

1	(a)	12 cm <sup>2</sup>	B1 B1	for numerical answer of 12 for units shown as cm <sup>2</sup>
	(b)	kite	B1	cao

2	140	P1	for complete process to find sum of the interior angles of a pentagon eg $(5-2) \times 180$ or exterior $360 \div 5 = 72$ , interior $180 - 72 = 108$ , $108 \times 5$ <b>OR</b> for complete process to find sum of the exterior angles of the pentagon eg $(180 - x) + (180 - 2x) + (180 - 125) + (180 - 115) + (180 - 90)$	Must be a complete process that could lead to a figure of 540 if that process is evaluated incorrectly  360 must be identified as the sum of the exterior angles  Award provided [angles in a pentagon] is greater than 400 Algebraic route needs to show both sides of the equation. LHS of equation may be simplified  Award if 70 is given for either <i>ABC</i> or <i>BCD</i> on the diagram  Award marks for 140 on the diagram with working and not contradicted by the answer line. Award 0 marks for 140 without working.
		A1	for sum of interior angles is 540 <b>OR</b> for sum of exterior angles is 360	
		P1	for start to process to find angle <i>ABC</i> eg [angles in a pentagon] - $115 - 125 - 90 (= 210)$ or $115 + 125 + 90 + x + 2x =$ [angles in a pentagon] <b>OR</b> $(180 - x) + (180 - 2x) + (180 - 125) + (180 - 115) + (180 - 90) = 360$	
		P1	for process to find angle <i>ABC</i> eg " $210 \div 3 (= 70)$ ", " $210$ " divided in the ratio 2 : 1 or for process to find angle <i>BCD</i> eg $\frac{2}{3} \times "210"$ or for $3x = "210"$ or $-3x = -"210"$	
		A1	cao	

3	shown	M1	for method to find angle <i>ADC</i> , eg $180 - 75 (= 105)$	Must be clear link to angle <i>ADC</i> , may be marked on diagram  Must be clear method/explanation shown. Angle marked on diagram is not sufficient.  Underlined words need to be shown; reasons need to be linked to their method
		M1	for angle <i>BCD</i> = 50	
		M1	for method to find angle <i>ABC</i> , eg $360 - 100 - 50 - "105"$	
		C1	(dep M3) for angles <i>ADC</i> , <i>BCD</i> and <i>ABC</i> correct and at least 2 appropriate reasons, eg <u>vertically opposite angles</u> are equal or <u>vertically opposite angles</u> are equal, <u>angles on a straight line</u> add to <u>180°</u> , <u>angles in a quadrilateral/kite</u> add up to <u>360°</u> ; <u>angles at a point</u> add up to <u>360°</u>	

4	24	P1	starts process, eg $x + 11x = 180$ or $180 \div 12 (= 15)$ or interior angle + exterior angle = 180 oe
		P1	complete process to find number of sides, eg $360 \div (180 \div 12)$
		A1	cao

5	45	P1	for $180 - 117 (=63)$ or states, or uses, exterior angle + $x = 117$	Angles may be shown on the diagram.  Any angle labelled correctly as 63 and not contradicted scores this mark  Exterior = 108 or interior = 72 does not score the mark  An answer of 45 with no supporting working scores 0
		P1	for process to find the exterior or the interior angle of the pentagon, eg $360 \div 5 (=72)$ or $180 - (360 \div 5) (=108)$ or $((5-2) \times 180) \div 5 (=108)$	
		P1	for a complete process to find $x$ , eg $180 - "72" - "63"$ or " $108" - "63"$ or $117 - "72"$	
		A1	cao	

6	85 with working and reasons	M1	for correct use of corresponding angles eg $\angle AEB = 63$ or co-interior angles eg $BCD = 180 - 148 (= 32)$ or $DEB = 180 - 63 (= 117)$	Angles must be clearly labelled on the diagram or otherwise identified. Full solution must be seen. Correct method can be implied from angles on the diagram if no ambiguity or contradiction.  When reasons are given the key words underlined must be present. Reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.
		M1	for a complete method to find angle $EAB$ eg. $180 - "63" - (180 - 148)$ or $148 - "63"$ or $"117" - (180 - 148)$	
		A1	for $EAB = 85$ (identified)	
		C2	(dep on M2) all working correct with all appropriate reasons stated. <u>Corresponding</u> angles are equal <u>Allied angles / Co-interior</u> angles add up to 180 <u>Angles</u> on a straight line add up to 180 <u>Angles</u> in a triangle add up to 180 The <u>exterior angle</u> of a triangle is equal to the sum of the <u>interior opposite angles</u> .	
		(C1)	for one reason relating to parallel lines clearly used and stated or for any two reasons clearly stated for their fully correct method)	

7	24	M1	for a complete method eg $360 \div 15 (=24)$	If extra steps are shown do not award this mark.
		A1	cao	

8	110	M1	for use of angles in a quadrilateral add to $360^\circ$ , eg $360 - 130 - 95 - 65 (= 70)$	May be seen in diagram or as a sum to $360^\circ$ .  $(130 + 95 + 65) - 180$ gains M2
		M1	for $180 - "70"$ or for $(130 + 95 + 65) - 180$	
		A1	cao	