Paper: 1MA1/3F				
Question	**Working**	**Answer**	**Mark**	**Notes**

7
 	
Q1
		shown	M1
			
			M1
			
			C2
			
			[C1
			
			M1
			
			M1
			
			C2
				for (angle *BCA*) = 180 – 117 (= 63)
				
				for (angle *CAB*) = 180 – "63" – 54 (= 63) or (angle *CAB*) = 117 – 54 (= 63)
				
				for statement, eg. isosceles since angle *BCA* = angle *CAB* = 63 with fully correct reasons,
				from: angles on a straight line add up to 180º
				angles in a triangle add up to 180º
				exterior angle of a triangle is equal to sum of interior opposite angles
				
				for angle *BCA* = 63 and angle *CAB* = 63 and one of the above reasons]
				
				OR
				
				for $\frac{(180-54)}{2}$ (= 63)
				
				for identification of **two** angles in triangle *ABC* being "63"
				
				for statement, eg. isosceles since angle *BCA* = angle *CAB* = 63 **and** angles on a straight line add up to 180º **and** fully correct reasons:
				base angles of an isosceles triangle are equal
				and angles in a triangle add up to 180º

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
9 **Q2**		54	M1 M1 A1	for method to form equation, eg $90 + 2x + 3x = 360$ or for $360 - 90$ (= 270) for $5x = 360 - 90$ or for $2x + 3x = 360 - 90$ or for $2x = 108$ or for $3x = 162$ or for $270 \div 5$ cao

Paper: 1MA1/3F				
Question	**Working**	**Answer**	**Mark**	**Notes**
13 **Q3**		92, 65, 23	P1 P1 P1 P1 A1	for two of x, $4x$ and $4x - 27$ (where x is the smallest angle) (dep) for equation summing their three angles to 180, eg $x + 4x + 4x - 27 = 180$ (dep P1) for correct process to simplify their algebraic expression, eg $9x - 27$ (=180) for correct process to solve their equation of the form $ax + b = 180$ for three correct angles (order irrelevant)

Paper: 1MA1/2F					
Question		**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
15 **Q4**	(a (b)	Correct evaluation Correct or corrected reasoning given	C1 C1	for explanation eg x is not a base angle or states $x = 54°$ 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	

Pape:` 1MA1/1F				
Que. tion	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
9 **Q5**	45	M1 A1	for 180 – (100 + 35) oe cao	 Answer may be written on the diagram.

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
12 (a)	40	M1 A1	for using 90, eg 90 – 25 – 25 cao	90 – 25 is enough for this mark
(b)(i) **Q6**	*b* or *d* with reason	B1 C1	for *b* or *d* (or both) (dep) for appropriate reason(s) vertically opposite angles are equal vertically opposite angles are equal corresponding angles are equal alternate angles are equal angles on a straight line add up to 180	A correct answer can be implied by writing 125 immediately next to *b* or *d* (or both) as long as 125 is not written next to an incorrect angle. 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.
(ii)	reason	C1	for correct explanation using 360 or a full explanation using angles around a point **Acceptable examples** Because 360 around a point 360 – 125 = 235 125 + 235 = 360 Because they add to 360 **Not acceptable examples** Because b is 125	Using 360 appropriately and not in an incorrect setting

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
8 (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 ⌝ means 90 degrees	

Q7

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
13 (i) **Q8**	21	M1 A1	for 180 – 75 – 84 cao	 Angle may be indicated on the diagram
(ii)	Reason given	C1	for reason that Angles on a straight line add up to 180	The key words underlined must be present There should be no incorrect reasons given

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
15 **Q9**	Explanation	C1	for explanation **Acceptable examples** They do not add to 360 They add to 100 too least It is missing a 100 angle / It needs 100 more Because the total has to be 360 A whole circle is 360 **Not acceptable examples** They add up to 260 One of the angles is wrong A shape with 4 angles adds up to 360	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
9 (a)	290	B1	cao	Accept 290°. May be seen on diagram provided no ambiguity
(b)	reason	C1	for correct reason: Angles at a point add to 360	The key words underlined must be present with the 360 implied if not stated by use in part (a)
Q10				

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
6 (a)	4.5	B1	accept answer in the range 4.3 to 4.7	
Q11 (b)	110	B1	accept answers in the range 108 to 112	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
13 (a)(i)	40	B1	cao	
(ii)	Reason	C1	Reason given Angles in a quadrilateral add up to 360. Accept "4-sided shape"	Underlined words need to be shown.
(b)	Explanation	C1	Explanation **Acceptable examples** 190 > 180 It does not add up to 180 80+60+50=190 Angles in a triangle add up to 180 **Not acceptable examples** One of the angles needs to be less You cannot draw this triangle	
Q12				

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
11	39 with reasoning	M1	for a method to find angle *ACB* eg 180 – 116 − 25	
		A1	for 39	*ACB* = 39 or *x* = 39 or *C* = 39 or just 39 is acceptable for this accuracy mark
		C1	for *x* = 39 with reasoning eg Angles in a triangle add up to 180 **and** Vertically opposite angles are equal **or** Vertically opposite angles are equal **or** Angles on a straight line add up to 180 **OR** The exterior angle of a triangle is equal to the sum of the interior opposite angles **and** Angles on a straight line add up to 180	Angle may be shown on diagram if no ambiguity or contradiction The key words underlined must be present. There should be no incorrect reasons given. All reasons given should be used, not just a list of angle facts.
Q13				

Paper 1MA1: 1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
25 **Q14**	*CB* extended to form *CG*	Reasoning	B1 M1 C2 (C1	for 35 **or** 75 **or** 145 **or** 105 **or** *DEF* = 70, marked on the diagram or 3 letter description 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 (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 (dep on B1 or M1) for one reason clearly used and stated.) Corresponding angles are equal, alternate angles are equal, opposite angles in a parallelogram are equal, angles in a triangle sum to 180, angles on a straight line sum to 180, vertically opposite angles are equal, vertically opposite angles are equal, angles in a quadrilateral sum to 360, co-interior angles sum to 180, allied angles sum to 180, angles around a point sum to 360

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
14 **Q15**	shown	M1 M1 M1 C1	for method to find angle *ADC*, eg 180 – 75 (= 105) for angle *BCD* = 50 for method to find angle *ABC*, eg 360 – 100 – 50 – "105" (dep M3) for angles *ADC*, *BCD* and *ABC* correct and at least 2 appropriate reasons, eg vertically opposite angles are equal or vertically opposite angles are equal , angles on a straight line add to 180º, angles in a quadrilateral/kite add up to 360º; angles at a point add up to 360º	Must be clear link to angle *ADC*, 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

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
22 **Q16**	60	M1 M1 A1 C1	use of parallel lines to find an angle eg *ABE*=70 **or** *EBG*=75 **or** *EBC* = 110 **or** shows parts of *x* as 35 or 25 for a complete method to find angle *x*; could be in working or on the diagram for *x* = 60 (dep on M1) for one reason linked to parallel lines and one other reason, supported by working taken from: alternate angles are equal, allied angles / co-interior angles add up to 180, angles on a straight line add up to 180, angles in a triangle add up to 180°	Parts of *x* should be identified on the diagram by the insertion of a dividing line through angle *x* (need not be identified or drawn parallel). Correct method can be implied from angles on the diagram if no ambiguity or contradiction. 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.

Pape: 1MA1/1F				
Que. tion	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
24 **Q17**	93	M1 M1 M1 A1	for method to find angle *ACB*, eg 180 – 75 – 51 (= 54) (dep M1) for method to use the ratio, eg "54" ÷ (2 + 1) (= 18) for complete method, eg 180 – 51 – "18" × 2 or 75 + "18" oe cao	Angles may be shown on diagram but must not be ambiguous eg. M0 for angle of 54° shown in the wrong place

Pape:` 1MA1/1F				
Que. tion	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
28 **Q18**	16	P1 P1 A1	for process to formulate an equation or inequality, eg $2x + 3x + 10 * 90$ **or** for $90 - 10$ for a process to solve the equation or inequality by isolating terms in x, eg $5x * 90 - 10$ **or** for $(90 - 10) \div 5$ cao SC B1 for $x = 34$ or for a value in the range $15 \leq x < 16$	*denotes an equality or inequality symbol Accept equivalent forms Award P2 for an embedded answer of 16, which could be shown on the diagram as 32, 48, (10) or written as x embedded in working in an equation.

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
17 **Q19**	26	M1 M1 A1 C1	for $ADB = 64$ **or** $ABD = 52$ for complete method, eg $(180 - 64 - 64) \div 2$ oe for 26 (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>	May be shown on the diagram Correct method can be implied from angles on the diagram if no ambiguity or contradiction. 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.

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
20 **Q20**	105	M1 A1	for evidence of understanding the angle properties of a square or equilateral triangle, eg stating angle *DBC* = 60 or angle *EBD* = 45 or angle *BAE* = 90 cao	Accept on the diagram with no contradiction in working, or no contradiction or ambiguity on the diagram; 90 can be shown as a right angle Could be shown on the diagram or in working, but do not accept contradiction or ambiguity.

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
20 **Q21**	118 with reasons	M1 M1 C1 C1 A1	for angle *QPR* = 56 or *CQP* = 56 for angle *PQR* = (180 – 56) ÷ 2 (= 62) (dep on a previous M1) for giving a reason relating to parallel lines: angle *CQR* = 180 – "62" (Allied angles / Co-interior angles add up to 180) **or** angle *CQP* = 56 (corresponding angles are equal) **or** use "angle *QPR*" (alternate angles are equal) (dep on a previous M1) for at least one reason given from: vertically opposite angles are equal OR vertically opposite angles are equal **or** base angles of an isosceles triangle are equal **or** Angles in a triangle add up to 180 for 118	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.