## 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 $\mathbf{x = 60}°$

**2.2**

- angles in a triangle add to 180°
- $3x = 120$ so $\mathbf{x = 40}°$

**2.3**

$$\frac{360°}{5} = \mathbf{72}°$$

**3.1**

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

**3.2**

- exterior $= \dfrac{360}{8} = 45°$
- interior $= 180 - 45 = \mathbf{135}°$

**3.3**

- exterior $= 180 - 156 = 24°$

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

  sides

**3.4**

(a)

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

(b)

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

(c)

- exterior angles of any polygon add to 360°

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

(d)

- exterior $= 180 - 160.5 = 19.5°$
- $\dfrac{360}{19.5} = 18.46\ldots$, not a whole number, so no such regular polygon exists