	$41472{=}2^9 3^4$	$-$	294	292	$\frac{3}{2}\frac{4}{5}^2$	y,$\mathfrak{H}$,a	4
293	$[2^6]S(6)$ $= 2 \wr S(6)$	$46080{=}2^{10} 3^2 5$	$-$	293	293	$\frac{10}{39}$	x,R,p	2
294	$[S(4)^3]S(3)$ $=$ $S(4) \wr S(3)$	$82944{=}2^{10} 3^4$	$-$	294	294	$\frac{3}{2}\frac{8}{47}$	y,$\mathfrak{H}$,a,b	4
295	$M(12)$	$95040{=}2^6 3^3 5{\cdot}11$	$+$	295	301	$\frac{11}{6}$	$(0,6,7,5,8)(1,11,2,3,4)$, $(0,11,8,2,4,1,9,5)(6,10)$	
296	$[A(6)^2]2$ $= A(6) \wr 2$	$259200{=}2^7 3^4 5^2$	$+$	297	299	$\frac{5}{4}\frac{6}{15}$	$\mathcal{P}$,$\mathcal{Q}$,f	6
297	$[\frac{1}{2}S(6)^2]2$	$518400{=}2^8 3^4 5^2$	$+$	299	299	$\frac{5}{5}\frac{6}{16}$	$\mathcal{Q}$,$\mathcal{P}$,R,f	6
298	$\frac{1}{2}[S(6)^2]2$	$518400{=}2^8 3^4 5^2$	$-$	299	299	$\frac{5}{5}\frac{6}{16}$	$\mathcal{P}$,$\mathcal{Q}$,R,$\mathrm{j}f$	6
299	$[S(6)^2]2$ $= S(6) \wr 2$	$1036800{=}2^9 3^4 5^2$	$-$	299	299	$\frac{5}{5}\frac{6}{16}$	j,Iw,f	6
300	A_{12}	$239500800{=}\frac{12!}{2}$	$+$	301	301	$\frac{11}{7}$	$x\mathrm{j}$, $(0,2,3)$, $(0,3,4)$, $(0,4,5)$, $(0,5,6)$, $(0,6,7)$, $(0,7,8)$, $(0,8,9)$, $(0,9,10)$, $(0,10,11)$	
301	S_{12}	$479001600{=}12!$	$-$	301	301	$\frac{11}{8}$	x,j,$\mathfrak{H}l$,Wd, $(0,5)$, $\mathcal{R}$, $(0,7)$, dW,$G^{-1}y$, $(0,10)$, $(0,11)$	

Degree 13:

Generator: $a = (0,1,2,3,4,5,6,7,8,9,10,11,12)$

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators
1	$C(13) = 13$	13=13	+	6	1		a
2	$D(13)$ $= 13{:}2$	26=2·13	+	6	2	$\frac{2}{1}^{6}$	$a,\ (1,12)(2,11)(3,10)(4,9)(5,8)(6,7)$
3	$F_{39}(13)$ $= 13{:}3$	39=3·13	+	6	3	$\frac{3}{1}^{4}$	$a,\ (1,3,9)(2,6,5)(4,12,10)(7,8,11)$
4	$F_{52}(13)$ $= 13{:}4$	$52{=}2^2 13$	−	6	4	$\frac{4}{1}^{3}$	$a,\ (1,5,12,8)(2,10,11,3)(4,7,9,6)$
5	$F_{78}(13)$ $= 13{:}6$	78=2·3·13	+	6	5	$\frac{6}{1}^{2}$	$a,\ (1,4,3,12,9,10)(2,8,6,11,5,7)$
6	$F_{156}(13)$ $= 13{:}12$	$156{=}2^2 3{\cdot}13$	−	6	9	$\frac{12}{1}$	$a,\ (1,2,4,8,3,6,12,11,9,5,10,7)$
7	$L(13)$ $= PSL(3,3)$	$5616{=}2^4 3^3 13$	+	7	9	$\frac{12}{157}$	$a,\ (2,12)(4,11)(5,6)(7,10)$
8	A_{13}	$3113510400{=}\frac{13!}{2}$	+	9	9	$\frac{12}{300}$	$(0,1,2),\ (0,2,3),\ (0,3,4),\ (0,4,5),\ (0,5,6),\ (0,6,7),$ $(0,7,8),\ (0,8,9),\ (0,9,10),\ (0,10,11),\ (0,11,12)$
9	S_{13}	6227020800=13!	−	9	9	$\frac{12}{301}$	$(0,1),\ (0,2),\ (0,3),\ (0,4),\ (0,5),\ (0,6),$ $(0,7),\ (0,8),\ (0,9),\ (0,10),\ (0,11),\ (0,12)$

Degree 14:

Generators:

$a = (0,2,4,6,8,10,12)(1,3,5,7,9,11,13)$

$b = (1,9,11)(2,4,8)(3,13,5)(6,12,10)$

$c = (0,7)(1,8)(2,9)(3,10)(4,11)(5,12)(6,13)$

$d = (0,2,4,6,8,10,12)$

$e = (1,13)(2,12)(3,11)(4,10)(5,9)(6,8)$

$f = (0,7)(2,9)$

$g = (0,7)$

$h = (3,13,5)(6,12,10)$

$i = (2,4)(5,13)(6,12)(9,11)$

$j = (2,4,8)(6,12,10)$

$k = (1,11,9)(2,4,8)(3,5,13)(6,12,10)$

$l = (1,8)(2,9)(4,11)$

Blocks:

$$
\begin{aligned}
m &= (0,7)(1,6,13,8)(2,9,12,5)(3,4,11,10) & t &= (1,8)(2,13)(3,10)(4,12)(5,11)(6,9) & 2 &= [0,7]\\
n &= (2,12)(4,10)(6,8) & u &= (1,8)(2,11)(3,10)(4,9)(5,6)(12,13) & 7 &= [0,2,4,6,8,10,12]\\
o &= (0,7)(3,10)(5,12)(6,13) & v &= (0,1,2,3,4,5,6,7,8,9,10,11,12) & &\\
p &= (3,5)(10,12) & w &= (0,1,2,3,4,5,6,7,8,9,10,11,12,13) & &\\
q &= (8,12,10) & x &= (0,2)(7,9) & &\\
r &= (0,7)(1,13)(2,12)(3,11)(4,10)(5,9)(6,8) & & & &\\
s &= (0,13)(1,12)(2,6)(3,4)(7,11)(9,10) & & & &
\end{aligned}
$$

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
1	$C(14)$ $= 7[\times]2$	$14{=}2{\cdot}7$	$-$	7	1		w	7,2
2	$D_{14}(14)$ $= [7]2$	$14{=}2{\cdot}7$	$-$	24	2		a,we	[0,13],7,[0,11],[0,9], 2,[0,5],[0,3],[0,1]
3	$D(7)[\times]2$	$28{=}2^2 7$	$-$	7	3	$\frac{2}{1}^6$	w,e	7,2
4	$2[\frac{1}{2}]F_{42}(7)$	$42{=}2{\cdot}3{\cdot}7$	$-$	7	4	$\frac{3}{1}^4$	a,b,ec	7,2
5	$F_{21}(7)[\times]2$	$42{=}2{\cdot}3{\cdot}7$	$-$	7	5	$\frac{3}{1}^4$	a,b,c	7,2
6	$[2^3]7$	$56{=}2^3 7$	$+$	18	29	$\frac{2}{1}^6$	o,a	2
7	$F_{42}(7)[\times]2$	$84{=}2^2 3{\cdot}7$	$-$	7	49	$\frac{6}{1}^2$	a,b,e,c	7,2
8	$[7^2]2$ $= 7 \wr 2$	$98{=}2{\cdot}7^2$	$-$	24	8	$\frac{7}{1}$	d,c	7
9	$[2^4]7$	$112{=}2^4 7$	$-$	18	29	$\frac{2}{1}^6$	l,a	2
10	$L_7(14)$	$168{=}2^3 3{\cdot}7$	$+$	17	57	$\frac{12}{4}$	a,b,t	2
11	$[2^3]F_{21}(7)$	$168{=}2^3 3{\cdot}7$	$+$	18	44	$\frac{6}{4}^2$	o,a,b	2
12	$\frac{1}{2}[D(7)^2]2$	$196{=}2^2 7^2$	$+$	32	20	$\frac{2}{1}^3 \frac{7}{2}$	d,e,m	7
13	$[\frac{1}{2}D(7)^2]2$	$196{=}2^2 7^2$	$-$	32	20	$\frac{2}{1}^3 \frac{7}{2}$	d,e,c	7
14	$[7^2{:}3]2$	$294{=}2{\cdot}3{\cdot}7^2$	$-$	24	26	$\frac{3}{1}^2 \frac{7}{3}$	d,b,c	7

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
15	$[7^2{:}3_3]2$	$294{=}2{\cdot}3{\cdot}7^2$	$-$	37	26	${\frac{3}{1}}^{2}\frac{7}{3}$	d,k,c	7
16	$L_7{:}2(14)$ $=[L(7)_{\div}]2$	$336{=}2^4 3{\cdot}7$	$-$	16	16	$\frac{3}{2}\frac{4}{5}\frac{6}{7}$	$(0,2,4,6,8,10,12)(1,13,11,9,7,5,3),\ b,i,c$	7
17	$2L_7(14)$ $=[2]L(7)$	$336{=}2^4 3{\cdot}7$	$-$	17	57	$\frac{12}{8}$	a,b,t,c	2
18	$[2^4]F_{21}(7)$	$336{=}2^4 3{\cdot}7$	$-$	18	44	$\frac{6}{4}\frac{6}{6}$	l,a,b	2
19	$L(7)[\times]2$	$336{=}2^4 3{\cdot}7$	$-$	19	49	${\frac{6}{7}}^{2}$	a,b,i,c	7,2
20	$[D(7)^2]2$ $=D(7)\wr 2$	$392{=}2^3 7^2$	$-$	32	20	${\frac{2}{1}}^{3}\frac{7}{2}$	d,n,c	7
21	$[2^6]7$	$448{=}2^6 7$	$+$	48	29	${\frac{2}{1}}^{6}$	f,a	2
22	$[\frac{1}{6}{}_{-}.F_{42}(7)^2]2_2$	$588{=}2^2 3{\cdot}7^2$	$+$	45	61	$\frac{6}{1}\frac{7}{4}$	d,k,e,m	7
23	$[\frac{1}{6}{}_{+}.F_{42}(7)^2]2_2$	$588{=}2^2 3{\cdot}7^2$	$+$	32	61	$\frac{6}{1}\frac{7}{4}$	d,b,e,m	7
24	$[7^2{:}6]2$	$588{=}2^2 3{\cdot}7^2$	$-$	32	61	$\frac{6}{1}\frac{7}{4}$	d,b,e,c	7
25	$[7^2{:}6_3]2$	$588{=}2^2 3{\cdot}7^2$	$-$	45	61	$\frac{6}{1}\frac{7}{4}$	d,k,e,c	7
26	$\frac{1}{2}[\frac{1}{2}F_{42}(7)^2]2$	$882{=}2{\cdot}3^2 7^2$	$-$	37	26	${\frac{3}{1}}^{2}\frac{7}{3}$	$d,j,\ (0,7)(1,8)(2,5)(3,4)(6,13)(9,12)(10,11)$	7
27	$2^7[\frac{1}{2}]D(7)$	$896{=}2^7 7$	$-$	48	38	${\frac{4}{3}}^{3}$	f,a,r	2
28	$[2^6]D(7)$	$896{=}2^7 7$	$+$	48	38	${\frac{4}{3}}^{3}$	f,a,e	2
29	$[2^7]7=2\wr 7$	$896{=}2^7 7$	$-$	48	29	${\frac{2}{1}}^{6}$	g,a	2
30	$L(14)$ $=PSL(2,13)$	$1092{=}2^2 3{\cdot}7{\cdot}13$	$+$	39	63	$\frac{13}{5}$	$v,\ (1,4,3,12,9,10)(2,8,6,11,5,7),\ s$	
31	$[D(7)^2{:}3_3]2$	$1176{=}2^3 3{\cdot}7^2$	$-$	45	61	$\frac{6}{1}\frac{7}{4}$	d,n,k,c	7
32	$[D(7)^2{:}3]2$	$1176{=}2^3 3{\cdot}7^2$	$-$	32	61	$\frac{6}{1}\frac{7}{4}$	d,n,b,c	7
33	$2^{3\cdot}L_7(14)$	$1344{=}2^6 3{\cdot}7$	$+$	42	57	$\frac{12}{63}$	o,a,b,u	2
34	$2^3{:}L_7(14)$ $=[2^3]L(7)$ $=[2^3]L(3,2)$	$1344{=}2^6 3{\cdot}7$	$+$	43	57	$\frac{12}{67}$	o,a,b,i	2

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
35	$[2^6]F_{21}(7)$	$1344{=}2^6 3{\cdot}7$	+	48	44	$\frac{6}{6}^2$	f,a,b	2
36	$\frac{1}{2}[F_{42}(7)^2]2$	$1764{=}2^2 3^2 7^2$	+	45	61	$\frac{6}{1}\frac{7}{4}$	d,j,e,m	7
37	$[\frac{1}{2}F_{42}(7)^2]2$	$1764{=}2^2 3^2 7^2$	−	45	61	$\frac{6}{1}\frac{7}{4}$	d,j,e,c	7
38	$[2^7]D(7)$	$1792{=}2^8 7$	−	48	38	$\frac{4}{3}^3$	g,a,e	2
	$= 2 \wr D(7)$							
39	$L(14)$:2	$2184{=}2^3 3{\cdot}7{\cdot}13$	−	39	63	$\frac{13}{6}$	$v,\ (1,2,4,8,3,6,12,11,9,5,10,7),\ s$	
	$= PGL(2,13)$							
40	$\frac{1}{2}[2^7]F_{42}(7)$	$2688{=}2^7 3{\cdot}7$	−	48	57	$\frac{12}{105}$	f,a,b,r	2
41	$[2^6]F_{42}(7)$	$2688{=}2^7 3{\cdot}7$	+	48	57	$\frac{12}{87}$	f,a,b,e	2
42	$2^{4\cdot}L_7(14)$	$2688{=}2^7 3{\cdot}7$	−	42	57	$\frac{12}{115}$	l,a,b,u	2
43	$2^4{:}L_7(14)$	$2688{=}2^7 3{\cdot}7$	−	43	57	$\frac{12}{110}$	l,a,b,i	2
	$= [2^4]L(7)$							
44	$[2^7]F_{21}(7)$	$2688{=}2^7 3{\cdot}7$	−	48	44	$\frac{6}{6}^2$	g,a,b	2
	$= 2 \wr F_{21}(7)$							
45	$[F_{42}(7)^2]2$	$3528{=}2^3 3^2 7^2$	−	45	61	$\frac{6}{1}\frac{7}{4}$	d,j,n,c	7
	$= F_{42}(7) \wr 2$							
46	$2[\frac{1}{2}]S(7)$	$5040{=}2^4 3^2 5{\cdot}7$	−	49	49	$\frac{6}{15}^2$	a,h,xc	7,2
47	$2[\times]A(7)$	$5040{=}2^4 3^2 5{\cdot}7$	−	49	49	$\frac{6}{15}^2$	a,h,c	7,2
48	$[2^7]F_{42}(7)$	$5376{=}2^8 3{\cdot}7$	−	48	57	$\frac{12}{134}$	g,a,b,e	2
	$= 2 \wr F_{42}(7)$							
49	$2[\times]S(7)$	$10080{=}2^5 3^2 5{\cdot}7$	−	49	49	$\frac{6}{16}^2$	a,p,c	7,2
50	$[2^6]L(7)$	$10752{=}2^9 3{\cdot}7$	+	51	57	$\frac{12}{184}$	f,a,b,i	2
51	$[2^7]L(7)$	$21504{=}2^{10} 3{\cdot}7$	−	51	57	$\frac{12}{227}$	g,a,b,i	2
	$= 2 \wr L(7)$							
52	$[L(7)^2]2$	$56448{=}2^7 3^2 7^2$	−	52	61	$\frac{6}{7}\frac{7}{5}$	d,j, $(2,4)(6,12)$, c	7
	$= L(7) \wr 2$							
53	$[2^6]A(7)$	$161280{=}2^9 3^2 5{\cdot}7$	+	57	57	$\frac{12}{277}$	f,a,h	2

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
54	$\frac{1}{2}[2^7]S(7)$	$322560{=}2^{10}3^2 5{\cdot}7$	$-$	57	57	$\frac{12}{287}$	f,a,h,pg	2
55	$[2^6]S(7)$	$322560{=}2^{10}3^2 5{\cdot}7$	$+$	57	57	$\frac{12}{285}$	f,a,h,p	2
56	$[2^7]A(7)$ $= 2 \wr A(7)$	$322560{=}2^{10}3^2 5{\cdot}7$	$-$	57	57	$\frac{12}{286}$	g,a,h	2
57	$[2^7]S(7)$	$645120{=}2^{11}3^2 5{\cdot}7$	$-$	57	57	$\frac{12}{293}$	g,a,h,p	2
58	$[A(7)^2]2$ $= A(7) \wr 2$	$12700800{=}2^7 3^4 5^2 7^2$	$-$	60	61	$\frac{6}{15}\frac{7}{6}$	d,q,c	7
59	$\frac{1}{2}[S(7)^2]2$	$25401600{=}2^8 3^4 5^2 7^2$	$+$	61	61	$\frac{6}{16}\frac{7}{7}$	d,q,x, $(0,7,2,9)(1,8)(3,10)(4,11)(5,12)(6,13)$	7
60	$[\frac{1}{2}S(7)^2]2$	$25401600{=}2^8 3^4 5^2 7^2$	$-$	61	61	$\frac{6}{16}\frac{7}{7}$	d,q,x,c	7
61	$[S(7)^2]2$ $= S(7) \wr 2$	$50803200{=}2^9 3^4 5^2 7^2$	$-$	61	61	$\frac{6}{16}\frac{7}{7}$	d, $(10,12)$, c	7
62	A_{14}	$43589145600{=}\frac{14!}{2}$	$+$	63	63	$\frac{13}{8}$	$(0,1,2)$, $(0,2,3)$, $(0,3,4)$, $(0,4,5)$, $(0,5,6)$, $(0,6,7)$, $(0,7,8)$, $(0,8,9)$, $(0,9,10)$, $(0,10,11)$, $(0,11,12)$, $(0,12,13)$	
63	S_{14}	$87178291200{=}14!$	$-$	63	63	$\frac{13}{9}$	$(0,1)$, $(0,2)$, $(0,3)$, $(0,4)$, $(0,5)$, $(0,6)$, g, $(0,8)$, $(0,9)$, $(0,10)$, $(0,11)$, $(0,12)$, $v^{-1}w$	

Degree 15:

Generators:

$$a = (0,5,10)(1,6,11)(2,7,12)(3,8,13)(4,9,14)$$
$$b = (0,3,6,9,12)(1,4,7,10,13)(2,5,8,11,14)$$
$$c = (0,3,6,9,12)$$
$$d = (1,11)(2,7)(4,14)(5,10)(8,13)$$
$$e = (0,5,10)$$
$$f = (1,4)(2,8)(3,12)(6,9)(7,13)(11,14)$$
$$g = (1,7,4,13)(2,14,8,11)(3,6,12,9)$$
$$h = (1,6,11)(4,14,9)$$
$$i = (0,1,2,3,4,5,6,7,8,9,10,11,12,13,14)$$
$$j = (1,4)(6,9)(11,14)$$
$$k = (1,13)(2,14)(3,6)(4,7)(8,11)(9,12)$$
$$l = (1,13,10,7,4)(2,5,8,11,14)$$
$$m = (1,11)(4,14)$$
$$n = (0,7,12,6,2)(1,9,10,3,14)(4,5,11,13,8)$$

$$
\begin{aligned}
o &= (3,6)(9,12) \\
p &= (1,2,4,8)(3,6,12,9)(5,10)(7,14,13,11) \\
q &= (3,12)(6,9) \\
r &= (1,14)(2,13)(3,12)(4,11)(5,10)(6,9)(7,8) \\
s &= (5,10) \\
t &= (1,14)(2,7)(4,11)(5,10)(6,9)(8,13) \\
u &= (1,13,4,7)(2,14,8,11) \\
v &= (0,6,9)(1,4,10)(2,5,8)(3,7,11)(12,14,13)
\end{aligned}
$$

$$
\begin{aligned}
w &= (0,4)(1,5)(2,7)(3,6)(8,9)(12,13) \\
x &= (1,4)(2,8)(7,13)(11,14) \\
y &= (0,5)(1,4)(2,6)(3,7)(8,9)(12,13) \\
z &= (1,4)(11,14) \\
A &= (0,1,2)(4,5,6)(8,9,10)(12,13,14) \\
B &= (1,7,4,13)(2,14,8,11) \\
C &= (3,6,12,9)
\end{aligned}
$$

$$D = (6,9)$$

Blocks:

$$
\begin{aligned}
3 &= [0,5,10] \\
5 &= [0,3,6,9,12]
\end{aligned}
$$

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
1	$C(15)$ $= 5[\times]3$	15=3·5	+	11	1		i	5,3
2	$D(15)$	30=2·3·5	−	11	2	${\frac{2}{1}}^{7}$	i,r	5,3
3	$D(5)[\times]3$	30=2·3·5	+	11	3	${\frac{2}{1}}^{6}$	i,f	5,3
4	$5[\times]S(3)$	30=2·3·5	−	11	4	${\frac{2}{1}}^{5}$	i,d	5,3
5	$A_5(15)$	60=$2^2$3·5	+	21	5	${\frac{4}{2}}^{3}$	n,v	3
6	$F(5)[\frac{1}{2}]S(3)$	60=$2^2$3·5	+	11	6	$\frac{2}{1}{\frac{4}{1}}^{3}$	i,f,p	5,3
7	$D(5)[\times]S(3)$	60=$2^2$3·5	−	11	7	${\frac{2}{1}}^{3}{\frac{4}{2}}^{2}$	i,f,d	5,3
8	$F(5)[\times]3$	60=$2^2$3·5	−	11	24	${\frac{4}{1}}^{3}$	i,g	5,3
9	$[5^2]3$	75=3·5^2	+	49	25	${\frac{5}{1}}^{2}$	l,a	5
10	$S_5(15)$	120=$2^3$3·5	+	10	10	$\frac{2}{1}\frac{4}{3}\frac{8}{4}$	n,v,y	3
11	$F(5)[\times]S(3)$	120=$2^3$3·5	−	11	29	$\frac{2}{1}\frac{4}{1}\frac{8}{2}$	i,g,d	5,3
12	$[5^2{:}2]3$	150=2·3·5^2	+	27	50	${\frac{2}{1}}^{2}{\frac{5}{2}}^{2}$	l,a,f	5
13	$[5^2]S(3)$	150=2·3·5^2	−	49	32	$\frac{10}{2}$	l,a,d	5
14	$5^2{:}2[\frac{1}{2}]S(3)$	150=2·3·5^2	−	27	60	${\frac{2}{1}}^{2}\frac{10}{1}$	l,a,r	5
15	$3A_5(15) = [3]A(5)$ $= GL(2,4)$	180=$2^2 3^2$5	+	21	78	$\frac{12}{4}$	n,v,A	3

Nr	Name	$\vert G\vert$	p	N	C	S	Generators	Blocks
16	$A(5)[\times]3$	$180{=}2^2 3^2 5$	+	29	24	$\frac{4}{4}^3$	i,k	5,3
17	$\frac{1}{2}[5^2{:}4]S(3)$	$300{=}2^2 3{\cdot}5^2$	+	27	102	$\frac{4}{1}\frac{10}{4}$	l,a,f,p	5
18	$[5^2{:}2]S(3)$	$300{=}2^2 3{\cdot}5^2$	−	27	60	$\frac{2}{1}^2\frac{10}{3}$	l,a,f,d	5
19	$[5^2{:}4]3$	$300{=}2^2 3{\cdot}5^2$	−	27	101	$\frac{4}{1}\frac{5}{3}^2$	l,g,a	5
20	$A_6(15)$	$360{=}2^3 3^2 5$	+	28	28	$\frac{6}{7}\frac{8}{14}$	n,w	
21	$3S_5(15)$	$360{=}2^3 3^2 5$	+	21	93	$\frac{2}{1}\frac{12}{8}$	n,v,y,A	3
22	$S(5)[\frac{1}{2}]S(3)$	$360{=}2^3 3^2 5$	+	29	29	$\frac{2}{1}\frac{4}{5}\frac{8}{14}$	i,t	5,3
23	$A(5)[\times]S(3)$	$360{=}2^3 3^2 5$	−	29	29	$\frac{2}{1}\frac{4}{4}\frac{8}{13}$	i,k,d	5,3
24	$S(5)[\times]3$	$360{=}2^3 3^2 5$	−	29	24	$\frac{4}{5}^3$	i,j	5,3
25	$[5^3]3 = 5 \wr 3$	$375{=}3{\cdot}5^3$	+	49	25	$\frac{5}{1}^2$	c,a	5
26	$[3^4]5$	$405{=}3^4 5$	+	64	36	$\frac{3}{1}^4$	h,b	3
27	$[5^2{:}4]S(3)$	$600{=}2^3 3{\cdot}5^2$	−	27	102	$\frac{4}{1}\frac{10}{5}$	l,g,a,d	5
28	$S_6(15)$	$720{=}2^4 3^2 5$	+	28	28	$\frac{6}{7}\frac{8}{24}$	n,w,y	
29	$S(5)[\times]S(3)$	$720{=}2^4 3^2 5$	−	29	29	$\frac{2}{1}\frac{4}{5}\frac{8}{24}$	i,j,d	5,3
30	$[5^3{:}2]3$	$750{=}2{\cdot}3{\cdot}5^3$	+	49	50	$\frac{2}{1}^2\frac{5}{2}^2$	c,f,a	5
31	$\frac{1}{2}[5^3{:}2]S(3)$	$750{=}2{\cdot}3{\cdot}5^3$	−	49	60	$\frac{2}{1}^2\frac{10}{6}$	c,a,r	5
32	$[5^3]S(3)$	$750{=}2{\cdot}3{\cdot}5^3$	−	49	32	$\frac{10}{6}$	c,a,d	5
33	$[3^4{:}2]5$	$810{=}2{\cdot}3^4 5$	−	52	81	$\frac{2}{1}\frac{3}{2}^4$	h,b,d	3
34	$[3^4]D(5)$	$810{=}2{\cdot}3^4 5$	+	64	46	$\frac{6}{5}^2$	h,b,f	3
35	$\frac{1}{2}[3^4{:}2]D(5)$	$810{=}2{\cdot}3^4 5$	−	52	86	$\frac{2}{1}\frac{6}{5}^2$	h,b,r	3
36	$[3^5]5 = 3 \wr 5$	$1215{=}3^5 5$	+	64	36	$\frac{3}{1}^4$	e,b	3
37	$\frac{1}{2}[5^3{:}4]S(3)$	$1500{=}2^2 3{\cdot}5^3$	+	49	102	$\frac{4}{1}\frac{10}{10}$	c,f,a,p	5
38	$[5^3{:}4]3$	$1500{=}2^2 3{\cdot}5^3$	−	49	101	$\frac{4}{1}\frac{5}{3}^2$	c,g,a	5
39	$[\frac{1}{2}D(5)^3]3$	$1500{=}2^2 3{\cdot}5^3$	+	68	50	$\frac{2}{1}^2\frac{5}{2}^2$	c,x,a	5

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
40	$[5^3{:}2]S(3)$	$1500{=}2^2 3{\cdot}5^3$	$-$	49	60	${\frac{2}{1}}^2 \frac{10}{9}$	c,f,a,d	5
41	$[3^4]F(5)$	$1620{=}2^2 3^4 5$	$-$	64	78	$\frac{12}{72}$	h,b,g	3
42	$\frac{1}{2}[3^4{:}2]F(5)$	$1620{=}2^2 3^4 5$	$+$	52	93	$\frac{2}{1}\frac{12}{73}$	h,b,p	3
43	$[3^4{:}2]D(5)$	$1620{=}2^2 3^4 5$	$-$	52	86	$\frac{2}{1}{\frac{6}{9}}^2$	h,b,d,f	3
44	$[3^5{:}2]5$	$2430{=}2{\cdot}3^5 5$	$-$	64	81	$\frac{2}{1}{\frac{3}{2}}^4$	e,d,b	3
45	$\frac{1}{2}[3^5{:}2]D(5)$	$2430{=}2{\cdot}3^5 5$	$-$	64	86	$\frac{2}{1}{\frac{6}{5}}^2$	e,b,r	3
46	$[3^5]D(5) = 3 \wr D(5)$	$2430{=}2{\cdot}3^5 5$	$+$	64	46	${\frac{6}{5}}^2$	e,b,f	3
47	$A_7(15)$	$2520{=}2^3 3^2 5{\cdot}7$	$+$	47	104	$\frac{14}{10}$	$n,\ (1,2,3)(5,6,7)(8,10,9)(12,14,13)$	
48	$\frac{1}{2}[D(5)^3]S(3)$	$3000{=}2^3 3{\cdot}5^3$	$-$	68	60	${\frac{2}{1}}^2 \frac{10}{21}$	c,x,a,qd	5
49	$[5^3{:}4]S(3)$	$3000{=}2^3 3{\cdot}5^3$	$-$	49	102	$\frac{4}{1}\frac{10}{17}$	c,g,a,d	5
50	$[D(5)^3]3 = D(5) \wr 3$	$3000{=}2^3 3{\cdot}5^3$	$+$	68	50	${\frac{2}{1}}^2 {\frac{5}{2}}^2$	c,q,a	5
51	$[\frac{1}{2}D(5)^3]S(3)$	$3000{=}2^3 3{\cdot}5^3$	$-$	68	60	${\frac{2}{1}}^2 \frac{10}{21}$	c,x,a,d	5
52	$[3^4{:}2]F(5)$	$3240{=}2^3 3^4 5$	$-$	52	93	$\frac{2}{1}\frac{12}{119}$	h,d,b,g	3
53	$[3^4]A(5)$	$4860{=}2^2 3^5 5$	$+$	83	78	$\frac{12}{133}$	h,b,k	3
54	$\frac{1}{2}[3^5{:}2]F(5)$	$4860{=}2^2 3^5 5$	$+$	64	93	$\frac{2}{1}\frac{12}{131}$	e,b,p	3
55	$[3^5{:}2]D(5)$	$4860{=}2^2 3^5 5$	$-$	64	86	$\frac{2}{1}{\frac{6}{9}}^2$	e,d,b,f	3
56	$[3^5]F(5) = 3 \wr F(5)$	$4860{=}2^2 3^5 5$	$-$	64	78	$\frac{12}{131}$	e,b,g	3
57	$[\frac{1}{4}F(5)^3]3$	$6000{=}2^4 3{\cdot}5^3$	$+$	82	101	$\frac{4}{1}{\frac{5}{3}}^2$	c,u,a	5
58	$\frac{1}{2}[D(5)^3{:}2]S(3)$	$6000{=}2^4 3{\cdot}5^3$	$+$	68	102	$\frac{4}{1}\frac{10}{21}$	c,q,a,p	5
59	$[D(5)^3{:}2]3$	$6000{=}2^4 3{\cdot}5^3$	$-$	68	101	$\frac{4}{1}{\frac{5}{3}}^2$	c,q,a,g	5
60	$[D(5)^3]S(3)$ $= D(5) \wr S(3)$	$6000{=}2^4 3{\cdot}5^3$	$-$	68	60	${\frac{2}{1}}^2 \frac{10}{21}$	c,q,a,d	5
61	$[3^4{:}2]A(5)$	$9720{=}2^3 3^5 5$	$-$	70	93	$\frac{2}{1}\frac{12}{176}$	h,d,b,k	3
62	$\frac{1}{2}[3^4{:}2]S(5)$	$9720{=}2^3 3^5 5$	$+$	70	93	$\frac{2}{1}\frac{12}{178}$	h,b,t	3
63	$[3^4]S(5)$	$9720{=}2^3 3^5 5$	$-$	83	78	$\frac{12}{175}$	h,b,j	3

Nr	Name	$\lvert G\rvert$	p	N	C	S	Generators	Blocks
64	$[3^5{:}2]F(5)$	$9720{=}2^3 3^5 5$	$-$	64	93	$\frac{2}{1}\frac{12}{170}$	e,d,b,g	3
65	$\frac{1}{2}[\frac{1}{2}F(5)^3]S(3)$	$12000{=}2^5 3{\cdot}5^3$	$-$	82	102	$\frac{4}{1}\frac{10}{33}$	c,u,a,r	5
66	$[\frac{1}{4}F(5)^3]S(3)$	$12000{=}2^5 3{\cdot}5^3$	$-$	82	102	$\frac{4}{1}\frac{10}{33}$	c,u,a,d	5
67	$[\frac{1}{2}F(5)^3]3$	$12000{=}2^5 3{\cdot}5^3$	$+$	82	101	$\frac{4}{1}\frac{5}{3}^2$	c,u,f,a	5
68	$[D(5)^3{:}2]S(3)$	$12000{=}2^5 3{\cdot}5^3$	$-$	68	102	$\frac{4}{1}\frac{10}{27}$	c,q,g,a,d	5
69	$[3^5]A(5) = 3 \wr A(5)$	$14580{=}2^2 3^6 5$	$+$	83	78	$\frac{12}{194}$	e,b,k	3
70	$[3^4{:}2]S(5)$	$19440{=}2^4 3^5 5$	$-$	70	93	$\frac{2}{1}\frac{12}{213}$	h,d,b,j	3
71	$[\frac{1}{2}S(3)^5]5$	$19440{=}2^4 3^5 5$	$+$	87	81	$\frac{2}{1}\frac{3}{2}^4$	e,m,b	3
72	$L(15) = A_8(15)$ $= PSL(4,2)$	$20160{=}2^6 3^2 5{\cdot}7$	$+$	72	104	$\frac{14}{34}$	n,A,w	
73	$\frac{1}{2}[F(5)^3]S(3)$	$24000{=}2^6 3{\cdot}5^3$	$+$	82	102	$\frac{4}{1}\frac{10}{33}$	c,q,B,a,Cd	5
74	$[\frac{1}{2}F(5)^3]S(3)$	$24000{=}2^6 3{\cdot}5^3$	$-$	82	102	$\frac{4}{1}\frac{10}{33}$	c,q,B,a,d	5
75	$[F(5)^3]3 = F(5) \wr 3$	$24000{=}2^6 3{\cdot}5^3$	$-$	82	101	$\frac{4}{1}\frac{5}{3}^2$	c,C,a	5
76	$[3^5{:}2]A(5)$	$29160{=}2^3 3^6 5$	$-$	83	93	$\frac{2}{1}\frac{12}{234}$	e,d,b,k	3
77	$\frac{1}{2}[3^5{:}2]S(5)$	$29160{=}2^3 3^6 5$	$+$	83	93	$\frac{2}{1}\frac{12}{233}$	e,b,t	3
78	$[3^5]S(5) = 3 \wr S(5)$	$29160{=}2^3 3^6 5$	$-$	83	78	$\frac{12}{231}$	e,b,j	3
79	$\frac{1}{2}[S(3)^5]D(5)$	$38880{=}2^5 3^5 5$	$-$	87	86	$\frac{2}{1}\frac{6}{13}^2$	e,m,b,sf	3
80	$[\frac{1}{2}S(3)^5]D(5)$	$38880{=}2^5 3^5 5$	$+$	87	86	$\frac{2}{1}\frac{6}{13}^2$	e,m,b,f	3
81	$[S(3)^5]5 = S(3) \wr 5$	$38880{=}2^5 3^5 5$	$-$	87	81	$\frac{2}{1}\frac{3}{2}^4$	e,s,b	3
82	$[F(5)^3]S(3)$ $= F(5) \wr S(3)$	$48000{=}2^7 3{\cdot}5^3$	$-$	82	102	$\frac{4}{1}\frac{10}{33}$	c,C,a,d	5
83	$[3^5{:}2]S(5)$	$58320{=}2^4 3^6 5$	$-$	83	93	$\frac{2}{1}\frac{12}{258}$	e,d,b,j	3
84	$\frac{1}{2}[S(3)^5]F(5)$	$77760{=}2^6 3^5 5$	$+$	87	93	$\frac{2}{1}\frac{12}{264}$	e,m,b,f,p	3
85	$[\frac{1}{2}S(3)^5]F(5)$	$77760{=}2^6 3^5 5$	$-$	87	93	$\frac{2}{1}\frac{12}{264}$	e,m,b,g	3
86	$[S(3)^5]D(5)$ $= S(3) \wr D(5)$	$77760{=}2^6 3^5 5$	$-$	87	86	$\frac{2}{1}\frac{6}{13}^2$	e,s,b,f	3

Nr	Name	$\|G\|$	p	N	C	S	Generators	Blocks
87	$[S(3)^5]F(5)$ $= S(3) \wr F(5)$	$155520{=}2^7 3^5 5$	$-$	87	93	$\frac{2}{1}\frac{12}{264}$	e,s,b,g	3
88	$[\frac{1}{2}S(3)^5]A(5)$	$233280{=}2^6 3^6 5$	$+$	93	93	$\frac{2}{1}\frac{12}{280}$	e,m,b,k	3
89	$\frac{1}{2}[S(3)^5]S(5)$	$466560{=}2^7 3^6 5$	$+$	93	93	$\frac{2}{1}\frac{12}{289}$	e,m,b,sj	3
90	$[S(3)^5]A(5)$ $= S(3) \wr A(5)$	$466560{=}2^7 3^6 5$	$-$	93	93	$\frac{2}{1}\frac{12}{280}$	e,s,b,k	3
91	$[\frac{1}{2}S(3)^5]S(5)$	$466560{=}2^7 3^6 5$	$-$	93	93	$\frac{2}{1}\frac{12}{289}$	e,m,b,j	3
92	$[A(5)^3]3$ $= A(5) \wr 3$	$648000{=}2^6 3^4 5^3$	$+$	97	101	$\frac{4}{4}\frac{5}{4}^2$	c,o,a	5
93	$[S(3)^5]S(5)$ $= S(3) \wr S(5)$	$933120{=}2^8 3^6 5$	$-$	93	93	$\frac{2}{1}\frac{12}{289}$	e,s,b,j	3
94	$\frac{1}{2}[A(5)^3{:}2]S(3)$	$1296000{=}2^7 3^4 5^3$	$+$	97	102	$\frac{4}{5}\frac{10}{40}$	c,o,a,t	5
95	$[A(5)^3{:}2]3$	$1296000{=}2^7 3^4 5^3$	$-$	97	101	$\frac{4}{5}\frac{5}{5}^2$	c,o,j,a	5
96	$[A(5)^3]S(3)$ $= A(5) \wr S(3)$	$1296000{=}2^7 3^4 5^3$	$-$	97	102	$\frac{4}{4}\frac{10}{40}$	c,o,a,d	5
97	$[A(5)^3{:}2]S(3)$	$2592000{=}2^8 3^4 5^3$	$-$	97	102	$\frac{4}{5}\frac{10}{41}$	c,o,j,a,d	5
98	$[\frac{1}{2}S(5)^3]3$	$2592000{=}2^8 3^4 5^3$	$+$	102	101	$\frac{4}{5}\frac{5}{5}^2$	c,o,z,a	5
99	$\frac{1}{2}[S(5)^3]S(3)$	$5184000{=}2^9 3^4 5^3$	$+$	102	102	$\frac{4}{5}\frac{10}{43}$	c,o,z,a,Dd	5
100	$[\frac{1}{2}S(5)^3]S(3)$	$5184000{=}2^9 3^4 5^3$	$-$	102	102	$\frac{4}{5}\frac{10}{43}$	c,o,z,a,d	5
101	$[S(5)^3]3$ $= S(5) \wr 3$	$5184000{=}2^9 3^4 5^3$	$-$	102	101	$\frac{4}{5}\frac{5}{5}^2$	c,D,a	5
102	$[S(5)^3]S(3)$ $= S(5) \wr S(3)$	$10368000{=}2^{10} 3^4 5^3$	$-$	102	102	$\frac{4}{5}\frac{10}{43}$	c,D,a,d	5
103	A_{15}	$653837184000{=}\frac{15!}{2}$	$+$	104	104	$\frac{14}{62}$	$(0,1,2)$, $(0,2,3)$, $(0,3,4)$, $(0,4,5)$, $(0,5,6)$, $(0,6,7)$, $(0,7,8)$, $(0,8,9)$, $(0,9,10)$, $(0,10,11)$, $(0,11,12)$, $(0,12,13)$, $(0,13,14)$	
104	S_{15}	$1307674368000{=}15!$	$-$	104	104	$\frac{14}{63}$	$(0,1)$, $(0,2)$, $(0,3)$, $(0,4)$, se, $(0,6)$, $(0,7)$, $(0,8)$, $(0,9)$, es, $(0,11)$, $(0,12)$, $(0,13)$, $(0,14)$	

2.3 Isomorphism classes

Degree 3:

2	6/2

Degree 4:

3	8/4
4	6/4,12/4
5	6/7,6/8,8/14, 12/8,12/9

Degree 5:

2	10/2
3	10/4
4	6/12,10/7,12/33,15/5
5	6/14,10/12,10/13, 12/74,15/10

Degree 6:

2	3/2
3	12/3
4	4/4,12/4
4	12/4
5	9/4
6	8/13,12/6,12/7
7	4/5,6/8,8/14, 12/8,12/9
8	——
9	9/8,12/16
10	9/9,12/17
11	8/24,12/21,12/22, 12/23,12/24
12	5/4,10/7,12/33,15/5
13	9/16,12/34,12/35, 12/36
14	5/5,10/12,10/13, 12/74,15/10
15	10/26,15/20
16	10/32,12/183,15/28

Degree 7:

2	14/2
4	14/4
5	8/37,14/10
6	15/47
7	14/46

Degree 8:

4	4/3
13	6/6,12/6,12/7
14	4/5,6/7,6/8, 12/8,12/9
24	6/11,12/21,12/22, 12/23,12/24
37	7/5,14/10
41	12/108,12/109, 12/110,12/111
42	12/126,12/128,12/129
43	14/16
45	12/161,12/163,12/165
46	12/160,12/162
47	12/200,12/201, 12/202,12/203
48	14/34
49	15/72

Degree 9:

4	6/5
8	6/9,12/16
9	6/10,12/17
16	6/13,12/34,12/35, 12/36
23	12/122
25	12/132,12/133
26	12/157
28	12/176
29	12/175
30	12/177,12/178
31	12/213

Degree 10:

2	5/2
4	5/3
7	5/4,6/12,12/33, 15/5
11	12/75,12/76
12	5/5,6/14,10/13, 12/74,15/10
13	——
15	10/16
16	——
19	10/21
21	——
22	12/123
24	10/25
25	——
26	6/15,15/20
30	12/182
31	12/181
32	6/16,12/183,15/28
35	12/220
37	10/38
38	——
40	12/269
41	12/279
42	12/278
43	12/288

Degree 11:

5	12/179
6	12/272

Degree 12:

3	6/3
4	4/4,6/4
4	6/4
6	6/6,8/13,12/7
7	——
8	4/5,6/7,6/8, 8/14,12/9
9	——
16	6/9,9/8
17	6/10,9/9
21	6/11,8/24,12/22, 12/23,12/24
22	——
23	——
24	——
33	5/4,6/12,10/7, 15/5
34	6/13,9/16,12/35, 12/36
35	——
36	——

74	5/5,6/14,10/12, 10/13,15/10
75	10/11,12/76
76	——
87	12/88
88	——
89	12/92
91	12/93
92	12/89
93	12/91
95	12/96,12/97
96	——
97	——
99	12/105
100	12/101,12/103,12/106
101	——
102	12/107
103	12/100,12/101,12/106
105	12/99
106	12/100,12/101,12/103
107	12/102
108	8/41,12/109,12/110, 12/111
109	——
110	——
111	——
112	12/113,12/114,12/115
113	——
114	——
115	——
116	12/120
120	——
122	9/23
123	10/22
126	8/42,12/128,12/129
128	8/42,12/126,12/129
129	——
132	9/25,12/133
133	——
134	12/142
135	12/148
136	12/137
137	——
138	12/140
140	——
142	12/134
145	12/146
146	——
147	12/149
148	12/135
149	12/147
152	12/154
153	12/155
154	12/152
155	12/153
157	9/26
160	8/46,12/162
161	8/45,12/163,12/165
162	8/46,12/160
163	8/45,12/161,12/165
165	——
175	9/29
176	9/28
177	9/30,12/178
178	——
179	11/5
181	10/31
182	10/30
183	6/16,10/32,15/28
184	12/190,12/191
186	12/193
187	12/188
188	——
190	12/184,12/191
191	——
193	12/186
198	12/199
199	——
200	8/47,12/201, 12/202,12/203
201	——
202	——
203	——
213	9/31
220	10/35
223	12/224
224	——
226	12/227
227	——
235	12/236
236	——
237	12/238
238	——
245	12/246,12/247
246	——
247	——
251	12/253
253	——
261	12/267
262	12/264
264	——
267	12/261
269	10/40
272	11/6
278	10/42
279	10/41
288	10/43

Degree 14:

2	7/2
4	7/4
10	7/5,8/37
16	8/43
17	14/19
19	14/17
27	14/28
28	——
34	8/48
40	14/41
41	——
46	7/7
54	14/55
55	——

Degree 15:

5	5/4,6/12,10/7, 12/33
10	5/5,6/14,10/12, 10/13,12/74
15	15/16
16	——
20	6/15,10/26
21	15/22
22	——
28	6/16,10/32, 12/183

34	15/35	47	7/6
35	——	72	8/49
41	15/42	99	15/100
42	——	100	——

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