ANGLES

Pearson Edexcel - Thursday 4 June 2020 - Paper 2 (Calculator) Foundation Tier

1.

8	(a)(i)	30	B1	cao	
	(ii)	Reason	C1	reason, eg angles on a straight line 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	

Pearson Edexcel - Tuesday 11 June 2019 - Paper 3 (Calculator) Foundation Tier

2.

20	105	M1	for evidence of understanding the angle properties of a square or equilateral triangle, eg stating angle $DBC = 60$ or angle $EBD = 45$ or angle $BAE = 90$	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
		A1	cao	Could be shown on the diagram or in working, but do not accept contradiction or ambiguity.

Pearson Edexcel – Specimen 2 - Paper 2 (Calculator) Foundation Tier

3.

29	$\angle ADB = 72°$ (base angles of isosceles triangle ABD) $\angle BAD = 180° - 2 \times 72°$ (angle sum of a triangle is 180°) $\angle BCA = 36°$ (base angles of isosceles triangle ABC) $\angle BDC = 180° - 72°$ (angles on a straight line sum to 180°) $\angle DBC = 180° - 36° - 108°$ (angle sum of a triangle is 180°)	Result shown	M1 M1 M1 C1 C1	for $\angle ADB = 72°$ and $\angle BAD = 180° - 2 \times 72°$ for $\angle BCA =$ "36°" for $\angle BDC = 180° - 72°$ for complete chain of reasoning to find angle $DBC = 36°$ and one correct reason C1 dependent on all previous marks for correct deduction and full reasons.

Pearson Edexcel – Specimen 1 - Paper 1 (Non-Calculator) Foundation Tier

4.

20		42	P1 P1 A1	process to start problem solving eg forms an appropriate equation complete process to solve equation cao

Pearson Edexcel – Specimen 1 - Paper 2 (Calculator) Foundation Tier

5.

17		56° with reasons	M1 M1 C1 C1	for a method leading to the evaluation of another angle, eg angle A =180 – 90 – 22 (= 68) for correctly using the isosceles property in identifying two equal angles, eg (180 – "68") ÷ 2 (= 56) for at least one correct reason given linked to clear working. for all correct reasons included Reasons as appropriate from: sum of angles in a triangle = 180° base angles of isosceles triangle are equal sum of angles on a straight line = 180° sum of angles in a quadrilateral = 360°

Pearson Edexcel – Specimen 1 - Paper 3 (Calculator) Foundation Tier

6.

14	(a)		Angle marked	B1 cao
	(b)		Face shaded	B1 cao
	(c)		12	B1 cao

7.

17	(a)		70, 40 and 55	P1 for a method to find one of angles eg (180 - 70) ÷ 2 or 70 stated as the equal or 180 – 2 × 70 P1 for a method to find a angle A1 for 70, 40 and 55 (any order)
	(b)		Explanation	C1 Explanation eg cannot have two obtuse angles

Pearson Edexcel – Sample Paper 1 (Non-Calculator) Foundation Tier

8.

23		152	M1 M1 A1	Start to method $ABD = 38°$ **and** BAD or DBC or $DCB = 38°$ ADB or $BDC = 180 – 2 \times 38$ (=104) for 152 with working

OCR – Tuesday 03 November 2020- Morning - Paper 1 (Calculator) Foundation Tier

9.

18			No, with full correct working and a statement referring to correct comparable values	4	**M3** for $\sqrt{14.1^2+14.8^2}$ = 20.4 to 20.5 or $14.1^2 + 14.8^2$ = 417.8 to 417.9 **and** 19.5^2 = 380.2 to 380.3 OR **M2** for $\sqrt{14.1^2+14.8^2}$ or $14.1^2 + 14.8^2$ **and** 19.5^2 OR **M1** for $14.1^2 + 14.8^2$ If **0** scored, **SC2** for 20.4 to 20.5 or 12.6 to 12.7 or 13.4 to 13.5 with no or insufficient working or **SC1** for 417.8- 417.9 or 161.2 -161.21 or 181.4 to 181.44 with no or insufficient working	Do not accept a scale drawing method Need No and a comment for 4 marks Need to see evidence Accept equivalent alternative methods e.g. using subtraction: **M3** for $\sqrt{19.5^2-14.8^2}$ = 12.6 to 12.7 OR **M2** for $\sqrt{19.5^2-14.8^2}$ OR **M1** for $19.5^2 - 14.8^2$

OCR Thursday 07 November 2019- Morning (Non-Calculator) Foundation Tier

10.

21	(b)		105	4	**M1** for DEA = 60 or AFB = 60 or any angle within either equilateral triangle identified as 60 **M2** for DAE = 15 or **M1** for *their* EAF ÷ 4 soi **B1FT** x = 180 – *their* AED – *their* DAE	Angles may be identified in working or seen on the diagram May be implied by 15 : 60 If final answer not 105, MAX of 3 marks

OCR Monday 11 November 2019 – Afternoon (Calculator) Foundation Tier

11.

14	(a)		157	2	**M1** for 103 + 100 soi 203	
	(b)	(i)	Angles [on a straight] line add to 180° or 180 – 130 [= 50] oe	1		Key words "Angle[s]", "line" and "180" must be seen If reason and calculation seen, mark the best
		(ii)	80 final answer ACB = 50 isosceles [triangle] One from ABC = 80 angles in a triangle = 180 CBY = 100 angles on a straight line = 180 or exterior angle ACW = 130 alternate angles [are equal]	2 1 1		80 may be seen on diagram Allow one letter for angle when usage makes clear e.g. B = 80 isosceles Reasons must be geometric e.g. angles on a straight line add to (allow =) 180 or Isosceles triangle Do not accept AB = BC for isosceles Do not accept e.g. Z angles for alternate Do not accept drawings as a reason

OCR Thursday 6 June 2019 – Morning (Non-Calculator) Foundation Tier

12.

20			125 nfww	6	B3 for $x = 35$ or B1 for $x + 20 = 3x - 50$ M1 for $\pm 2x = k$ or $kx = \pm 70$ $(k \neq 0)$ AND M1 for *their* $x + 20$ or $3 \times$ *their* $x - 50$ M1dep for $y = 180 - (\text{their } x + 20)$ oe If 0 scored SC1 for $x + 20 + 3x - 50 + y + y = 360$ or better or $3x - 50 + y = 180$ or $x + 20 + y = 180$	eg $y = \frac{360 - 2 \times \text{their } 55}{2}$ Dependent on the previous M1

OCR Tuesday 11 June 2019 – Morning (Calculator) Foundation Tier

13.

1	a		Obtuse	1	May be indicated in list	Condone poor spelling
	b		45	1	Accept 43 to 47	

Pearson Edexcel –Sample Papers - Paper 2 (Calculator) Foundation Tier

14.

13		shown	B1	$ABC = 80$
			M1	$180 - 80° - 50°$
			A1	$ACB = 50$
			C1	statement that since $ACB = CAB = 50°$ with reasons eg Vertically opposite angles are equal, Angles in a triangle add up to $180°$, The exterior angle of a triangle is equal to the sum of the interior opposite angles; Base angles of an isosceles triangle are equal.

Pearson Edexcel – Sample Papers - Paper 3 (Calculator) Foundation Tier

15.

13	(a)(i)		33	B1	The sum of the angles on a straight line is $180°$
	(ii)		The sum of the angles on a straight line is 180	B1	
	(b)	$(360 - 33 - 145) \div 2$	91	P1 A1	For a correct process to find angle ZWX

OCR Thursday 25 May 2017 – Morning (Calculator) Foundation Tier

16.

1	**(a)**	**(i)**	44	**1**		±2°
		(ii)	Acute	**1**		Condone incorrect spelling
	(b)		Parallel	**1**		Condone incorrect spelling

OCR Thursday 8 June 2017 – Morning (Non - Calculator) Foundation Tier

17.

6	**a**		Corresponding	**1**		Do not accept F angles

	b		Angle BXC = 50 [Angles in a] isosceles [triangle] Angles in a triangle add up to 180	**2** **1** **1**	**B1** for Angle XCB = 65 Accept Alternate angles [are equal] **and** Angles on a [straight] line =180	XCB may be seen on the diagram Accept C for XCB, X for BXC Condone isos for isosceles [Angles in a] isosceles triangle add up to 180 scores final 2 marks Key words for 1 mark in 'Angles in a triangle add up to 180' are 'triangle' and '180'

OCR Sample Question Paper 1 – Morning/Afternoon (Calculator) Foundation Tier

18.

8			70 The triangle is isosceles so the missing angle is *x* (may be on diagram) **oe** Angles in a triangle sum to 180° **oe** (may be indicated by summing of angles to 180 **oe**)	**3** **1 AO1.3a** **1 AO2.4a** **1 AO3.1b**	**B1** for each	

AQA Thursday 4 June 2020 – Morning (Calculator) Foundation Tier

19.

Q	Answer	Mark	Comments
2	250°	B1	

AQA Monday 8 June 2020 – Morning (Calculator) Foundation Tier

20.

Q	Answer	Mark	Comments
11	180 – 103 – 49	M1	oe
	28	A1	

AQA Tuesday 21 May 2019 – Morning (Non-Calculator) Foundation Tier

21.

1	reflex	B1	

AQA Thursday 11 June 2019 – Morning (Calculator) Foundation Tier

22.

10	**Alternative method 1**		
	180 ÷ 3 or 60	M1	
	90 – their 60 or 30	M1dep	
	180 – 65 – their 30	M1dep	85 marked on *AED*
	85	A1	
	Alternative method 2		
	90 – 65 or 25	M1	
	180 – 2 × (90 – 65) or 2 × 65 or 180 – 2 × their 25 or 130	M1dep	
	(360 – (180 ÷ 3) – their 130) ÷ 2 or 170 ÷ 2	M1dep	85 marked on *AED*
	85	A1	
	Additional Guidance		
	Correct angles could be marked on diagram		
	85 on answer line with no working or angles marked on diagram		M1M1M1A1
	60, 30, 25 or 130 on answer line with no working and not marked correctly on diagram		M0
	On Alt 1, 60 with no working and incorrectly marked on diagram		M0

AQA Thursday 7 June 2018 – Morning (Calculator) Foundation Tier

23.

16(a)	180 ÷ 3 or 60	M1	oe eg 60 + 60 + 60 = 180
	(180 – 28) ÷ 2 or 152 ÷ 2 or 76	M1	oe eg 76 + 76 + 28 = 180
	180 – their 60 – their 76	M1dep	oe eg 44 + 60 + 76 = 180 dep on M1M1
	44	A1	
	Additional Guidance		
	60 or 76 seen in appropriate place on diagram or in working scores one mark for each		
	Answer 44 not from wrong working		M3A1
	180 – 28 ÷ 2 unless recovered		2nd M0

	No and gives correct reason	B1	eg it should be 180 – (360 ÷ 8) it should be 1080 ÷ 8 this gives the exterior (not the interior) angle it should be obtuse not acute accept any unambiguous indication of No

	Additional Guidance		
	A correct reason may be 1. showing a correct method 2. correction of her method (error and replacement shown) 3. correction of her answer (answer and replacement shown)		
16(b)	No, It should be 135 not 45	(3)	B1
	No, It should be 1080 not 360	(2)	B1
	No, because the interior angles should be 1080 not 360	(2)	B1
	No, she needs to subtract her answer from 180	(1)	B1
	No, ((8 – 2) × 180) ÷ 8	(1)	B1
	No, It should be $((n - 2) \times 180) \div 8$ (doesn't use $n = 8$)		B0
	Any numbers quoted must be correct but ignore other non-contradictory statements eg No, It should be 720. She's worked out the exterior angle		B0
	No, There's not 360 in an octagon or No, Angles in an octagon do not add up to 360		B0
	No, Interior angles add up to more than 360		B0
	No, It should be 135		B0
	No, It should be 1080		B0
	No, 45 is the outside angle		B0

AQA Thursday 8 June 2017– Morning (Calculator) Foundation Tier

24.

13	360 – (21 + 36 + 160 + 90) or 360 – 307 or 270 – (21 + 36 + 160) or 270 – 217	M1	oe
	53	A1	
	Additional Guidance		
	53 (may be on diagram) with no incorrect working or no working		M1A1
	53 on diagram with different answer on answer line		A0
	360 – (21 + 36 + 160) or 360 – 217 or 143 (ignoring 90°)		M0A0
	180 – (90 + 36) = 54		M0A0