

The group G is isomorphic to the group labelled by [16, 9] in the Small Groups library.

Ordinary character table of $G \cong \text{Q16}$:

| | $1a$ | $2a$ | $4a$ | $8a$ | $8b$ | $4b$ | $4c$ |
|----------|------|------|------|------------------|------------------|------|------|
| χ_1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| χ_2 | 1 | 1 | 1 | 1 | 1 | -1 | -1 |
| χ_3 | 1 | 1 | 1 | -1 | -1 | 1 | -1 |
| χ_4 | 1 | 1 | 1 | -1 | -1 | -1 | 1 |
| χ_5 | 2 | 2 | -2 | 0 | 0 | 0 | 0 |
| χ_6 | 2 | -2 | 0 | $-E(8) + E(8)^3$ | $E(8) - E(8)^3$ | 0 | 0 |
| χ_7 | 2 | -2 | 0 | $E(8) - E(8)^3$ | $-E(8) + E(8)^3$ | 0 | 0 |

Trivial source character table of $G \cong \text{Q16}$ at $p = 2$:

| Normalisers N_i | N_1 | N_2 | N_3 | N_4 | N_5 | N_6 | N_7 | N_8 | N_9 |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 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 |
| Representatives $n_j \in N_i$ | $1a$ | $1a$ | $1a$ | $1a$ | $1a$ | $1a$ | $1a$ | $1a$ | $1a$ |
| $1 \cdot \chi_1 + 1 \cdot \chi_2 + 1 \cdot \chi_3 + 1 \cdot \chi_4 + 2 \cdot \chi_5 + 2 \cdot \chi_6 + 2 \cdot \chi_7$ | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| $1 \cdot \chi_1 + 1 \cdot \chi_2 + 1 \cdot \chi_3 + 1 \cdot \chi_4 + 2 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7$ | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| $1 \cdot \chi_1 + 1 \cdot \chi_2 + 1 \cdot \chi_3 + 1 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7$ | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| $1 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 1 \cdot \chi_4 + 1 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7$ | 4 | 4 | 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 | 0 | 2 | 0 | 0 | 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 | 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 | 2 | 0 | 2 | 0 | 2 | 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 | 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 |

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

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

$$P_3 = \text{Group}([(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16)]) \cong \text{C4}$$

$$P_4 = \text{Group}([(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 3, 5, 10)(2, 6, 8, 13)(4, 15, 11, 9)(7, 16, 14, 12)]) \cong \text{C4}$$

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

$$P_6 = \text{Group}([(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 3, 5, 10)(2, 6, 8, 13)(4, 15, 11, 9)(7, 16, 14, 12)]) \cong \text{Q8}$$

$$P_7 = \text{Group}([(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 2, 5, 8)(3, 12, 10, 16)(4, 14, 11, 7)(6, 15, 13, 9)]) \cong \text{Q8}$$

$$P_8 = \text{Group}([(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 12, 4, 13, 5, 16, 11, 6)(2, 15, 7, 3, 8, 9, 14, 10)]) \cong \text{C8}$$

$$P_9 = \text{Group}([(1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 3, 5, 10)(2, 6, 8, 13)(4, 15, 11, 9)(7, 16, 14, 12), (1, 2, 5, 8)(3, 12, 10, 16)(4, 14, 11, 7)(6, 15, 13, 9)]) \cong \text{Q16}$$

$$N_1 = \text{Group}([(1, 2, 5, 8)(3, 12, 10, 16)(4, 14, 11, 7)(6, 15, 13, 9), (1, 3, 5, 10)(2, 6, 8, 13)(4, 15, 11, 9)(7, 16, 14, 12), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16)]) \cong \text{Q16}$$

$$N_2 = \text{Group}([(1, 2, 5, 8)(3, 12, 10, 16)(4, 14, 11, 7)(6, 15, 13, 9), (1, 3, 5, 10)(2, 6, 8, 13)(4, 15, 11, 9)(7, 16, 14, 12), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16)]) \cong \text{Q16}$$

$$N_3 = \text{Group}([(1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 2, 5, 8)(3, 12, 10, 16)(4, 14, 11, 7)(6, 15, 13, 9), (1, 3, 5, 10)(2, 6, 8, 13)(4, 15, 11, 9)(7, 16, 14, 12)]) \cong \text{Q16}$$

$$N_4 = \text{Group}([(1, 3, 5, 10)(2, 6, 8, 13)(4, 15, 11, 9)(7, 16, 14, 12), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16)]) \cong \text{Q8}$$

$$N_5 = \text{Group}([(1, 2, 5, 8)(3, 12, 10, 16)(4, 14, 11, 7)(6, 15, 13, 9), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16)]) \cong \text{Q8}$$

$$N_6 = \text{Group}([(1, 3, 5, 10)(2, 6, 8, 13)(4, 15, 11, 9)(7, 16, 14, 12), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 2, 5, 8)(3, 12, 10, 16)(4, 14, 11, 7)(6, 15, 13, 9)]) \cong \text{Q16}$$

$$N_7 = \text{Group}([(1, 2, 5, 8)(3, 12, 10, 16)(4, 14, 11, 7)(6, 15, 13, 9), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 3, 5, 10)(2, 6, 8, 13)(4, 15, 11, 9)(7, 16, 14, 12)]) \cong \text{Q16}$$

$$N_8 = \text{Group}([(1, 12, 4, 13, 5, 16, 11, 6)(2, 15, 7, 3, 8, 9, 14, 10), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16), (1, 2, 5, 8)(3, 12, 10, 16)(4, 14, 11, 7)(6, 15, 13, 9)]) \cong \text{Q16}$$

$$N_9 = \text{Group}([(1, 2, 5, 8)(3, 12, 10, 16)(4, 14, 11, 7)(6, 15, 13, 9), (1, 3, 5, 10)(2, 6, 8, 13)(4, 15, 11, 9)(7, 16, 14, 12), (1, 4, 5, 11)(2, 7, 8, 14)(3, 9, 10, 15)(6, 12, 13, 16), (1, 5)(2, 8)(3, 10)(4, 11)(6, 13)(7, 14)(9, 15)(12, 16)]) \cong \text{Q16}$$