Tetrahedral symmetry \((A_4\text{ or } S_4)\)

- 8 \times \text{rotation by 120° (OP)}
- 6 \times \text{reflection in a plane (OR)}
- 3 \times \text{rotation by 180° (OP)}

6 \times \text{rotoreflection by 90° (OR)}

1 \times \text{identity (OP)}
Octahedral symmetry

Orientation preserving ($S_4$):
1. $1 \times$ identity
2. rotation (a) about an axis from the center of a face to the center of the opposite face by an angle of 90°: 3 axes, 2 per axis, together 6
3. ditto (a) by an angle of 180°: 3 axes, 1 per axis, together 3
4. rotation (b) about a body diagonal by an angle of 120°: 4 axes, 2 per axis, together 8
5. rotation (c) about an axis from the center of an edge to the center of the opposite edge by an angle of 180°: 6 axes, 1 per axis, together 6

For orientation reversing ones multiply by $-\text{id} (S_4 \times C_2)$.

Octahedron is dual to the cube: