

The group  $G$  is isomorphic to the group labelled by [ 16, 7 ] in the Small Groups library.

Ordinary character table of  $G \cong \text{D16}$ :

|          | 1a | 8a               | 2a | 4a | 2b | 8b               | 2c |
|----------|----|------------------|----|----|----|------------------|----|
| $\chi_1$ | 1  | 1                | 1  | 1  | 1  | 1                | 1  |
| $\chi_2$ | 1  | -1               | -1 | 1  | 1  | -1               | 1  |
| $\chi_3$ | 1  | -1               | 1  | 1  | -1 | -1               | 1  |
| $\chi_4$ | 1  | 1                | -1 | 1  | -1 | 1                | 1  |
| $\chi_5$ | 2  | 0                | 0  | -2 | 0  | 0                | 2  |
| $\chi_6$ | 2  | $E(8) - E(8)^3$  | 0  | 0  | 0  | $-E(8) + E(8)^3$ | -2 |
| $\chi_7$ | 2  | $-E(8) + E(8)^3$ | 0  | 0  | 0  | $E(8) - E(8)^3$  | -2 |

Trivial source character table of  $G \cong \text{D16}$  at  $p = 2$ :

| Normalisers $N_i$  | $N_1$ | $N_2$ | $N_3$ | $N_4$ | $N_5$ | $N_6$ | $N_7$ | $N_8$ | $N_9$ | $N_{10}$ | $N_{11}$ |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|----------|
| $p$ -subgroups of $G$ up to conjugacy in $G$   | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ | $P_6$ | $P_7$ | $P_8$ | $P_9$ | $P_{10}$ | $P_{11}$ |
| Representatives $n_j \in N_i$  | 1a    | 1a    | 1a    | 1a    | 1a    | 1a    | 1a    | 1a    | 1a    | 1a       | 1a       |
| $1 \cdot \chi_1 + 1 \cdot \chi_2 + 1 \cdot \chi_3 + 1 \cdot \chi_4 + 2 \cdot \chi_5 + 2 \cdot \chi_6 + 2 \cdot \chi_7$ | 16    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0        | 0        |
| $1 \cdot \chi_1 + 1 \cdot \chi_2 + 1 \cdot \chi_3 + 1 \cdot \chi_4 + 2 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7$ | 8     | 8     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0        | 0        |
| $1 \cdot \chi_1 + 1 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 1 \cdot \chi_5 + 1 \cdot \chi_6 + 1 \cdot \chi_7$ | 8     | 0     | 2     | 0     | 0     | 0     | 0     | 0     | 0     | 0        | 0        |
| $1 \cdot \chi_1 + 0 \cdot \chi_2 + 1 \cdot \chi_3 + 0 \cdot \chi_4 + 1 \cdot \chi_5 + 1 \cdot \chi_6 + 1 \cdot \chi_7$ | 8     | 0     | 0     | 2     | 0     | 0     | 0     | 0     | 0     | 0        | 0        |
| $1 \cdot \chi_1 + 1 \cdot \chi_2 + 1 \cdot \chi_3 + 1 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7$ | 4     | 4     | 0     | 0     | 4     | 0     | 0     | 0     | 0     | 0        | 0        |
| $1 \cdot \chi_1 + 1 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 1 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7$ | 4     | 4     | 2     | 0     | 0     | 2     | 0     | 0     | 0     | 0        | 0        |
| $1 \cdot \chi_1 + 0 \cdot \chi_2 + 1 \cdot \chi_3 + 0 \cdot \chi_4 + 1 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7$ | 4     | 4     | 0     | 2     | 0     | 0     | 2     | 0     | 0     | 0        | 0        |
| $1 \cdot \chi_1 + 1 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7$ | 2     | 2     | 2     | 0     | 2     | 2     | 0     | 2     | 0     | 0        | 0        |
| $1 \cdot \chi_1 + 0 \cdot \chi_2 + 1 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7$ | 2     | 2     | 0     | 2     | 2     | 0     | 2     | 0     | 2     | 0        | 0        |
| $1 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 1 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7$ | 2     | 2     | 0     | 0     | 2     | 0     | 0     | 0     | 0     | 2        | 0        |
| $1 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7$ | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1        | 1        |

$$P_1 = \text{Group}[(())] \cong 1$$

$$P_2 = \text{Group}[(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16)] \cong \text{C2}$$

$$P_3 = \text{Group}[(1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14)] \cong \text{C2}$$

$$P_4 = \text{Group}[(1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15)] \cong \text{C2}$$

$$P_5 = \text{Group}[(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16)] \cong \text{C4}$$

$$P_6 = \text{Group}[(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14)] \cong \text{C2} \times \text{C2}$$

$$P_7 = \text{Group}[(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15)] \cong \text{C2} \times \text{C2}$$

$$P_8 = \text{Group}[(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14)] \cong \text{D8}$$

$$P_9 = \text{Group}[(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15)] \cong \text{D8}$$

$$P_{10} = \text{Group}[(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 12, 4, 13, 5, 16, 11, 6)(2, 9, 7, 10, 8, 15, 14, 3)] \cong \text{C8}$$

$$P_{11} = \text{Group}[(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14), (1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15)] \cong \text{D16}$$

$$N_1 = \text{Group}[(1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15), (1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16)] \cong \text{D16}$$

$$N_2 = \text{Group}[(1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15), (1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16)] \cong \text{D16}$$

$$N_3 = \text{Group}[(1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16)] \cong \text{C2} \times \text{C2}$$

$$N_4 = \text{Group}[(1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16)] \cong \text{C2} \times \text{C2}$$

$$N_5 = \text{Group}[(1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15), (1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14)] \cong \text{D16}$$

$$N_6 = \text{Group}[(1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16)] \cong \text{D8}$$

$$N_7 = \text{Group}[(1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16)] \cong \text{D8}$$

$$N_8 = \text{Group}[(1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15)] \cong \text{D16}$$

$$N_9 = \text{Group}[(1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14)] \cong \text{D16}$$

$$N_{10} = \text{Group}[(1, 12, 4, 13, 5, 16, 11, 6)(2, 9, 7, 10, 8, 15, 14, 3), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15)] \cong \text{D16}$$

$$N_{11} = \text{Group}[(1, 2)(3, 12)(4, 14)(5, 8)(6, 9)(7, 11)(10, 16)(13, 15), (1, 3)(2, 6)(4, 15)(5, 10)(7, 16)(8, 13)(9, 11)(12, 14), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16)] \cong \text{D16}$$