

# Fingerprinting for Semi-Presentations

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This document contains sufficient information to verify the fingerprinting in the article “Semi-Presentations for the Sporadic Simple Groups,” in *Experimental Mathematics* 14:3. For each group where we performed fingerprinting, we give the conjugacy class representatives we used (as words in the standard generators  $x$  and  $y$ ) and a table of fingerprints. Each row in each table represents a pair  $(a, b)$ , where  $a$  is the first conjugacy class representative and  $b$  is the second conjugacy class representative conjugated by a specified word. The orders of various words in  $a$  and  $b$  are given: these orders specify the fingerprint.

## 1 Fingerprinting for $M_{12}$

### 1.1 Class representatives

- $2A$ :  $(xyxyx^2)^3$
- $2B$ :  $x$
- $3A$ :  $(xyxy^2)^2$
- $3B$ :  $y$

### 1.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2ab)$	$o(ab^2abab)$
$2A/3A$	$x$	6	10
$2A/3B$	$xy^2xy^2xy^2$	5	5
$2B/3A$	$y^2$	5	5
$2B/3B$	$x$	6	6

## 2 Fingerprinting for $M_{22}$

### 2.1 Class representatives

- 2A:  $x$
- 4A:  $y$
- 4B:  $xy^3xyxyxy$

### 2.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2)$	$o(ab^3ab)$	$o(ab^3ab^2ab)$
2A/4A	$x$	5	6	5
2A/4A	$xyxyxy$	6	5	5
2A/4B	$xy$	4	6	6
2A/4B	$xyxy^2xy^2$	5	5	6
2A/4B	$xy^2xy^3xyxy^2$	6	4	6
2A/4B	$xyxyxy^3xy^2$	6	4	5

## 3 Fingerprinting for $M_{24}$

### 3.1 Class representatives

- 2A:  $(xy^2(xy)^3)^4$
- 2B:  $x$
- 3A:  $y$
- 3B:  $(xy^2(xy)^5)^7$

### 3.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2ab^2abab^2abab)$	$o(ab^2ab)$
2A/3B	$xy^2xy^2xy$	4	6
2A/3B	$xy^2xy^2xy^2xy^2$	6	6
2B/3A	$x$	5	12
2B/3A	$xy^2xy^2xy^2xy^2xyxyxyxy$	4	12

Classes	Word to conjugate by	$o(ab^2ab^2abab^2abab)$	$o(ab^2ab)$
$2B/3B$	$xy^2xy^2xy^2xyxy$	12	12

## 4 Fingerprinting for $J_3$

### 4.1 Class representatives

- $2A$ :  $x$
- $3A$ :  $y$
- $3B$ :  $(xy^2xy)^3$

### 4.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2ab)$	$o(ab^2abab)$	$o(ab^2ab^2abab^2abab)$
$2A/3A$	$x$	9	17	15
$2A/3A$	$xyxyxyxy$	17	8	15
$2A/3B$	$xyxyxyxy$	15	12	6
$2A/3B$	$xyxy^2xyxy$	15	12	10
$2A/3B$	$xyxy^2xyxyxy^2xy^2xy$	9	5	5
$2A/3B$	$xyxy^2xyxy^2xy^2xyxyxy$	6	12	10

## 5 Fingerprinting for $C_{O_3}$

### 5.1 Class representatives

- $3A$ :  $x$
- $3C$ :  $(xy^3xyxy)^7$
- $4A$ :  $y$

### 5.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^3)$	$o(a^2b^2ab)$	$o(ab^2ab)$	$o(ab^3ab)$	$o(a^2b^2abab)$	$o(a^2b^3abab)$
$3A/4A$	$x$	10	24	14	15	22	11
$3C/4A$	$xyx^2yxy$	5	10	6	30	12	11
$3C/4A$	$x^2yx^2yxy$	23	24	24	9	24	15

Classes	Word to conjugate by	$o(ab^3)$	$o(a^2b^2ab)$	$o(ab^2ab)$	$o(ab^3ab)$	$o(a^2b^2abab)$	$o(a^2b^3abab)$
3C/4A	$xy^3x^2yxy^2$	24	12	22	23	15	15
3C/4A	$xy^3xy^2xy^3$	24	10	8	15	7	9
3C/4A	$x^2yx^2y^2xy^3$	21	12	23	10	11	11
3C/4A	$xy^2x^2y^3xy^3$	20	8	22	15	8	10
3C/4A	$xyxyx^2y$	15	8	30	10	22	22
3C/4A	$xy^2xyx^2y^2$	23	10	20	22	30	15
3C/4A	$xy^2xy^2x^2y^2$	18	8	6	21	20	9
3C/4A	$x^2y^2xy^3x^2y^2$	21	22	24	15	23	9
3C/4A	$x^2y^2xy^3x^2y^3$	24	10	22	20	15	4
3C/4A	$xy^2x^2y^2x^2y^3$	15	6	6	24	11	15
3C/4A	$xyxy^2xyxy$	9	6	23	15	24	24
3C/4A	$x^2y^3x^2yxyxy$	9	12	23	15	21	23
3C/4A	$xy^3x^2y^3xyxy$	23	24	24	9	14	21
3C/4A	$x^2y^2xy^2xy^2xy$	15	6	6	24	15	18
3C/4A	$xy^2x^2yxy^2xy$	24	22	22	20	10	22
3C/4A	$xy^2x^2yxy^3xy$	21	22	24	15	11	11
3C/4A	$x^2y^2x^2y^2xy^3xy$	18	8	6	21	30	18
3C/4A	$x^2y^2x^2y^3xy^3xy$	23	10	20	22	7	11
3C/4A	$xyxy^2x^2yxy$	10	6	11	7	23	8
3C/4A	$x^2y^3x^2y^2x^2yxy$	15	22	30	11	10	15
3C/4A	$x^2y^2xyx^2y^2xy$	20	8	22	15	15	22
3C/4A	$xy^3xy^2x^2y^2xy$	21	12	23	10	7	18
3C/4A	$x^2yx^2y^2x^2y^2xy$	24	22	8	15	10	8
3C/4A	$x^2yxy^3x^2y^3xy$	24	10	22	23	11	23
3C/4A	$xyx^2yxyxy^2$	22	8	14	15	18	23
3C/4A	$x^2y^2x^2yxyxy^2$	12	12	18	15	23	23
3C/4A	$x^2yxyxy^2xy^2$	30	6	8	8	15	21
3C/4A	$x^2y^3xy^2xy^2xy^2$	11	24	30	20	18	7
3C/4A	$xy^3x^2y^3xy^2xy^2$	30	8	10	15	15	18
3C/4A	$x^2y^2xyxy^3xy^2$	23	8	24	11	14	21
3C/4A	$xy^3xy^3xy^3xy^2$	20	6	15	11	8	12
3C/4A	$xy^3x^2yxy^3xy^2$	22	12	12	15	24	23
3C/4A	$xyxyx^2yxy^2$	23	24	24	7	15	24
3C/4A	$x^2y^2x^2y^3x^2yxy^2$	22	10	6	15	11	6
3C/4A	$x^2yxy^2x^2y^2xy^2$	14	24	30	20	12	12
3C/4A	$x^2yxy^3x^2y^2xy^2$	9	10	21	24	23	10

Classes	Word to conjugate by	$o(ab^3)$	$o(a^2b^2ab)$	$o(ab^2ab)$	$o(ab^3ab)$	$o(a^2b^2abab)$	$o(a^2b^3abab)$
3C/4A	$x^2y^3x^2y^3x^2y^2xy^2$	22	8	12	15	20	23
3C/4A	$x^2y^3xyx^2y^3xy^2$	20	24	22	11	22	14
3C/4A	$x^2y^2xy^3x^2y^3xy^2$	7	12	15	12	9	6
3C/4A	$x^2y^3xy^3x^2y^3xy^2$	10	12	7	30	24	10
3C/4A	$xyx^2y^2x^2y^3xy^2$	11	22	15	24	22	15
3C/4A	$x^2yx^2y^2x^2y^3xy^2$	22	24	6	18	11	30
3C/4A	$x^2y^2xy^3xyxy^3$	14	10	10	12	21	11
3C/4A	$xy^3x^2y^2xyxy^3$	14	24	22	20	11	20
3C/4A	$xy^2x^2y^3xyxy^3$	14	12	30	10	11	22
3C/4A	$x^2y^2xyxy^2xy^3$	24	24	22	15	18	8
3C/4A	$xy^3x^2y^3xy^2xy^3$	20	10	6	20	20	15
3C/4A	$xy^3xyxy^3xy^3$	21	10	14	11	15	20
3C/4A	$x^2y^3xy^3xy^3xy^3$	24	24	20	8	7	12
3C/4A	$xy^2x^2yxy^3xy^3$	22	24	15	20	15	21
3C/4A	$xy^2x^2y^3xy^3xy^3$	14	24	22	20	20	10
3C/4A	$xy^2xyx^2y^2xy^3$	30	10	30	11	20	15
3C/4A	$x^2yxy^3x^2y^2xy^3$	11	22	23	11	20	20
3C/4A	$x^2yxyxyx^2y$	23	12	23	14	6	10
3C/4A	$xyxy^2xy^2x^2y$	8	6	6	14	23	24
3C/4A	$xyxy^3xy^2x^2y$	22	10	20	11	10	10
3C/4A	$xyx^2y^2xy^2x^2y$	8	12	15	11	22	24
3C/4A	$xy^2xy^2xy^3x^2y$	18	10	24	20	21	11
3C/4A	$xyxy^3xy^3x^2y$	11	8	21	23	23	21
3C/4A	$x^2yx^2yxy^3x^2y$	18	24	11	22	10	30
3C/4A	$x^2y^3x^2yxy^3x^2y$	23	8	15	21	20	23
3C/4A	$xyxy^3x^2yx^2y$	23	10	15	21	21	15
3C/4A	$xy^3xy^3x^2yx^2y$	18	8	11	22	9	24
3C/4A	$x^2y^3x^2yx^2yx^2y$	11	20	21	23	22	14
3C/4A	$x^2y^2x^2y^2x^2yx^2y$	18	8	24	20	21	15
3C/4A	$x^2y^3xy^2x^2y^2x^2y$	8	12	15	11	11	22
3C/4A	$x^2y^3x^2yx^2y^2x^2y$	22	22	20	11	18	15
3C/4A	$xy^2x^2yx^2y^3x^2y$	21	24	14	11	6	8
3C/4A	$xy^3x^2y^3x^2y^3x^2y$	23	12	23	14	20	15
3C/4A	$x^2y^3xy^3xyx^2y^2$	24	22	20	8	14	10
3C/4A	$xy^2x^2yxyx^2y^2$	14	8	12	20	24	20
3C/4A	$xyxy^2xy^3x^2y^2$	23	8	24	11	23	23

Classes	Word to conjugate by	$o(ab^3)$	$o(a^2b^2ab)$	$o(ab^2ab)$	$o(ab^3ab)$	$o(a^2b^2abab)$	$o(a^2b^3abab)$
3C/4A	$xy^3xy^2xy^3x^2y^2$	10	10	21	10	10	24
3C/4A	$xyx^2y^3xy^3x^2y^2$	15	8	8	11	15	15
3C/4A	$xy^3x^2yx^2yx^2y^2$	6	22	22	23	20	11
3C/4A	$xy^2xy^2x^2y^2x^2y^2$	22	24	15	20	14	23
3C/4A	$x^2y^3xy^3x^2y^3x^2y^2$	23	10	24	11	20	9
3C/4A	$xy^2x^2y^2x^2y^3x^2y^2$	20	12	30	10	22	15
3C/4A	$xyx^2y^2xy^2x^2y^3$	21	24	24	8	15	14
3C/4A	$x^2yxy^3xy^3x^2y^3$	5	8	14	10	24	20
3C/4A	$xy^3x^2y^2xy^3x^2y^3$	20	24	15	11	21	24
3C/4A	$xyxyx^2y^2x^2y^3$	8	6	21	14	30	24
3C/4A	$x^2yxyx^2y^2x^2y^3$	6	8	18	24	6	9
3C/4A	$x^2yxy^2x^2y^2x^2y^3$	20	22	15	11	23	15
3C/4A	$xy^2xyx^2y^3x^2y^3$	15	12	23	23	11	8
3C/4A	$xy^2x^2y^3x^2y^3x^2y^3$	21	10	23	15	11	23
3C/4A	$x^2y^2xyxyxyxyxy$	22	20	24	20	22	9
3C/4A	$xy^3x^2y^3xyxyxyxy$	14	8	23	20	23	15
3C/4A	$xy^3xyxy^2xyxyxy$	22	8	15	20	15	11
3C/4A	$xyxy^2xy^2xyxyxy$	14	12	24	23	22	15
3C/4A	$x^2y^3x^2y^2x^2yxyxyxy$	14	24	24	23	8	18
3C/4A	$x^2yx^2y^3x^2yxyxyxy$	22	10	15	20	24	20
3C/4A	$x^2yxyx^2y^2xyxyxy$	14	10	23	20	10	22
3C/4A	$xy^2x^2y^2y^2xyxyxy$	22	8	6	15	23	18
3C/4A	$xy^2x^2y^3x^2y^2xyxyxy$	22	8	24	20	11	12
3C/4A	$xyxy^2x^2y^3xyxyxy$	15	10	30	11	15	20
3C/4A	$x^2y^3x^2y^2x^2y^3xyxyxy$	10	22	11	7	8	18
3C/4A	$x^2y^2xyxyxy^2xyxy$	21	12	23	15	15	21
3C/4A	$x^2y^2x^2y^3xyxy^2xyxy$	15	10	23	23	18	15
3C/4A	$xy^3x^2y^2xy^2xy^2xyxy$	20	8	15	11	24	20
3C/4A	$x^2y^3x^2y^3xy^2xy^2xyxy$	8	6	21	14	10	24
3C/4A	$x^2yxy^2x^2yxy^2xyxy$	20	8	15	11	22	15
3C/4A	$x^2y^3xy^2x^2y^2xy^2xyxy$	21	12	24	8	8	8
3C/4A	$x^2y^2xy^2xyxy^3xyxy$	20	6	30	10	22	15
3C/4A	$xyx^2yxyxyxy^3xyxy$	23	24	24	11	20	7
3C/4A	$x^2yxy^3xy^3xy^3xyxy$	6	12	22	23	22	22
3C/4A	$x^2y^3xyx^2yxy^3xyxy$	15	8	8	11	6	22
3C/4A	$x^2yx^2y^2x^2yxy^3xyxy$	10	12	21	10	24	14

Classes	Word to conjugate by	$o(ab^3)$	$o(a^2b^2ab)$	$o(ab^2ab)$	$o(ab^3ab)$	$o(a^2b^2abab)$	$o(a^2b^3abab)$
3C/4A	$x^2y^2x^2y^3x^2y^2xy^3xy$	20	10	15	11	10	23
3C/4A	$x^2y^2xy^3x^2y^3xy^3xy$	14	10	12	20	23	15
3C/4A	$x^2yxy^2xyx^2yxy$	14	6	10	10	18	12
3C/4A	$xyxy^3xyx^2yxy$	18	10	14	21	24	20
3C/4A	$xy^3xy^3xy^3x^2yxy$	20	22	11	11	21	14
3C/4A	$xyx^2y^3xy^3x^2yxy$	30	22	14	18	22	11
3C/4A	$xy^2xy^2x^2yx^2yxy$	24	8	10	23	23	8
3C/4A	$xyxy^3x^2yx^2yxy$	23	24	14	11	10	15
3C/4A	$x^2y^3x^2yx^2yx^2yxy$	23	8	20	20	11	21
3C/4A	$xyx^2y^2x^2yx^2yxy$	24	22	24	14	24	11
3C/4A	$x^2y^2xy^2x^2y^3x^2yxy$	11	8	6	23	15	18
3C/4A	$xy^2x^2yx^2y^3x^2yxy$	24	8	11	18	15	10
3C/4A	$xy^3x^2y^2x^2y^3x^2yxy$	14	24	20	10	11	23
3C/4A	$x^2y^3x^2y^3x^2y^3x^2yxy$	22	8	11	12	24	24
3C/4A	$xy^3x^2yxxy^2x^2y^2xy$	11	8	23	11	24	22
3C/4A	$x^2y^2x^2y^3xy^2x^2y^2xy$	30	8	30	11	11	9
3C/4A	$xy^3xy^3x^2yx^2y^2xy$	24	22	22	15	15	8
3C/4A	$x^2yxxyx^2y^2x^2y^2xy$	20	10	6	20	11	23
3C/4A	$x^2y^2xyx^2y^3x^2y^2xy$	14	24	30	10	21	30
3C/4A	$xy^3xy^2xyx^2y^3xy$	22	22	6	18	9	22
3C/4A	$x^2y^3xy^2xyx^2y^3xy$	11	10	15	24	22	11
3C/4A	$xyx^2yxxyx^2y^3xy$	10	12	7	30	22	18
3C/4A	$xy^2x^2yxxyx^2y^3xy$	7	6	15	12	24	15
3C/4A	$xyx^2y^3xyx^2y^3xy$	20	8	22	11	12	24
3C/4A	$xy^3x^2y^2xy^2x^2y^3xy$	14	24	30	20	24	14
3C/4A	$x^2y^3x^2y^3xy^3x^2y^3xy$	23	8	24	7	24	21
3C/4A	$x^2yxxyx^2y^2x^2y^3xy$	30	10	10	15	24	18
3C/4A	$xyx^2y^2x^2y^2x^2y^3xy$	11	22	30	20	24	12
3C/4A	$xy^3x^2y^3x^2y^2x^2y^3xy$	30	10	8	8	23	22
3C/4A	$xy^2xy^3x^2y^3x^2y^3xy$	12	12	18	15	24	23
3C/4A	$x^2y^3xy^3x^2y^3x^2y^3xy$	22	10	14	15	18	15
3C/4A	$x^2yxxyxyxyxy^2$	20	12	15	11	11	15
3C/4A	$x^2y^2x^2yxxyxyxy^2$	30	22	23	23	14	8
3C/4A	$x^2yx^2y^3xyxyxy^2$	21	22	9	18	20	11
3C/4A	$x^2y^2x^2y^3xy^2xyxy^2$	15	22	22	10	15	18
3C/4A	$xy^2xy^2xy^3xyxy^2$	24	24	24	15	22	11

Classes	Word to conjugate by	$o(ab^3)$	$o(a^2b^2ab)$	$o(ab^2ab)$	$o(ab^3ab)$	$o(a^2b^2abab)$	$o(a^2b^3abab)$
3C/4A	$x^2y^2x^2yx^2y^2xyxy^2$	15	24	15	11	21	18
3C/4A	$x^2yx^2y^2xy^2xy^2$	18	22	14	30	15	24
3C/4A	$xyxy^2xy^3xy^2xy^2$	11	8	11	14	24	10
3C/4A	$xy^2xyx^2yx^2y^2xy^2$	24	24	18	11	30	11
3C/4A	$xyxyx^2y^2xy^2xy^2$	18	22	18	5	22	23
3C/4A	$x^2y^2x^2yx^2y^2xy^2xy^2$	20	10	21	8	23	20
3C/4A	$xyx^2y^2x^2y^2xy^2xy^2$	11	10	24	23	11	12
3C/4A	$xyxy^2x^2y^3xy^2xy^2$	10	24	11	15	24	14
3C/4A	$xyx^2y^2x^2y^3xy^2xy^2$	15	24	6	11	15	30
3C/4A	$x^2yx^2y^2xy^2xy^3xy^2$	20	20	15	11	18	30
3C/4A	$xyxy^2xy^3xy^3xy^2$	12	22	18	11	24	20
3C/4A	$x^2y^3xy^3xy^3xy^3xy^2$	20	22	18	11	22	12
3C/4A	$xy^2x^2y^2x^2yx^3xy^2$	20	8	22	15	15	18
3C/4A	$x^2yx^2yx^2y^3xy^3xy^2$	22	20	22	14	23	15
3C/4A	$x^2y^2xy^3xyx^2yx^2y^2$	18	12	22	20	11	14
3C/4A	$xy^2xyxy^2x^2yx^2y^2$	23	6	21	14	23	12
3C/4A	$x^2y^3xy^3xy^2x^2yx^2y^2$	15	24	22	12	24	22
3C/4A	$xyx^2yx^2y^2x^2yx^2y^2$	14	24	15	11	14	20
3C/4A	$xy^2x^2y^3xy^3x^2yx^2y^2$	22	8	22	23	6	23
3C/4A	$xy^3xy^3x^2y^2x^2yx^2y^2$	14	10	12	18	21	6
3C/4A	$xy^2xy^2x^2y^3x^2yx^2y^2$	15	22	15	6	30	8
3C/4A	$x^2yx^2y^2x^2y^3x^2yx^2y^2$	20	8	18	11	10	9
3C/4A	$x^2y^2x^2y^3x^2y^3x^2yx^2y^2$	14	24	15	11	20	18
3C/4A	$xyxy^3xyx^2y^2xy^2$	23	6	20	20	18	7
3C/4A	$xy^2x^2y^2xyx^2y^2xy^2$	23	8	24	11	12	10
3C/4A	$xy^2xy^3xy^2x^2y^2xy^2$	11	8	11	15	20	11
3C/4A	$xy^3x^2yx^2y^2x^2y^2xy^2$	22	8	18	23	14	22
3C/4A	$xyxy^3xy^3x^2y^2xy^2$	15	8	20	18	6	18
3C/4A	$x^2yx^3x^2yx^2y^2xy^2$	8	8	14	20	23	20
3C/4A	$x^2y^2xy^3x^2yx^2y^2xy^2$	15	24	22	12	6	11
3C/4A	$xy^2x^2yx^2y^2x^2y^2xy^2$	12	24	15	8	22	24
3C/4A	$x^2yx^2y^2x^2y^3x^2y^2xy^2$	24	12	18	21	21	23
3C/4A	$xyxy^2xy^2x^2y^3xy^2$	23	10	12	15	15	15
3C/4A	$xyx^2yx^2y^2x^2y^3xy^2$	20	12	21	18	24	24
3C/4A	$x^2yx^2yx^2y^2x^2y^3xy^2$	20	12	14	11	18	11
3C/4A	$x^2yx^2y^2xy^3x^2y^3xy^2$	24	24	24	14	22	12



Classes	Word to conjugate by	$o(ab^3)$	$o(a^2b^2ab)$	$o(ab^2ab)$	$o(ab^3ab)$	$o(a^2b^2abab)$	$o(a^2b^3abab)$
3C/4A	$xy^2x^2yxy^3x^2y^3xy^2$	23	20	15	20	11	24
3C/4A	$x^2yx^2y^3xy^3x^2y^3xy^2$	11	22	24	18	20	21
3C/4A	$xy^3xyx^2yx^2y^3xy^2$	18	12	18	24	8	20
3C/4A	$xy^2xy^3x^2yx^2y^3xy^2$	15	24	23	20	10	22
3C/4A	$xy^3xy^3x^2yx^2y^3xy^2$	11	8	18	15	8	21
3C/4A	$xy^2xy^2x^2y^3x^2y^3xy^2$	15	6	30	23	21	20
3C/4A	$xy^3xy^3x^2y^3x^2y^3xy^2$	23	4	15	22	12	12
3C/4A	$x^2yx^2y^3x^2y^3x^2y^3xy^2$	10	22	11	30	8	14
3C/4A	$xyx^2y^2xyxyxy^3$	23	24	24	11	15	12
3C/4A	$xy^3xyxy^2xyxy^3$	15	6	24	15	15	22
3C/4A	$xyxy^3xy^2xyxy^3$	11	12	8	12	24	11
3C/4A	$x^2yxxy^3xy^3xyxy^3$	11	22	21	20	14	10
3C/4A	$x^2y^2x^2y^2xy^3xyxy^3$	11	24	22	11	21	22
3C/4A	$xyx^2y^3xy^3xyxy^3$	20	24	21	18	20	14
3C/4A	$xyxy^3x^2yxxy^3$	8	10	11	10	7	24
3C/4A	$xyx^2yx^2y^2xyxy^3$	11	12	15	20	21	22
3C/4A	$xy^3x^2y^3x^2y^2xyxy^3$	15	8	20	20	6	9
3C/4A	$xyx^2y^3x^2y^3xyxy^3$	24	10	18	11	20	20
3C/4A	$xy^2xy^2xyxy^2xy^3$	10	8	14	15	23	15
3C/4A	$x^2yx^2y^2xy^2xy^2xy^3$	30	22	23	23	11	15
3C/4A	$x^2yxxy^3xy^3xy^2xy^3$	12	22	24	11	15	23
3C/4A	$xy^3x^2y^2xy^3xy^2xy^3$	22	24	21	23	20	21
3C/4A	$x^2yxxy^3x^2yxxy^2xy^3$	15	22	6	11	24	7
3C/4A	$xy^3xy^3xyxy^3xy^3$	10	24	11	15	12	18
3C/4A	$x^2y^2x^2yxxyxy^3xy^3$	14	22	15	11	15	12
3C/4A	$x^2y^3x^2yxxyxy^3xy^3$	24	8	14	15	11	12
3C/4A	$x^2y^2x^2y^3xy^2xy^3xy^3$	23	10	11	24	6	15
3C/4A	$xy^3xy^3x^2yxxy^3xy^3$	24	20	10	23	18	22
3C/4A	$x^2y^3x^2yx^2yxxy^3xy^3$	21	24	9	18	14	10
3C/4A	$x^2y^2xyx^2y^2xy^3xy^3$	18	12	8	23	23	24
3C/4A	$x^2yxxy^3x^2y^2xy^3xy^3$	11	8	18	23	22	15
3C/4A	$xyxy^2xyx^2yxxy^3$	11	6	8	12	10	15
3C/4A	$xyxy^2xy^3x^2yxxy^3$	10	8	11	30	22	11
3C/4A	$x^2y^2x^2yxxy^3x^2yxxy^3$	20	10	30	10	5	24
3C/4A	$x^2yx^2y^2x^2yx^2yxxy^3$	9	8	14	15	23	11
3C/4A	$x^2y^3xyx^2y^2x^2yxxy^3$	11	8	11	15	30	10

Classes	Word to conjugate by	$o(ab^3)$	$o(a^2b^2ab)$	$o(ab^2ab)$	$o(ab^3ab)$	$o(a^2b^2abab)$	$o(a^2b^3abab)$
3C/4A	$x^2y^3xy^2x^2y^2x^2yxy^3$	12	8	24	11	24	11
3C/4A	$x^2yxyx^2y^3x^2yxy^3$	10	22	12	22	11	14
3C/4A	$x^2yx^2y^3xy^2x^2y^2xy^3$	18	8	18	15	10	11
3C/4A	$x^2y^2xyxy^3x^2y^2xy^3$	23	22	15	12	18	23
3C/4A	$x^2y^3x^2y^2xy^3x^2y^2xy^3$	9	12	14	15	12	6
3C/4A	$x^2yxy^2x^2y^3x^2y^2xy^3$	30	24	20	20	12	14
3C/4A	$x^2y^2x^2y^3x^2y^3x^2y^2xy^3$	22	12	22	14	21	15
3C/4A	$x^2yxy^3xy^2x^2y^3xy^3$	23	12	21	14	15	10
3C/4A	$x^2y^3x^2y^2xy^2x^2y^3xy^3$	15	24	22	11	24	23
3C/4A	$xyxy^3xy^3x^2y^3xy^3$	18	10	18	15	24	20
3C/4A	$x^2y^2x^2y^3x^2y^2x^2y^3xy^3$	21	24	20	15	12	14
3C/4A	$x^2y^2x^2yx^2y^3x^2y^3xy^3$	24	12	14	15	14	12
3C/4A	$xyx^2y^3xyxyx^2y$	20	24	14	10	7	15
3C/4A	$x^2y^3xy^3xy^2xyx^2y$	11	24	11	11	23	20
3C/4A	$xyx^2y^2xy^2xyx^2y$	22	22	15	23	10	15
3C/4A	$xyxyxy^3xyx^2y$	12	6	15	8	21	22
3C/4A	$x^2y^3x^2y^2x^2y^3xyx^2y$	8	10	14	20	14	21
3C/4A	$xy^3x^2y^2xy^2xy^2x^2y$	11	10	6	23	10	11
3C/4A	$xy^3xy^3x^2yxy^2x^2y$	8	10	24	8	24	8
3C/4A	$x^2y^3x^2yx^2yxy^2x^2y$	23	12	15	20	8	30
3C/4A	$xyx^2y^3x^2yxy^2x^2y$	20	10	14	11	30	22
3C/4A	$xyxy^2x^2y^2xy^2x^2y$	10	10	9	10	20	20
3C/4A	$x^2yx^2y^2x^2y^3xy^2x^2y$	20	10	21	8	20	22
3C/4A	$x^2yxy^3xyxy^3x^2y$	15	10	24	23	11	11
3C/4A	$xy^2xyxy^2xy^3x^2y$	11	12	20	24	20	30
3C/4A	$xyxy^3xy^3xy^3x^2y$	22	24	18	23	24	14
3C/4A	$x^2y^2x^2y^2xy^3xy^3x^2y$	20	24	14	10	8	22
3C/4A	$x^2y^3x^2y^3x^2y^3xy^3x^2y$	30	12	21	14	15	24
3C/4A	$xyxyxyx^2yx^2y$	30	10	21	14	22	18
3C/4A	$x^2yxyxyx^2yx^2y$	20	24	22	15	14	15
3C/4A	$xyx^2y^2xy^3x^2yx^2y$	22	12	11	12	21	23
3C/4A	$x^2y^2x^2y^3x^2y^2x^2yx^2y$	11	24	20	24	6	15
3C/4A	$x^2y^2xy^3x^2y^3x^2yx^2y$	14	6	20	10	22	15
3C/4A	$xy^3x^2yx^2y^3x^2yx^2y$	15	24	24	23	7	30
3C/4A	$xyx^2y^2x^2y^3x^2yx^2y$	11	22	11	11	15	21
3C/4A	$xy^3xyxyx^2y^2x^2y$	15	12	30	23	18	11

Classes	Word to conjugate by	$o(ab^3)$	$o(a^2b^2ab)$	$o(ab^2ab)$	$o(ab^3ab)$	$o(a^2b^2abab)$	$o(a^2b^3abab)$
3C/4A	$x^2yxy^3xy^3x^2y^2x^2y$	11	10	18	15	18	9
3C/4A	$xyx^2yxy^3x^2y^2x^2y$	14	22	15	11	14	20
3C/4A	$x^2y^2xyxy^3x^2y^3x^2y$	22	10	22	23	20	5
3C/4A	$xy^3xy^3xy^3x^2y^3x^2y$	11	24	21	20	7	23
3C/4A	$x^2yxy^2x^2y^2x^2y^3x^2y$	21	6	20	15	11	9
3C/4A	$x^2y^3xy^2x^2y^2x^2y^3x^2y$	22	24	15	23	12	10
3C/4A	$xy^3x^2y^3xy^2xyx^2y^2$	23	12	15	18	20	24
3C/4A	$xy^2x^2yxy^3xyx^2y^2$	21	24	9	14	8	30
3C/4A	$x^2y^3x^2yx^2y^3xyx^2y^2$	7	8	23	14	21	20
3C/4A	$x^2yx^2y^2xy^2xy^2x^2y^2$	21	10	9	14	14	15
3C/4A	$xy^3xy^2xy^3xy^2x^2y^2$	20	10	24	12	23	20
3C/4A	$x^2yx^2y^3x^2y^3xy^2x^2y^2$	15	22	15	11	5	21
3C/4A	$xy^3xyxyxy^3x^2y^2$	15	10	30	8	24	24
3C/4A	$xy^3x^2yxyxy^3x^2y^2$	23	8	21	15	22	20
3C/4A	$x^2y^3xyxy^3x^2yx^2y^2$	15	24	23	24	10	20
3C/4A	$x^2yx^2y^2x^2y^3x^2y^2x^2y^2$	15	10	22	10	24	22
3C/4A	$x^2yxxy^2xy^3x^2y^3x^2y^2$	21	10	22	20	30	12
3C/4A	$xy^2xyx^2y^2x^2y^3x^2y^2$	23	22	12	15	12	24
3C/4A	$x^2yx^2y^2y^2x^2y^3x^2y^2$	22	10	23	18	14	24
3C/4A	$x^2y^3x^2y^2x^2y^3x^2y^3x^2y^2$	21	22	22	20	11	6
3C/4A	$x^2y^2x^2y^2xy^2xyx^2y^3$	23	8	15	24	20	15
3C/4A	$x^2y^2xy^3xyxy^2x^2y^3$	20	8	21	12	8	24
3C/4A	$x^2yx^2y^3xy^3xy^2x^2y^3$	24	22	11	18	14	23
3C/4A	$xy^3x^2yx^2yxxy^2x^2y^3$	6	6	21	24	22	15
3C/4A	$xy^3xyx^2y^3xy^2x^2y^3$	30	12	6	7	18	7
3C/4A	$xy^2xy^3xyxy^3x^2y^3$	11	22	24	18	15	15
3C/4A	$x^2yx^2y^3xyxy^3x^2y^3$	15	20	30	8	10	20
3C/4A	$x^2y^3x^2y^3xy^2xy^3x^2y^3$	15	8	23	7	14	30
3C/4A	$x^2yx^2y^3xy^3xy^3x^2y^3$	24	22	24	15	24	24
3C/4A	$xy^2xyx^2y^2xy^3x^2y^3$	21	24	12	21	12	21
3C/4A	$x^2y^2xy^2x^2y^3xy^3x^2y^3$	9	24	14	15	14	24
3C/4A	$x^2y^3xyx^2y^3x^2y^2x^2y^3$	30	8	20	20	11	14
3C/4A	$xy^3xy^2x^2y^2x^2y^3x^2y^3$	15	12	23	7	7	9
3C/4A	$x^2yxxy^3x^2y^3x^2y^3x^2y^3$	23	24	14	11	15	24
3C/4A	$xy^3x^2yxxyxyxyxy$	23	8	15	24	15	23
3C/4A	$xy^2xyxy^2xyxyxy$	20	8	10	20	18	9

Classes	Word to conjugate by	$o(ab^3)$	$o(a^2b^2ab)$	$o(ab^2ab)$	$o(ab^3ab)$	$o(a^2b^2abab)$	$o(a^2b^3abab)$
3C/4A	$xy^2x^2y^2x^2y^2xyxyxy$	15	6	20	20	30	15
3C/4A	$x^2y^2x^2y^3xy^2xy^2xyxy$	15	8	18	11	15	22
3C/4A	$xyx^2y^2x^2yxy^2xyxy$	14	24	10	10	11	15
3C/4A	$x^2yx^2y^2x^2y^2xy^2xyxy$	11	20	24	23	21	20
3C/4A	$xy^2xyx^2y^2x^2yxyxy$	15	24	18	11	20	30
3C/4A	$xy^2xy^2x^2y^3x^2yxyxy$	20	10	21	12	18	23
3C/4A	$xy^3xyxyx^2y^2xyxy$	20	22	11	11	15	30
3C/4A	$xy^2x^2y^3x^2yx^2y^2xyxy$	15	10	20	18	15	21
3C/4A	$x^2y^2x^2y^3x^2y^2x^2y^2xyxy$	20	10	10	20	30	18
3C/4A	$x^2y^3xyx^2yx^2y^3xyxy$	30	24	14	18	11	12
3C/4A	$x^2y^3x^2yx^2y^3x^2y^3xyxy$	18	6	14	21	24	15
3C/4A	$xy^3xyxyxy^3xy^2xy$	22	12	21	23	24	20
3C/4A	$x^2y^2x^2yxyxy^3xy^2xy$	23	12	21	15	11	14
3C/4A	$xyxy^3xy^2xy^3xy^2xy$	11	10	15	20	20	15
3C/4A	$xy^2xyxyx^2yxy^2xy$	21	24	12	21	23	11
3C/4A	$x^2y^3x^2y^3xy^2x^2yxy^2xy$	23	8	11	24	22	18
3C/4A	$xyxyxy^3x^2yxy^2xy$	18	24	14	30	20	21
3C/4A	$x^2yx^2y^2xy^3x^2yxy^2xy$	23	22	15	12	9	30
3C/4A	$xyx^2y^3x^2yx^2yxy^2xy$	8	8	11	10	11	23
3C/4A	$xy^3xy^3xy^2xyxy^3xy$	22	12	23	18	11	15
3C/4A	$x^2yxy^3x^2y^3xyxy^3xy$	23	6	15	22	22	20
3C/4A	$x^2y^3xy^2x^2y^2xy^2xy^3xy$	15	10	15	6	14	20
3C/4A	$x^2y^2xyxyxy^3xy^3xy$	23	10	15	18	22	14
3C/4A	$xyx^2y^3x^2yxy^3xy^3xy$	15	6	23	24	23	14
3C/4A	$x^2yxy^2x^2yx^2y^2xy^3xy$	18	10	18	24	10	20
3C/4A	$x^2yx^2y^2x^2yx^2y^2xy^3xy$	20	10	24	12	20	22
3C/4A	$xyxy^3xyx^2y^3xy^3xy$	7	10	23	14	24	24
3C/4A	$x^2y^2x^2y^2xyxy^3x^2yxy$	20	12	22	20	23	14
3C/4A	$xy^2x^2y^2x^2yxy^3x^2yxy$	15	24	11	23	18	18
3C/4A	$xy^3x^2y^2xy^2x^2yxy$	11	24	11	14	12	20
3C/4A	$xyxy^2x^2y^2xyx^2y^2xy$	15	8	22	11	7	14
3C/4A	$xy^3x^2y^3xyxy^3x^2y^2xy$	10	24	12	22	18	6
3C/4A	$xy^2xy^3x^2yxy^3x^2y^2xy$	20	24	30	10	22	12
3C/4A	$xy^3x^2yxy^2x^2yx^2y^2xy$	11	6	18	23	15	8
3C/4A	$xy^2x^2y^3xy^2x^2yx^2y^2xy$	18	12	8	23	15	23
3C/4A	$xy^2xy^2x^2yx^2y^3x^2y^2xy$	11	24	22	11	9	14

Classes	Word to conjugate by	$o(ab^3)$	$o(a^2b^2ab)$	$o(ab^2ab)$	$o(ab^3ab)$	$o(a^2b^2abab)$	$o(a^2b^3abab)$
3C/4A	$x^2yx^2y^3x^2y^2x^2y^3x^2y^2xy$	15	6	24	15	23	14
3C/4A	$x^2y^2x^2yxy^3xyx^2y^3xy$	15	10	23	20	24	23
3C/4A	$x^2yxyx^2y^3xyx^2y^3xy$	12	22	18	11	8	15
3C/4A	$x^2yx^2yxy^2xy^3x^2y^3xy$	14	10	12	18	24	9
3C/4A	$xy^2x^2yx^2y^3xy^3x^2y^3xy$	18	10	22	20	21	23
3C/4A	$xyxy^2x^2y^2xy^3xyxy^2$	15	22	21	23	24	8
3C/4A	$xy^3x^2yx^2yx^2y^2xyxy^2$	8	22	14	5	24	23
3C/4A	$xy^2x^2yxy^2xyxy^2xy^2$	23	20	24	14	18	18
3C/4A	$x^2yxy^3xyxy^3xy^2xy^2$	20	12	22	20	23	30
3C/4A	$xy^2x^2yx^2yxy^3xy^2xy^2$	15	22	21	23	20	20
3C/4A	$xyx^2y^3xy^3xy^3xy^3xy^2$	24	24	15	18	12	14
3C/4A	$x^2y^2x^2y^3xy^2xy^3x^2yxy^2$	20	8	15	15	21	11
3C/4A	$x^2y^2x^2y^2x^2y^3xy^3x^2yxy^3$	15	24	11	23	24	23
3C/4A	$xyx^2y^2x^2y^3xyxy^3x^2y$	23	10	24	14	24	24
3C/4A	$xyx^2y^3xy^3x^2yx^2y^2x^2y$	20	10	15	15	30	15

## 6 Fingerprinting for $C_{02}$

### 6.1 Class representatives

- 2A:  $x$
- 5A:  $y$
- 5B:  $(xy^2xyxy)^6$

### 6.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2)$
2A/5A	$x$	9
2A/5B	$xy^3xyxy^4xy^4xy^2xy^2$	15

## 7 Fingerprinting for $C_{01}$

### 7.1 Class representatives

- 2A:  $(xy)^{20}$
- 3C:  $y$

- 3D:  $(xyxy^2)^2$

## 7.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2abab)$
2A/3C	$xyxyxyxy^2$	18
2A/3D	$xy^2xy^2xy^2xyxy^2xyxy^2$	12

## 8 Fingerprinting for HS

### 8.1 Class representatives

- 2A:  $x$
- 2B:  $(xy^2)^5$
- 5A:  $y$
- 5B:  $(xyxy^2)^3$
- 5C:  $xyxy^4$

### 8.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2ab)$	$o(ab^3ab^2ab)$	$o(ab^4ab)$	$o(ab^3ab^2abab)$	$o(ab^2)$	$o(ab^4ab^2ab)$
2A/5A	$x$	15	15	5	11	10	15
2A/5B	$xyxyxy$	20	8	5	15	12	8
2A/5C	$y^2$	7	4	6	5	7	6
2A/5C	$y^4$	7	7	6	11	7	4
2A/5C	$xy^4xy^2$	11	7	5	11	7	6
2A/5C	$xy^2xy^3$	11	7	5	5	7	5
2A/5C	$xy^2xyxy$	11	4	6	7	11	8
2A/5C	$xy^4xy^2xy$	8	3	6	8	8	11
2A/5C	$xy^3xy^3xy$	10	10	5	20	12	11
2A/5C	$xy^4xy^3xy^2$	11	5	5	5	8	11
2A/5C	$xy^4xy^4xy^2$	8	4	6	5	8	3
2A/5C	$xy^2xy^2xy^3$	11	8	5	8	8	7
2A/5C	$xy^3xy^2xy^4$	10	20	5	8	12	7

Classes	Word to conjugate by	$o(ab^2ab)$	$o(ab^3ab^2ab)$	$o(ab^4ab)$	$o(ab^3ab^2abab)$	$o(ab^2)$	$o(ab^4ab^2ab)$
2A/5C	$xy^3xyxyxy$	7	8	4	6	7	7
2A/5C	$xy^4xyxy^3xy$	11	7	3	7	11	8
2A/5C	$xy^2xy^2xy^3xy$	7	5	4	6	7	8
2A/5C	$xy^2xyxy^3xy^2$	8	7	4	11	7	5
2A/5C	$xy^2xy^3xy^3xy^2$	6	8	4	11	11	7
2A/5C	$xy^4xy^4xy^2xy^3$	8	5	4	7	7	11
2A/5C	$xy^3xy^2xy^2xy^4xy$	11	3	2	5	6	6
2A/5C	$xy^2xy^2xy^4xyxy^2$	5	8	5	7	11	4
2A/5C	$xy^2xy^2xy^3xyxyxy$	8	8	6	10	20	5
2A/5C	$xy^2xyxy^3xy^2xy^3xy$	3	5	5	2	5	5
2B/5A	$xy$	10	12	7	11	12	12
2B/5A	$xy^4xy^3$	11	20	8	11	7	7
2B/5A	$xyxy^4$	11	11	8	8	7	12
2B/5B	$xyxyxy$	20	8	10	20	5	12
2B/5B	$xyxy^3xyxy$	20	12	10	10	7	12
2B/5B	$xy^4xy^4xy^3xy$	20	20	10	15	7	12
2B/5C	$x$	11	8	15	20	7	7
2B/5C	$y$	11	11	15	20	7	11
2B/5C	$y^4$	20	8	7	20	5	12
2B/5C	$xy^4xyxy$	20	20	15	8	8	10
2B/5C	$xy^2xy^4xy$	20	10	15	8	8	20
2B/5C	$xy^4xy^2xy^3$	11	6	7	10	20	12
2B/5C	$xy^3xy^3xy^3$	20	7	8	8	7	20
2B/5C	$xy^3xy^2xy^4$	20	11	8	10	7	8
2B/5C	$xy^2xy^3xy^4$	11	11	7	20	20	11
2B/5C	$xy^2xyxyxy$	12	7	15	8	10	11
2B/5C	$xy^4xyxyxy$	11	10	15	20	11	8
2B/5C	$xy^3xy^2xyxy$	12	6	10	20	7	8
2B/5C	$xy^2xy^3xyxy$	11	8	4	10	12	8
2B/5C	$xy^4xy^4xyxy$	8	8	15	5	8	7
2B/5C	$xy^3xy^2xy^2xy$	11	6	6	8	10	6
2B/5C	$xy^2xy^3xy^2xy$	20	15	4	7	20	8
2B/5C	$xy^4xy^3xy^2xy$	20	12	15	7	8	11

Classes	Word to conjugate by	$o(ab^2ab)$	$o(ab^3ab^2ab)$	$o(ab^4ab)$	$o(ab^3ab^2abab)$	$o(ab^2)$	$o(ab^4ab^2ab)$
$2B/5C$	$xy^2xyxy^3xy$	11	20	4	7	12	10
$2B/5C$	$xy^2xy^2xy^3xy$	20	11	15	8	8	10
$2B/5C$	$xy^4xy^2xy^3xy$	20	15	4	7	20	11
$2B/5C$	$xy^3xy^3xy^3xy$	11	11	6	20	10	15
$2B/5C$	$xy^2xyxy^4xy$	8	12	15	10	8	15
$2B/5C$	$xy^3xy^3xy^4xy$	12	10	10	10	7	8
$2B/5C$	$xy^2xy^4xy^4xy$	11	11	15	12	11	7
$2B/5C$	$xy^4xy^4xy^4xy$	12	12	15	11	10	7
$2B/5C$	$xy^3xy^2xy^2xy^3$	8	15	8	12	15	20
$2B/5C$	$xy^2xy^4xy^3xy^3$	20	7	10	6	7	10
$2B/5C$	$xy^4xyxy^2xy^4$	20	8	10	8	7	8
$2B/5C$	$xy^3xy^2xy^3xy^4$	8	20	8	6	15	11
$2B/5C$	$xy^4xy^2xy^2xyxy$	8	8	10	6	11	11
$2B/5C$	$xy^2xy^2xy^3xyxy$	7	12	8	8	10	7
$2B/5C$	$xy^2xy^3xy^4xyxy$	20	15	15	12	20	6
$2B/5C$	$xy^4xyxyxy^2xy$	20	10	10	15	20	11
$2B/5C$	$xy^3xy^4xyxy^2xy$	10	8	8	11	6	7
$2B/5C$	$xy^4xy^2xy^2xy^2xy$	8	7	10	7	11	10
$2B/5C$	$xy^3xyxy^4xy^3xy$	10	8	8	15	6	7
$2B/5C$	$xy^4xy^2xyxy^4xy$	20	6	15	8	20	12
$2B/5C$	$xy^4xy^3xy^2xy^4xy$	7	20	8	7	10	10
$2B/5C$	$xy^4xyxyxy^3xy^3$	7	10	15	20	7	6
$2B/5C$	$xy^2xy^3xyxy^3xy^3$	11	12	5	11	10	15
$2B/5C$	$xy^4xy^3xyxy^3xy^3$	7	15	7	10	20	8
$2B/5C$	$xy^3xyxy^3xy^3xy^3$	11	15	10	8	15	15
$2B/5C$	$xy^2xyxy^2xy^4xy^3$	10	11	8	10	11	8
$2B/5C$	$xy^3xy^3xy^3xy^4xy^3$	7	20	15	6	7	15
$2B/5C$	$xy^3xy^4xy^4xy^4xy^3$	10	20	15	20	5	10
$2B/5C$	$xy^3xyxyxyxy^4$	10	15	15	7	5	6
$2B/5C$	$xy^2xy^3xyxyxy^4$	11	7	5	11	10	8
$2B/5C$	$xy^4xy^4xy^3xyxy^4$	10	8	8	20	11	6
$2B/5C$	$xy^3xy^2xyxy^2xy^4$	11	7	10	11	15	12
$2B/5C$	$xy^2xy^2xy^4xy^2xy^4$	7	20	7	8	20	5
$2B/5C$	$xy^3xyxyxyxyxy$	11	8	8	12	11	8
$2B/5C$	$xy^4xyxyxyxyxy$	11	6	8	7	11	11
$2B/5C$	$xy^3xy^4xyxyxyxy^3$	15	8	10	8	6	6



Classes	Word to conjugate by	$o(ab^2ab)$	$o(ab^3ab^2ab)$	$o(ab^4ab)$	$o(ab^3ab^2abab)$	$o(ab^2)$	$o(ab^4ab^2ab)$
$2B/5C$	$xy^2xy^4xy^2xyxy^2xy^3$	7	11	15	8	20	8
$2B/5C$	$xy^3xy^3xy^3xy^2xyxy$	5	11	10	5	20	12

## 9 Fingerprinting for Suz

### 9.1 Class representatives

- $2A$ :  $(xy^2xy^2xyxyxy)^4$
- $2B$ :  $x$
- $3B$ :  $y$
- $3C$ :  $(xyxy^2)^5$

### 9.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2abab)$	$o(ab^2ab)$	$o(ab^2ab^2abab^2abab)$	$o(ab^2ab^2abab^2ababab)$
$2A/3C$	$xy^2xyxyxy^2xy$	13	6	4	13
$2A/3C$	$xy^2xyxyxy^2xy^2$	8	4	6	13
$2A/3C$	$xy^2xy^2xyxyxy^2xy$	10	5	3	5
$2B/3B$	$x$	12	15	8	14
$2B/3B$	$xy^2xyxy^2xy^2xy$	18	21	24	21
$2B/3B$	$xyxy^2xyxyxy^2$	18	21	20	15
$2B/3B$	$xyxy^2xyxyxyxy^2xy$	18	13	24	13
$2B/3B$	$xy^2xyxy^2xy^2xy^2xyxy^2$	18	13	24	18
$2B/3C$	$xy^2xy^2xy$	12	13	13	13
$2B/3C$	$xy^2xyxyxyxy$	14	6	15	11
$2B/3C$	$xy^2xyxyxy^2xy$	10	13	8	15
$2B/3C$	$xy^2xy^2xy^2xy^2xy$	15	15	8	8
$2B/3C$	$xy^2xyxyxyxy^2$	15	15	10	15
$2B/3C$	$xy^2xy^2xy^2xyxy^2$	10	13	15	12
$2B/3C$	$xy^2xyxyxy^2xyxy$	10	11	15	15
$2B/3C$	$xy^2xy^2xyxy^2xyxy$	15	10	15	21
$2B/3C$	$xy^2xy^2xy^2xyxy^2xy$	24	21	15	20
$2B/3C$	$xy^2xyxyxy^2xy^2xy$	15	10	10	15
$2B/3C$	$xy^2xy^2xy^2xy^2xy^2xy$	11	8	10	13

Classes	Word to conjugate by	$o(ab^2abab)$	$o(ab^2ab)$	$o(ab^2ab^2abab^2abab)$	$o(ab^2ab^2abab^2ababab)$
$2B/3C$	$xy^2xyxyxyxyxy^2$	11	8	13	13
$2B/3C$	$xy^2xy^2xy^2xyxy^2xy^2$	10	11	10	18
$2B/3C$	$xy^2xyxyxy^2xyxyxy$	6	7	13	7
$2B/3C$	$xy^2xyxy^2xyxyxy^2xy$	6	15	4	21
$2B/3C$	$xy^2xyxy^2xyxy^2xy^2xy$	15	20	13	15
$2B/3C$	$xy^2xy^2xy^2xyxy^2xy^2xy$	18	13	11	11
$2B/3C$	$xy^2xyxyxy^2xyxyxy^2$	18	13	24	20
$2B/3C$	$xy^2xy^2xyxy^2xyxyxy^2$	15	20	13	11
$2B/3C$	$xy^2xy^2xyxy^2xy^2xyxy^2$	6	15	21	15
$2B/3C$	$xy^2xyxyxyxyxy^2xyxy$	10	10	8	13
$2B/3C$	$xy^2xyxy^2xyxyxyxy^2xy$	6	12	5	13
$2B/3C$	$xy^2xyxyxyxy^2xy^2xyxy^2$	10	10	15	21
$2B/3C$	$xy^2xy^2xy^2xy^2xyxyxyxyxy$	8	15	12	13
$2B/3C$	$xy^2xy^2xy^2xyxy^2xyxyxyxy$	13	15	12	15
$2B/3C$	$xy^2xy^2xy^2xy^2xy^2xyxyxyxy$	21	15	21	12
$2B/3C$	$xy^2xy^2xyxy^2xyxyxyxy^2xy$	21	20	21	18
$2B/3C$	$xy^2xy^2xyxyxy^2xyxyxy^2xy$	15	21	10	13
$2B/3C$	$xy^2xyxy^2xyxy^2xyxyxy^2xy$	13	4	13	6
$2B/3C$	$xy^2xyxy^2xyxyxy^2xyxy^2xy$	15	10	15	10
$2B/3C$	$xy^2xy^2xyxyxy^2xy^2xyxy^2xy$	15	12	5	18
$2B/3C$	$xy^2xyxyxyxy^2xyxy^2xy^2xy$	15	21	10	12
$2B/3C$	$xy^2xyxyxyxy^2xyxyxyxy^2$	15	21	10	3
$2B/3C$	$xy^2xy^2xy^2xy^2xyxy^2xyxyxy^2$	15	21	8	8
$2B/3C$	$xy^2xyxy^2xy^2xyxyxy^2xyxy^2$	15	12	10	9
$2B/3C$	$xy^2xy^2xyxy^2xy^2xyxy^2xyxy^2$	15	10	5	15
$2B/3C$	$xy^2xyxy^2xyxy^2xy^2xy^2xyxy^2$	21	20	15	8
$2B/3C$	$xy^2xyxyxyxyxy^2xy^2xy^2xy^2$	21	15	24	10
$2B/3C$	$xy^2xyxyxy^2xyxy^2xy^2xy^2xy^2$	13	15	15	12
$2B/3C$	$xy^2xyxyxyxy^2xy^2xy^2xy^2xy^2$	8	15	13	10
$2B/3C$	$xy^2xyxyxyxy^2xyxyxyxyxy$	6	15	5	15
$2B/3C$	$xy^2xy^2xyxyxyxyxy^2xyxyxy$	6	12	12	8
$2B/3C$	$xy^2xy^2xy^2xy^2xyxyxy^2xyxyxy$	6	12	13	13
$2B/3C$	$xy^2xy^2xyxyxy^2xyxyxy^2xyxy$	10	15	5	18
$2B/3C$	$xy^2xy^2xy^2xy^2xy^2xyxyxy^2xyxy$	15	13	15	13
$2B/3C$	$xy^2xy^2xyxy^2xyxyxy^2xy^2xyxy$	15	21	15	13
$2B/3C$	$xy^2xy^2xy^2xy^2xyxyxyxy^2xy$	15	21	21	15

Classes	Word to conjugate by	$o(ab^2abab)$	$o(ab^2ab)$	$o(ab^2ab^2abab^2abab)$	$o(ab^2ab^2abab^2ababab)$
$2B/3C$	$xy^2xy^2xyxy^2xy^2xyxyxyxy^2xy$	12	24	15	10
$2B/3C$	$xy^2xy^2xyxyxyxy^2xy^2xyxy^2xy$	21	12	15	21
$2B/3C$	$xy^2xyxy^2xyxyxy^2xy^2xyxy^2xy$	13	10	21	20
$2B/3C$	$xy^2xy^2xy^2xyxyxy^2xy^2xy^2xy^2xy$	13	10	12	18
$2B/3C$	$xy^2xy^2xy^2xy^2xy^2xyxyxy^2xyxy^2$	6	15	12	15
$2B/3C$	$xy^2xyxy^2xyxyxy^2xy^2xy^2xyxy^2$	12	24	6	21
$2B/3C$	$xy^2xyxyxyxyxy^2xy^2xyxy^2xy^2$	15	13	21	10
$2B/3C$	$xy^2xyxy^2xy^2xyxy^2xy^2xyxy^2xy^2$	10	15	21	18
$2B/3C$	$xy^2xyxy^2xy^2xyxy^2xyxyxyxyxy$	15	15	10	10
$2B/3C$	$xy^2xyxy^2xy^2xyxyxy^2xyxyxyxy$	12	13	20	14
$2B/3C$	$xy^2xy^2xy^2xyxyxyxy^2xy^2xyxyxy$	13	6	11	12
$2B/3C$	$xy^2xy^2xyxy^2xyxyxy^2xyxy^2xyxy$	10	8	15	10
$2B/3C$	$xy^2xy^2xyxyxyxyxy^2xy^2xy^2xy^2xy$	12	13	21	6
$2B/3C$	$xy^2xyxyxyxy^2xy^2xyxy^2xyxyxy^2$	10	8	15	13
$2B/3C$	$xy^2xy^2xy^2xyxy^2xyxy^2xy^2xy^2xyxy^2$	13	6	15	18
$2B/3C$	$xy^2xyxyxyxy^2xyxyxy^2xyxyxyxyxy$	11	15	21	5

## 10 Fingerprinting for McL

### 10.1 Class representatives

- 2A:  $x$
- 5A:  $y$
- 5B:  $xyxy^4$

### 10.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2)$	$o(ab^3ab^2ab)$	$o(ab^2ab)$	$o(ab^4ab^2ab)$
$2A/5A$	$x$	12	8	14	30
$2A/5A$	$xyxy$	12	10	14	14
$2A/5B$	$xy^4xy$	11	11	11	7
$2A/5B$	$xy^4xyxy$	11	9	11	12
$2A/5B$	$xy^3xy^4xy$	12	8	14	9
$2A/5B$	$xy^2xyxy^3$	7	8	7	7
$2A/5B$	$xy^4xyxy^3$	7	7	11	6
$2A/5B$	$xy^4xy^3xy^3$	7	7	8	5

Classes	Word to conjugate by	$o(ab^2)$	$o(ab^3ab^2ab)$	$o(ab^2ab)$	$o(ab^4ab^2ab)$
2A/5B	$xy^2xy^2xy^4$	7	7	11	5
2A/5B	$xy^2xy^4xy^4$	30	8	12	8
2A/5B	$xy^2xyxy^3xy$	15	6	8	9
2A/5B	$xy^3xy^2xy^3xy$	10	12	11	14
2A/5B	$xyxy^2xy^4xy$	12	8	14	14
2A/5B	$xy^2xy^2xy^4xy$	8	8	11	7
2A/5B	$xy^4xy^3xyxy^2$	11	7	11	8
2A/5B	$xy^4xyxy^2xy^2$	11	12	30	11
2A/5B	$xy^2xy^3xy^3xy^2$	11	11	14	11
2A/5B	$xy^2xy^3xy^4xy^2$	14	11	15	10
2A/5B	$xyxyxyxy^3$	7	5	7	8
2A/5B	$xy^4xyxy^2xy^3$	7	4	7	6
2A/5B	$xy^4xy^2xy^3xy^3$	15	5	8	7
2A/5B	$xyxy^3xy^3xy^3$	7	5	8	11
2A/5B	$xy^3xy^2xy^2xy^4$	11	8	5	4
2A/5B	$xyxyxy^4xy^4$	30	9	12	7
2A/5B	$xy^3xy^4xyxyxy$	9	8	15	12
2A/5B	$xy^4xy^2xy^2xyxy$	15	11	11	11
2A/5B	$xy^2xyxyxy^2xy$	10	14	14	11
2A/5B	$xy^4xy^3xyxy^2xy$	11	9	14	7
2A/5B	$xy^3xyxy^2xy^2xy$	15	8	11	14
2A/5B	$xy^4xy^3xy^2xy^2xy$	9	8	11	12
2A/5B	$xy^2xy^3xyxy^3xy$	15	7	11	7
2A/5B	$xy^2xyxy^2xy^3xy$	11	7	30	9
2A/5B	$xyxy^2xy^2xy^3xy$	10	12	11	8
2A/5B	$xy^2xy^4xy^2xy^3xy$	14	6	14	7
2A/5B	$xy^3xy^4xy^2xy^3xy$	6	3	11	6
2A/5B	$xyxyxy^2xy^4xy$	8	5	11	11
2A/5B	$xy^4xy^2xy^3xyxy^2$	14	7	15	7
2A/5B	$xy^4xyxy^4xyxy^2$	15	8	11	7
2A/5B	$xy^4xy^4xy^3xy^2xy^2$	9	12	11	7
2A/5B	$xy^4xy^4xy^4xy^2xy^2$	15	14	11	9
2A/5B	$xy^2xyxy^3xy^4xy^2$	12	9	14	11
2A/5B	$xyxy^3xyxy^2xy^3$	7	7	7	4
2A/5B	$xy^4xy^3xyxy^2xy^3$	9	8	15	8
2A/5B	$xy^4xy^4xy^3xy^4xy^3$	11	4	11	8

Classes	Word to conjugate by	$o(ab^2)$	$o(ab^3ab^2ab)$	$o(ab^2ab)$	$o(ab^4ab^2ab)$
$2A/5B$	$xy^2xy^2xy^4xy^4xy^3$	5	5	3	5
$2A/5B$	$xy^3xy^4xyxy^2xy^4$	11	8	6	7
$2A/5B$	$xy^3xyxy^2xy^2xy^4$	11	11	11	9
$2A/5B$	$xy^2xyxy^3xy^4xy^4$	15	12	11	11
$2A/5B$	$xy^4xy^3xy^4xy^4xy^4$	14	7	14	8
$2A/5B$	$xy^2xy^4xy^4xy^4xy^4$	12	8	14	8
$2A/5B$	$xyxyxyxyxy^2xy$	10	30	14	12
$2A/5B$	$xy^2xy^3xy^2xy^4xy^2xy$	11	7	11	11
$2A/5B$	$xy^2xy^4xy^4xyxyxy^3$	8	4	8	3
$2A/5B$	$xy^3xyxy^2xyxy^3xy^3$	8	3	8	11

## 11 Fingerprinting for He

### 11.1 Class representatives

- $2A$ :  $x$
- $7A/B$ :  $(xy^3xy^2xy)^4$
- $7C$ :  $y$
- $7D/E$ :  $(xyxyxy^5xy^3)^2$

### 11.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^3ab^2ab)$	$o(ab^4ab^2ab)$	$o(ab^2)$	$o(ab^2ab)$
$2A/7A/B$	$xy^2xy^3$	12	10	14	12
$2A/7A/B$	$xy^5xy^4$	21	15	14	12
$2A/7C$	$x$	28	8	12	15
$2A/7D/E$	$y^2$	17	6	21	28
$2A/7D/E$	$y^3$	10	10	28	28
$2A/7D/E$	$xy^5$	15	17	21	15
$2A/7D/E$	$xy^6$	8	17	21	15
$2A/7D/E$	$xy^4xy^2$	15	15	17	21
$2A/7D/E$	$xy^5xy^3$	21	14	12	12
$2A/7D/E$	$xy^6xy^4$	21	6	21	14
$2A/7D/E$	$xyxy^5$	17	12	21	15

Classes	Word to conjugate by	$o(ab^3ab^2ab)$	$o(ab^4ab^2ab)$	$o(ab^2)$	$o(ab^2ab)$
2A/7D/E	$xy^3xy^6$	14	8	21	15
2A/7D/E	$xy^4xyxy$	8	15	14	17
2A/7D/E	$xyxy^6xy$	12	8	17	28
2A/7D/E	$xy^3xy^2xy^2$	15	6	14	17
2A/7D/E	$xyxy^4xy^2$	21	4	21	28
2A/7D/E	$xy^4xy^5xy^2$	15	21	14	14
2A/7D/E	$xy^6xy^5xy^2$	15	15	14	17
2A/7D/E	$xy^5xy^5xy^3$	15	21	21	14
2A/7D/E	$xyxy^2xy^5$	12	15	17	28
2A/7D/E	$xy^2xy^2xy^5$	6	15	14	17
2A/7D/E	$xy^5xy^2xyxy$	12	8	17	17
2A/7D/E	$xy^2xy^5xyxy$	21	15	17	17
2A/7D/E	$xy^6xy^5xyxy$	12	8	17	12
2A/7D/E	$xyxyxy^3xy$	21	8	17	21
2A/7D/E	$xy^3xy^6xy^6xy$	8	17	12	12
2A/7D/E	$xy^4xy^4xy^2xy^2$	12	14	7	14
2A/7D/E	$xy^3xy^3xy^6xy^2$	7	15	14	14
2A/7D/E	$xy^5xy^4xyxy^3$	14	14	7	14
2A/7D/E	$xy^4xyxy^5xy^4$	12	17	17	12
2A/7D/E	$xy^6xy^5xy^6xy^4$	21	15	28	28

## 12 Fingerprinting for Ru

### 12.1 Class representatives

- 2A:  $y^2$
- 2B:  $x$
- 4A:  $y$
- 4B:  $(xy^3xyxy^2xyxy)^3$
- 4C:  $(xy^3xy^2xy^2xyxyxy)^4$
- 4D:  $(xy^3xyxy^3xy^2xy)^2$

### 12.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^3ab^2ab^2ab)$	$o(abab^3ab^2ab)$	$o(ab^2ab)$	$o(ab^2ab^3)$
2A/4A	$xyxy^2xy$	13	6	5	5
2A/4A	$xy^2xyxyxyxy$	6	12	6	6
2A/4A	$xy^2xy^2xyxyxy$	13	13	12	12
2A/4A	$xyxyxy^2xy^2xy$	6	13	13	13
2A/4A	$xy^3xy^3xy^2xyxy^2xy$	13	6	6	6
2A/4B	$xy^2xy^3xy^2xy^2xy^3xy$	5	13	5	5
2A/4B	$xyxy^2xyxy^2xy^2xyxy$	13	5	7	7
2A/4B	$xy^2xyxy^2xyxyxyxyxy$	7	5	5	5
2A/4B	$xyxy^3xy^3xy^2xyxyxyxy$	13	7	7	7
2A/4C	$xy^2xy^3xyxy$	4	13	8	8
2A/4C	$xyxy^2xy^2xy^2xyxy$	8	12	12	12
2A/4C	$xy^3xyxy^2xy^2xy^3xy$	13	10	12	12
2A/4C	$xy^2xy^2xy^3xyxy^2xyxy$	12	16	16	16
2A/4C	$xy^3xy^2xy^2xy^3xy^3xy^3xy$	12	12	5	5
2A/4C	$xyxy^3xy^2xy^3xy^2xy^3xyxy$	12	16	16	16
2A/4C	$xy^2xy^2xy^3xy^2xyxyxy^2xy$	10	16	12	12
2A/4D	$xyxy^2xyxy^3xy$	6	20	24	24
2A/4D	$xyxyxy^3xy^3xy$	12	10	15	15
2A/4D	$xy^2xy^3xy^3xy^3xy$	13	24	8	8
2A/4D	$xy^2xy^2xy^2xy^2xyxy$	6	4	10	10
2A/4D	$xy^2xy^3xyxyxy^2xy$	5	8	12	12
2A/4D	$xy^3xy^2xy^2xyxy^3xy$	7	14	24	24
2A/4D	$xyxy^3xyxyxy^2xyxy$	5	16	10	10
2A/4D	$xyxy^3xyxy^2xy^2xyxy$	6	26	12	12
2A/4D	$xy^2xy^3xyxy^2xyxy^2xy$	12	13	12	12
2A/4D	$xy^2xy^2xy^3xyxy^2xy^2xy$	6	8	12	12
2A/4D	$xyxy^2xyxyxyxy^3xy$	3	8	13	13
2A/4D	$xyxyxy^3xy^2xyxy^3xy$	12	29	29	29
2A/4D	$xyxy^2xy^3xy^2xy^2xyxyxy$	5	13	12	12
2A/4D	$xyxy^2xy^2xy^2xy^2xyxy$	12	12	7	7
2A/4D	$xy^2xyxyxyxy^3xy^2xyxy$	13	8	16	16
2A/4D	$xy^2xy^2xy^2xy^3xy^3xy^3xyxy$	5	6	6	6
2A/4D	$xy^2xy^2xy^3xy^3xy^3xy^3xyxy$	8	15	29	29

Classes	Word to conjugate by	$o(ab^3ab^2ab^2ab)$	$o(abab^3ab^2ab)$	$o(ab^2ab)$	$o(ab^2ab^3)$
2A/4D	$xy^3xyxy^2xy^3xyxyxy^2xy$	4	16	20	20
2A/4D	$xy^2xy^2xy^2xyxy^3xy^2xy^2xy$	6	13	8	8
2A/4D	$xy^2xy^2xyxy^2xy^3xy^3xy^2xy$	2	6	10	10
2A/4D	$xyxy^3xy^2xy^2xy^3xy^3xy^2xy$	5	10	20	20
2A/4D	$xy^3xy^2xyxy^3xy^2xyxy^3xy$	7	14	29	29
2A/4D	$xy^2xy^3xy^3xy^2xyxyxyxyxy$	13	13	16	16
2A/4D	$xy^3xy^2xy^2xy^3xy^2xy^2xyxyxy$	13	16	12	12
2A/4D	$xy^2xyxy^2xyxy^3xy^2xy^3xyxy$	5	6	16	16
2A/4D	$xy^2xyxy^3xy^2xy^3xy^2xy^3xyxy$	8	16	16	16
2A/4D	$xy^3xy^3xy^2xy^3xy^3xy^3xyxy$	7	15	29	29
2A/4D	$xy^2xy^2xy^2xyxyxy^2xyxy^2xy$	5	6	10	10
2A/4D	$xy^2xy^3xyxyxy^2xy^2xy^3xy^2xy$	13	13	12	12
2B/4A	$x$	26	7	29	29
2B/4B	$xy^3xy^2xy^3$	7	12	14	14
2B/4B	$xy^3xy^3xy^3xy^3$	15	26	29	29
2B/4B	$xyxy^2xyxyxy^2$	14	26	29	29
2B/4B	$xy^2xy^3xy^3xyxy^2$	15	8	24	24
2B/4B	$xyxy^2xyxy^3xy^2$	7	26	26	26
2B/4B	$xyxyxy^2xy^2xy^3$	13	12	24	24
2B/4B	$xy^3xyxy^2xy^3xy^3$	15	20	24	24
2B/4B	$xy^3xy^3xyxy^2xy^2xy$	26	12	14	14
2B/4B	$xyxy^2xy^3xyxyxy^2$	26	29	24	24
2B/4B	$xyxyxyxy^3xy^3xy^3$	10	26	14	14
2B/4C	$xy^2xyxyxy$	29	13	14	14
2B/4C	$xy^3xyxy^2xy$	14	29	10	10
2B/4C	$xy^3xy^2xy^3xy$	29	12	20	20
2B/4C	$xyxyxy^2xyxy$	5	20	20	20
2B/4C	$xy^3xyxyxy^2xy$	26	8	14	14
2B/4C	$xy^3xy^2xyxy^2xy$	20	12	26	26
2B/4C	$xyxy^3xyxy^2xy^3$	10	8	8	8
2B/4C	$xy^2xy^3xy^3xy^3xy^3$	20	8	8	8
2B/4C	$xy^3xy^2xyxyxyxy$	10	24	26	26
2B/4C	$xy^2xy^2xy^3xy^2xyxy$	10	7	26	26



Classes	Word to conjugate by	$o(ab^3ab^2ab^2ab)$	$o(abab^3ab^2ab)$	$o(ab^2ab)$	$o(ab^2ab^3)$
$2B/4C$	$xyxy^3xy^2xy^3xy^2xy$	12	7	29	29
$2B/4C$	$xy^3xyxy^3xy^2xyxy^2$	10	20	8	8
$2B/4C$	$xy^2xy^3xy^3xy^2xyxy^2$	13	24	24	24
$2B/4C$	$xy^2xy^2xy^2xy^3xyxy^2$	14	26	15	15
$2B/4C$	$xyxyxy^2xyxy^3xy^2$	26	12	16	16
$2B/4C$	$xy^2xy^2xy^2xy^2xy^2xy^3$	5	14	20	20
$2B/4C$	$xy^2xy^2xy^3xyxy^2xyxy$	13	29	26	26
$2B/4C$	$xyxy^2xy^3xyxy^2xy^2xy$	13	8	20	20
$2B/4C$	$xy^3xy^3xy^3xyxy^2xy^2xy$	10	6	20	20
$2B/4C$	$xy^3xy^3xy^3xy^3xy^3xy^2xy$	10	16	15	15
$2B/4C$	$xyxy^3xy^2xyxyxyxy^2$	26	16	14	14
$2B/4C$	$xy^2xyxyxy^2xyxyxy^2$	14	12	14	14
$2B/4C$	$xy^3xyxy^2xyxy^2xyxy^2$	10	10	24	24
$2B/4C$	$xyxy^2xyxyxyxy^2xy^2$	29	6	14	14
$2B/4C$	$xy^2xy^2xy^2xy^3xy^3xy^3xy^2$	26	24	14	14
$2B/4C$	$xyxy^2xy^2xy^2xy^2xy^2xy^3$	12	12	14	14
$2B/4C$	$xy^2xy^2xy^3xyxyxyxyxyxy$	26	6	16	16
$2B/4C$	$xy^2xy^2xyxyxy^3xy^2xyxy$	26	24	14	14
$2B/4C$	$xy^3xy^2xyxyxy^3xy^2xyxy$	15	24	20	20
$2B/4C$	$xyxy^3xy^2xyxy^3xy^3xy^2xy$	10	15	8	8
$2B/4C$	$xyxy^3xyxy^3xy^2xy^3xy^3xy$	26	12	24	24
$2B/4C$	$xy^2xy^2xy^3xy^2xy^3xy^2xy^3$	14	26	14	14
$2B/4D$	$xy^3xyxyxy^3$	29	14	24	24
$2B/4D$	$xy^2xy^2xy^2xy^3$	29	6	29	29
$2B/4D$	$xy^2xyxy^2xyxy$	26	14	24	24
$2B/4D$	$xyxy^2xy^3xy^3xy$	10	20	12	12
$2B/4D$	$xy^2xyxyxy^3xy^2$	7	24	20	20
$2B/4D$	$xy^3xy^3xy^2xy^2xy^3$	20	20	29	29
$2B/4D$	$xy^2xyxyxyxy^2xy$	10	29	12	12
$2B/4D$	$xyxy^3xy^3xy^2xy^2xy$	10	12	12	12
$2B/4D$	$xy^2xy^3xy^3xy^2xy^3xy$	29	26	16	16
$2B/4D$	$xy^3xy^2xy^2xy^3xy^3xy$	10	12	12	12
$2B/4D$	$xy^3xy^3xyxyxy^3xy^2$	13	20	20	20
$2B/4D$	$xyxyxyxy^2xy^2xy^3$	10	26	14	14
$2B/4D$	$xy^2xyxyxyxyxyxy$	13	16	24	24

Classes	Word to conjugate by	$o(ab^3ab^2ab^2ab)$	$o(abab^3ab^2ab)$	$o(ab^2ab)$	$o(ab^2ab^3)$
$2B/4D$	$xy^3xy^3xyxyxyxy^2xy$	13	13	12	12
$2B/4D$	$xy^3xy^2xy^3xy^3xy^2xy^2xy$	10	14	12	12
$2B/4D$	$xyxyxyxyxyxy^3xy^2xy$	14	26	14	14
$2B/4D$	$xy^3xy^3xy^3xy^3xy^2xy^3xy$	5	6	16	16
$2B/4D$	$xyxyxy^3xy^2xyxyxy^2$	7	10	10	10
$2B/4D$	$xyxyxyxy^3xy^3xy^2xy^2$	13	14	14	14
$2B/4D$	$xy^3xy^3xyxyxyxyxyxyxy$	26	8	24	24
$2B/4D$	$xyxyxy^2xy^2xy^3xyxyxy$	10	16	24	24
$2B/4D$	$xy^2xyxy^3xy^3xyxy^2xyxy$	5	26	20	20
$2B/4D$	$xy^2xyxy^3xy^3xy^2xyxy^2xy$	12	12	16	16
$2B/4D$	$xy^2xy^3xy^2xyxy^2xy^2xy^2xy$	13	14	26	26
$2B/4D$	$xy^2xyxy^2xyxyxy^3xy^3xy$	13	10	14	14
$2B/4D$	$xy^3xy^2xyxy^3xy^2xyxyxy^2$	5	26	10	10
$2B/4D$	$xyxyxy^2xy^3xy^3xy^2xyxy^2$	6	26	20	20
$2B/4D$	$xy^2xy^2xyxyxy^3xy^2xy^2xy^3$	20	26	16	16
$2B/4D$	$xy^2xy^3xy^3xyxy^2xyxyxyxy$	15	20	20	20
$2B/4D$	$xy^3xyxy^3xyxyxy^2xy^2xyxy$	29	16	26	26

## 13 Fingerprinting for $Ly$

### 13.1 Class representatives

- $3A$ :  $(xy^4xy^4xyxy)^7$
- $5A$ :  $y$
- $5B$ :  $(xyxyxy^4)^3$

### 13.2 Fingerprint table

Classes	Word to conjugate by	$o(a^2b^2ab)$	$o(ab^3)$	$o(ab^2)$	$o(a^2b^3ab)$
$3A/5A$	$xyxy^3xy^2$	33	15	9	33
$3A/5B$	$xy^2xy^4xy^4xy^3$	24	11	24	9
$3A/5B$	$xy^3xy^4xyxy^4$	15	12	15	33
$3A/5B$	$xy^3xy^2xyxy^3xy$	14	14	9	14
$3A/5B$	$xy^4xy^2xy^4xyxy^2$	33	14	9	7
$3A/5B$	$xy^4xyxy^2xy^4xy^2$	7	42	42	14
$3A/5B$	$xy^4xy^3xy^4xy^4xy^2$	24	42	21	12

Classes	Word to conjugate by	$o(a^2b^2ab)$	$o(ab^3)$	$o(ab^2)$	$o(a^2b^3ab)$
3A/5B	$xy^3xy^4xy^3xy^4xy^3$	42	30	15	12
3A/5B	$xy^3xy^3xy^4xy^2xy^4$	12	10	30	21
3A/5B	$xyxy^3xyxy^4xy^2xy$	12	12	15	33
3A/5B	$xyxy^4xyxyxy^3xy$	12	11	24	42
3A/5B	$xy^4xy^2xyxy^2xy^4xy$	24	7	30	9
3A/5B	$xy^3xyxy^4xy^4xyxy^2$	14	12	14	14
3A/5B	$xy^3xy^2xyxyxy^2xy^2$	24	24	42	12
3A/5B	$xyxyxyxyxy^2xy^4$	6	12	33	42
3A/5B	$xy^3xy^3xyxy^2xy^3xy^4$	33	30	33	12
3A/5B	$xy^3xyxyxy^4xy^4xy^4$	21	11	11	12
3A/5B	$xy^2xyxy^3xy^4xy^2xyxy$	8	11	11	7
3A/5B	$xy^3xy^2xyxyxy^3xyxy$	12	30	15	42
3A/5B	$xy^2xy^2xy^3xyxyxy^2xy$	15	42	42	42
3A/5B	$xyxy^3xy^2xyxy^3xy^2xy$	33	10	30	6
3A/5B	$xyxyxy^3xy^4xy^3xy^2xy$	21	12	33	21
3A/5B	$xy^2xy^3xy^3xy^2xy^4xy^2xy$	21	30	33	21
3A/5B	$xyxy^3xyxy^2xyxy^3xy$	21	30	15	21
3A/5B	$xy^2xyxy^2xy^3xy^3xy^3xy$	33	15	30	33
3A/5B	$xyxy^2xy^2xyxyxy^4xy$	12	42	21	11
3A/5B	$xy^2xy^3xy^3xyxy^4xy^4xy$	30	42	9	11
3A/5B	$xyxy^4xy^2xy^2xy^4xyxy^2$	24	42	9	7
3A/5B	$xy^3xy^2xy^2xyxyxy^2xy^2$	11	6	12	8
3A/5B	$xy^4xy^4xyxy^4xy^3xy^2xy^2$	12	12	42	11
3A/5B	$xy^2xy^4xy^2xy^4xy^2xy^3xy^2$	21	30	24	33
3A/5B	$xyxyxyxyxy^4xy^2xyxy^3$	21	9	12	33
3A/5B	$xy^4xy^2xy^3xy^2xy^2xy^2xy^3$	30	24	42	12
3A/5B	$xy^2xyxy^4xy^3xy^3xyxy^4$	12	30	30	33
3A/5B	$xy^2xyxy^4xy^4xy^2xyxyxy$	33	30	12	15
3A/5B	$xyxy^2xy^2xy^4xy^3xy^2xyxy$	12	12	42	21
3A/5B	$xy^4xy^2xy^3xy^4xyxyxy^2xy$	12	9	12	21
3A/5B	$xy^2xy^4xy^4xyxyxy^2xy^3xy$	8	8	15	33
3A/5B	$xyxy^3xy^4xyxyxy^4xy^4xy$	7	12	14	33

## 14 Fingerprinting for $M_{12}.2$

### 14.1 Class representatives

- 2C:  $x$
- 3A:  $y$

- 3B:  $(xy)^4$

## 14.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2ab)$	$o(ab^2abab)$	$o(ab^2ab^2abab^2abab)$
2C/3A	$x$	11	10	6
2C/3A	$xy^2xy^2xy$	6	10	11
2C/3A	$xyxy^2xyxy$	5	4	3
2C/3B	$y$	3	6	3
2C/3B	$xy^2xy$	10	12	5
2C/3B	$xy^2xy^2$	10	12	6
2C/3B	$xy^2xy^2xy$	5	10	6
2C/3B	$xy^2xyxyxy$	5	4	3
2C/3B	$xy^2xy^2xyxy$	6	10	11
2C/3B	$xy^2xy^2xyxyxyxy$	11	12	10

## 15 Fingerprinting for $M_{22}.2$

### 15.1 Class representatives

- 2A:  $y^2$
- 2B:  $x$
- 2C:  $(xyxy^2)^5$
- 4A:  $xyxy^3$
- 4B:  $xy^2xy^2xy$
- 4C:  $y$
- 4D:  $xy^3xy^3xy^2xyxy$

### 15.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2)$	$o(ab^3ab)$	$o(ab^3ab^2ab)$	$o(ab^2ab)$
2A/4A	$x$	5	6	5	11
2A/4A	$xy^2xyxyxy$	6	5	5	8
2A/4B	$x$	4	6	6	8

Classes	Word to conjugate by	$o(ab^2)$	$o(ab^3ab)$	$o(ab^3ab^2ab)$	$o(ab^2ab)$
$2A/4B$	$xyxy$	6	4	6	7
$2A/4B$	$xy^2xyxy$	6	4	5	7
$2A/4B$	$xy^3xyxy^3xy$	5	5	6	11
$2B/4C$	$x$	6	4	6	10
$2C/4C$	$y$	12	5	10	12
$2C/4D$	$xy^3xy$	10	5	10	14
$2C/4D$	$xy^2xy^2xy^3$	10	5	8	14
$2C/4D$	$xyxy^3xy^3$	12	6	12	14
$2C/4D$	$xyxy^3xy^3xy$	8	11	10	6
$2C/4D$	$xyxyxyxy^3$	12	6	10	14

## 16 Fingerprinting for HS.2

### 16.1 Class representatives

- $2C$ :  $x$
- $2D$ :  $xy^4xy^2xy^2xy^3xy^2xyxy$
- $5A$ :  $(xy^2)^4$
- $5B$ :  $(xy)^6$
- $5C$ :  $y$

### 16.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2)$	$o(ab^3ab)$	$o(ab^3ab^2ab)$	$o(ab^4ab^2ab)$	$o(ab^2ab)$
$2C/5B$	$xy^2xyxy$	14	15	14	6	6
$2C/5B$	$xy^2xy^3xyxy^2$	20	5	20	20	15
$2C/5C$	$x$	20	12	14	10	20
$2D/5A$	$y$	20	4	20	10	7
$2D/5B$	$xy^4xy^2$	20	11	20	20	20
$2D/5B$	$xy^2xy^4$	10	12	10	4	7

Classes	Word to conjugate by	$o(ab^2)$	$o(ab^3ab)$	$o(ab^3ab^2ab)$	$o(ab^4ab^2ab)$	$o(ab^2ab)$
$2D/5B$	$xy^3xy^3xy^3$	10	12	20	12	7
$2D/5B$	$xy^3xy^4xyxy^2$	8	8	14	20	10
$2D/5C$	$xy^3xyxy$	20	10	20	12	8
$2D/5C$	$xy^2xy^3xy$	20	10	14	6	8
$2D/5C$	$xy^3xy^3xy^4$	10	11	6	20	6
$2D/5C$	$xy^3xy^3xyxy$	14	7	12	20	11
$2D/5C$	$xy^2xy^2xy^3xy$	14	7	8	20	11
$2D/5C$	$xy^3xyxy^2xy^2$	20	20	20	20	7
$2D/5C$	$xy^4xy^2xy^2xy^2$	10	11	20	30	6
$2D/5C$	$xy^2xyxy^3xy^2$	20	7	20	14	10
$2D/5C$	$xy^3xyxyxy^3$	20	7	20	10	10
$2D/5C$	$xyxy^2xyxy^3$	12	15	10	12	12
$2D/5C$	$xy^4xy^2xyxy^3$	10	11	10	14	15
$2D/5C$	$xy^2xyxy^3xy^3$	20	11	12	20	7
$2D/5C$	$xy^3xyxy^2xy^4$	14	11	20	20	20
$2D/5C$	$xy^4xy^4xyxy^2xy$	20	7	6	4	10
$2D/5C$	$xy^2xyxy^3xyxy^2$	12	15	14	10	12
$2D/5C$	$xyxy^2xy^3xyxy^2$	12	15	8	12	11
$2D/5C$	$xy^2xy^3xyxy^3xy^2$	20	10	20	8	20
$2D/5C$	$xy^3xy^4xy^3xy^3xy^2$	10	11	10	6	15
$2D/5C$	$xy^3xy^4xyxy^2xy^3$	6	10	10	20	10
$2D/5C$	$xy^3xy^4xy^2xy^3xy^4xy$	20	11	20	20	7
$2D/5C$	$xy^4xy^4xy^4xy^3xy^3xy^2$	8	20	10	6	10

## 17 Fingerprinting for $J_2.2$

### 17.1 Class representatives

- $2C$ :  $x$
- $5AB$ :  $y$
- $5CD$ :  $xy^4(xy)^3$

### 17.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^4ab^2ab)$	$o(ab^2)$
$2C/5AB$	$x$	12	24

Classes	Word to conjugate by	$o(ab^4ab^2ab)$	$o(ab^2)$
$2C/5CD$	$y^2$	12	12
$2C/5CD$	$xy^4xy^3$	4	12
$2C/5CD$	$xy^2xy^2xy$	24	6
$2C/5CD$	$xy^2xy^3xy^4$	12	6

## 18 Fingerprinting for $J_3.2$

### 18.1 Class representatives

- $2B$ :  $x$
- $3A$ :  $y$
- $3B$ :  $(xyxy^2)^3$

### 18.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2ab^2abab^2abab)$	$o(ab^2ab)$	$o(ab^2abab)$
$2B/3A$	$x$	19	9	34
$2B/3A$	$xyxyxyxy$	19	17	34
$2B/3B$	$y^2$	17	9	18
$2B/3B$	$xy^2xy^2xy^2xy$	12	8	18
$2B/3B$	$xy^2xyxyxy^2$	17	8	18
$2B/3B$	$xy^2xy^2xy^2xyxy$	19	17	18
$2B/3B$	$xy^2xyxyxy^2xy^2$	4	17	18
$2B/3B$	$xy^2xyxyxy^2xy^2xyxyxy$	17	9	34

## 19 Fingerprinting for $Suz.2$

### 19.1 Class representatives

- $2C$ :  $x$
- $2D$ :  $((xy^2)^2(xy)^5)^5$
- $3B$ :  $y$
- $3C$ :  $(xyxyxy^2)^4$

### 19.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2ab^2ababab^2ababab)$	$o(ab^2ab)$	$o(ab^2ab^2abab^2abab)$
$2C/3B$	$x$	21	7	6
$2C/3C$	$xyxyxyxy^2xy^2xyxy$	3	12	3
$2D/3B$	$xy^2$	11	15	15
$2D/3C$	$xyxyxyxy^2xy^2$	12	14	14
$2D/3C$	$xy^2xyxy^2xy^2xyxy^2$	11	12	12
$2D/3C$	$xyxyxyxy^2xy^2xy^2$	12	12	12
$2D/3C$	$xyxyxyxyxy^2xy^2xy$	9	14	11
$2D/3C$	$xy^2xy^2xy^2xy^2xyxyxy^2$	24	7	18
$2D/3C$	$xyxy^2xyxyxyxy^2xy^2$	18	14	12
$2D/3C$	$xy^2xy^2xyxy^2xy^2xy^2xy^2$	4	18	18
$2D/3C$	$xy^2xy^2xy^2xy^2xyxy^2xy^2xy$	6	14	20
$2D/3C$	$xy^2xy^2xyxyxyxyxyxy^2$	8	18	6
$2D/3C$	$xyxy^2xy^2xyxyxyxyxy^2$	13	18	14
$2D/3C$	$xy^2xyxyxy^2xyxyxyxy^2$	10	18	11
$2D/3C$	$xyxyxyxy^2xy^2xyxyxy^2$	12	18	12
$2D/3C$	$xy^2xy^2xyxyxy^2xy^2xyxy^2$	20	11	12
$2D/3C$	$xyxy^2xy^2xy^2xyxyxy^2xy^2$	13	18	5
$2D/3C$	$xyxyxyxyxy^2xy^2xy^2xy^2$	15	9	12
$2D/3C$	$xy^2xy^2xy^2xy^2xy^2xy^2xy^2$	15	12	10
$2D/3C$	$xy^2xyxy^2xy^2xyxy^2xyxyxy^2$	24	5	18
$2D/3C$	$xy^2xyxy^2xyxy^2xy^2xy^2xyxy^2$	10	12	20
$2D/3C$	$xy^2xyxyxyxy^2xy^2xyxy^2xy^2$	9	11	9
$2D/3C$	$xyxy^2xyxyxyxyxy^2xy^2xy^2$	14	18	8
$2D/3C$	$xyxy^2xy^2xy^2xyxyxy^2xy^2xy^2$	18	20	9
$2D/3C$	$xy^2xy^2xy^2xyxyxy^2xy^2xy^2xy^2$	24	7	5
$2D/3C$	$xyxyxyxy^2xyxyxyxy^2xy^2xy$	10	9	12
$2D/3C$	$xy^2xyxy^2xy^2xyxyxyxy^2xy^2xy$	12	18	20
$2D/3C$	$xy^2xyxyxy^2xy^2xyxyxy^2xy^2xy$	9	20	18
$2D/3C$	$xyxy^2xyxyxyxy^2xyxyxy^2xy^2$	18	11	9
$2D/3C$	$xy^2xy^2xyxyxyxy^2xy^2xyxy^2xy^2$	18	5	18
$2D/3C$	$xy^2xy^2xy^2xyxy^2xyxyxyxyxy^2xy$	6	18	11
$2D/3C$	$xyxy^2xyxyxyxy^2xy^2xyxy^2xyxy^2$	10	18	12



## 20 Fingerprinting for $\text{Fi}_{22}.2$

### 20.1 Class representatives

- $2A$ :  $x$
- $18E$ :  $y$
- $18F$ :  $xyxy^2$

### 20.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2)$	$o(ab^3)$
$2A/18E$	$x$	30	30
$2A/18F$	$xy^6xy^2$	8	30
$2A/18F$	$xy^{13}xy^8$	20	30
$2A/18F$	$xy^4xy^8xy$	24	12
$2A/18F$	$xy^{12}xyxy^4$	30	12

## 21 Fingerprinting for $\text{Fi}_{24}$

### 21.1 Class representatives

- $2C$ :  $x$
- $8D$ :  $y$
- $8F$ :  $(xy^2xy^3(xy)^4)^3$

### 21.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2)$	$o(ab^3ab^2ab)$	$o(ab^4ab^2ab)$
$2C/8D$	$x$	20	18	21
$2C/8F$	$xy^2xy^2$	36	36	29
$2C/8F$	$xy^6xy^3$	24	54	27
$2C/8F$	$xy^2xy^2xy$	36	46	24
$2C/8F$	$xy^5xy^4xy$	24	28	24
$2C/8F$	$xy^3xy^2xy^3$	24	36	11
$2C/8F$	$xy^5xy^2xy^3$	24	28	23
$2C/8F$	$xyxy^3xy^3$	36	28	42

Classes	Word to conjugate by	$o(ab^2)$	$o(ab^3ab^2ab)$	$o(ab^4ab^2ab)$
$2C/8F$	$xy^6xyxyxy$	36	40	29
$2C/8F$	$xy^2xyxy^3xy$	24	84	33
$2C/8F$	$xy^3xy^6xy^3xy$	24	28	22

## 22 Fingerprinting for HN.2

### 22.1 Class representatives

- $2A$ :  $(xyxyxy^3xy^2)^{15}$
- $5A$ :  $y$
- $5CD$ :  $(xyxy^3xyxy^4)^6$
- $5E$ :  $(xy^3xy^3xyxy^3xy)^2$

### 22.2 Fingerprint table

Classes	Word to conjugate by	$o(ab^2ab)$	$o(ab^3ab^2ab)$	$o(ab^4ab^2ab)$
$2A/5A$	$xy^3xy$	20	8	8
$2A/5CD$	$xy^3xy^3xyxy^2$	20	20	15
$2A/5E$	$xy^4xy^2$	19	40	7
$2A/5E$	$xy^4xy^2xyxy^3$	22	14	8
$2A/5E$	$xy^2xy^3xy^2xyxy$	11	20	19
$2A/5E$	$xy^4xy^2xy^3xy^2xy$	19	19	11
$2A/5E$	$xy^3xy^3xy^3xy^3xy$	25	21	11
$2A/5E$	$xy^3xy^3xy^3xy^4xy$	10	20	11
$2A/5E$	$xy^2xy^3xy^2xy^2xy^2$	10	20	7
$2A/5E$	$xy^3xy^2xy^4xy^2xy^4$	8	7	5
$2A/5E$	$xyxy^3xyxy^3xy^2xy$	8	10	11
$2A/5E$	$xyxy^3xy^3xy^2xyxy^2$	14	8	7
$2A/5E$	$xy^4xy^4xy^2xy^4xy^3xy^3$	11	4	8
$2A/5E$	$xyxy^4xy^3xy^4xy^4xy^3$	8	8	10
$2A/5E$	$xy^3xyxy^3xy^3xy^3xy^4$	14	5	8