

Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- angles on a straight line add to 180°
- $x + 55 + 65 = 180$ so **x = 60°**

2.2

- angles in a triangle add to 180°
- $3x = 120$ so **x = 40°**

2.3

$$\frac{360^\circ}{5} = \mathbf{72^\circ}$$

3.1

- co-interior angles add to 180°
- $180 - 72 = \mathbf{108^\circ}$

3.2

- exterior = $\frac{360}{8} = 45^\circ$
- interior = $180 - 45 = \mathbf{135^\circ}$

3.3

- exterior = $180 - 156 = 24^\circ$

$$\frac{360}{24} = \mathbf{15}$$

sides

3.4

(a)

- they are **alternate angles** between parallel lines PQ and RS
- $3x + 10 = 5x - 30$
- $40 = 2x$ so **x = 20**

(b)

- $3(20) + 10 = \mathbf{70^\circ}$
- $5(20) - 30 = \mathbf{70^\circ}$ — the same, as expected

(c)

- exterior angles of any polygon add to 360°

- $n = \frac{360}{24} = \mathbf{15}$ sides
- interior angle sum = $(n - 2) \times 180 = 13 \times 180 = \mathbf{2340^\circ}$

(d)

- exterior = $180 - 160.5 = 19.5^\circ$
- $\frac{360}{19.5} = 18.46 \dots$, not a whole number, so no such regular polygon exists