Solutions

Award method and answer marks as indicated; accept equivalent correct methods.

2.1

- Both diagonals and both midlines give **4 lines**; quarter-turn matches give **order 4**.

2.2

- Only the apex-to-base-midpoint line works: **1 line; order 1**.

2.3

- $\theta = 360/6 = \mathbf{60}^\circ$.

2.4

- Five vertices give **5 lines; order 5**.

3.1

(a)

- **8 lines**, through opposite vertices or opposite side midpoints.

(b)

- **Order 8**; $\theta = 360/8 = \mathbf{45}^\circ$.

(c)

- The rectangle has **2 lines and order 2**, fewer than the octagon in both cases.

3.2

(a)

- A has **5 lines**, rotation order **5**, and smallest turn $\theta = 360/5 = \mathbf{72}^\circ$.

(b)

- B has **0 symmetry lines** and rotation order **2**.
- A 180° turn swaps opposite vertices and maps the figure onto itself even though no reflection does.

3.3

(a)

- **3** lines, order **3**.

(b)

- **2** lines (the diagonals), order **2**.

(c)

- **1** line (the diagonal through the unequal angles), order **1**.

3.4

- A full turn shared between the 6 positions: $360^\circ \div 6 = \mathbf{60}^\circ$.