

1	<i>CB</i> extended to form <i>CG</i>	Reasoning	B1	for 35 or 75 or 145 or 105 or $DEF = 70$, marked on the diagram or 3 letter description
			M1	for $180 - 70 - 35$ or $180 - 75 - 35$ or a correct pair of angles that would lead to 75 or 70, eg $AFB = 35$ and $FAB = 75$ or $AFB = 35$ and $ABG = 75$ or $FBC = 35$ and $ABG = 75$ or $EDF = 75$ and $DEF = 70$ or $FDC = 105$ and $FBC = 35$ or $ABC = 105$ and $FBC = 35$
			C2	(dep on B1M1) All figures correct with all appropriate reasons stated. Angles must be clearly labelled or on the diagram. Full solution must be seen
			(C1	(dep on B1 or M1) for one reason clearly used and stated.) <u>Corresponding</u> angles are equal, <u>alternate</u> angles are equal, <u>opposite angles</u> in a <u>parallelogram</u> are equal, <u>angles in a triangle</u> sum to 180, <u>angles on a straight line</u> sum to 180, vertically <u>opposite angles</u> are equal, <u>vertically opposite angles</u> are equal, <u>angles in a quadrilateral</u> sum to 360, <u>co-interior angles</u> sum to 180, <u>allied angles</u> sum to 180, <u>angles around a point</u> sum to 360

2		shown	M1	for $(\text{angle } BCA) = 180 - 117 (= 63)$
			M1	for $(\text{angle } CAB) = 180 - "63" - 54 (= 63)$ or $(\text{angle } CAB) = 117 - 54 (= 63)$
			C2	for statement, eg. isosceles since $\text{angle } BCA = \text{angle } CAB = 63$ with fully correct reasons, from: <u>angles on a straight line</u> add up to 180° <u>angles in a triangle</u> add up to 180° <u>exterior angle of a triangle</u> is equal to sum of interior opposite angles
			[C1	for $\text{angle } BCA = 63$ and $\text{angle } CAB = 63$ and one of the above reasons]
			OR	
			M1	for $\frac{(180-54)}{2} (= 63)$
			M1	for identification of two angles in triangle ABC being "63"
C2	for statement, eg. isosceles since $\text{angle } BCA = \text{angle } CAB = 63$ and <u>angles on a straight line</u> add up to 180° and fully correct reasons: base angles of an <u>isosceles triangle</u> are equal and <u>angles in a triangle</u> add up to 180°			

3	(a)	Correct evaluation	C1	for explanation eg x is not a base angle or states $x = 54^\circ$
	(b)	Correct or corrected reasoning given	C1	eg (because) alternate angles are equal, or Allied angles / Co-interior angles add up to 180 or they are not corresponding (they are alternate) OR selects correct reason used by William

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

5	45	M1	for $180 - (100 + 35)$ oe	Answer may be written on the diagram.
		A1	cao	

6	93	M1	for method to find angle $\angle CB$, eg $180 - 75 - 51 (= 54)$	Angles may be shown on diagram but must not be ambiguous eg. M0 for angle of 54° shown in the wrong place	
		M1	(dep M1) for method to use the ratio, eg " $54^\circ \div (2 + 1) (= 18)$ "		
		M1	for complete method, eg $180 - 51 - "18" \times 2$ or $75 + "18"$ oe		
		A1	cao		
7	26	M1	for $\angle DB = 64$ or $\angle BD = 52$	May be shown on the diagram	
		M1	for complete method, eg $(180 - 64 - 64) \div 2$ oe	Correct method can be implied from angles on the diagram if no ambiguity or contradiction.	
		A1	for 26		
		C1	(dep on first M1) for two correct reasons appropriate to their method from base <u>angles</u> of <u>isosceles triangle</u> are equal sum of <u>angles</u> in a <u>triangle</u> = 180 sum of <u>angles</u> on a straight <u>line</u> = 180 the <u>exterior angle</u> of a triangle is <u>equal</u> to the sum of the <u>interior opposite angles</u>	Underlined words need to be shown; reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.	
8	85 with working and reasons	M1	for correct use of corresponding angles eg $\angle EB = 63$ or co-interior angles eg $\angle CD = 180 - 148 (= 32)$ or $\angle EB = 180 - 63 (= 117)$	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 $\angle EB$ eg. $180 - "63" - (180 - 148)$ or $148 - "63"$ or " $117" - (180 - 148)$		
		A1	for $\angle EB = 85$ (identified)		
		C2	(dep on M2) all working correct with all appropriate reasons stated. <u>Corresponding</u> angles are equal <u>Allied angles</u> / <u>Co-interior</u> angles add up to 180 <u>Angles</u> on a straight <u>line</u> add up to 180 <u>Angles</u> in a <u>triangle</u> add up to 180 The <u>exterior angle</u> of a triangle is <u>equal</u> to the sum of the <u>interior opposite angles</u> .		
		(C1	for <u>one</u> reason relating to parallel lines clearly used and stated or for any <u>two</u> reasons clearly stated for their fully correct method)		
9	(a)(i)	30	B1	cao	
	(ii)	Reason	C1	reason, eg <u>angles</u> on a straight <u>line</u> add up to 180°	
	(b)	Explanation	C1	for explanation eg the two angles don't add up to 360 Acceptable examples $90 + 280 = 370$ The two angles don't add up to 360 280 should be 270 Angles around a point equal 360° It should be 360 (in a circle) It should be 80 It should not be a right angle It cannot be 280° Not acceptable examples They don't add up to 180 365 degrees in a circle \sphericalangle means 90 degrees	
10	110	M1	for use of angles in a quadrilateral add to 360° , eg $360 - 130 - 95 - 65 (= 70)$	May be seen in diagram or as a sum to 360° . $(130 + 95 + 65) - 180$ gains M2	
		M1	for $180 - "70"$ or for $(130 + 95 + 65) - 180$		
		A1	cao		
11	(i)	21	M1	for $180 - 75 - 84$	Angle may be indicated on the diagram The key words underlined must be present There should be no incorrect reasons given
	(ii)	Reason given	A1	cao	
			C1	for reason that <u>Angles</u> on a straight <u>line</u> add up to 180	