

PIE CHARTS

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

1.

14	Correct pie chart	M1	for a method to find at least one angle eg $\frac{50}{(50+45+25)} \times 360 (= 150)$ or $\frac{45}{(50+45+25)} \times 360 (= 135)$ or $\frac{25}{(50+45+25)} \times 360 (= 75)$ oe	Do not award for drawing if the intention is to show more than 3 sectors 3 angles correct in table is enough for this mark irrelevant of diagram Labels as "City" from table not just angle size.
		A1	for at all 3 angles correctly calculated OR at least one correct and accurately drawn angle (from no more than 3 sectors)	
		A1	for a fully correct labelled pie chart	

Pearson Edexcel - Monday 12 November 2018 - Paper 3 (Calculator) Foundation Tier

2.

12	Correct pie chart	M1	for method to find at least one angle eg P: $360 \div 60 \times 24 (=144)$ or C: $360 \div 60 \times 16 (=96)$ or M: $360 \div 60 \times 20 (=120)$	Use the overlay Working may be seen in or by the table
		A1	for all 3 angles correctly calculated OR at least one accurately drawn angle	If three equal sectors of 120° with no working award 0 marks
		A1	fully a correct labelled pie chart	Labels as "vegetables" from table not just angle size. Accept P, C, M

Pearson Edexcel - Thursday 7 June 2018 - Paper 2 (Calculator) Foundation Tier

3.

12	Correct pie chart	M1	for method to find at least one angle eg B: $360 \div "36" \times 11 (= 110)$ or P: $360 \div "36" \times 17 (= 170)$ or HD: $360 \div "36" \times 8 (= 80)$	Accept numbers if present in Number of fan column eg 0 added to a number is acceptable for this mark.
		A1	for at all 3 angles correctly calculated OR at least one accurately drawn angle	
		A1	for a fully correct labelled pie chart	Labels as "snacks" from table not just angle size.

Pearson Edexcel - Monday 6 November 2017 - Paper 2 (Calculator) Foundation Tier

4.

5	(a)		$\frac{33}{60}$	M1	for method to find number of students who did not walk to school eg $15 + 12 + 6$ or $60 - 27 (=33)$ or 0.55 or for $1 - \frac{27}{60}$
	(b)			Pie chart drawn	A1
				M1	for method to find the angle for at least one sector eg $\frac{27}{60} \times 360$, $\frac{12}{60} \times 360$, $\frac{6}{60} \times 360$, $27 \div \frac{60}{360}$, $12 \div \frac{60}{360}$, $6 \div \frac{60}{360}$ oe (0.166..) NB: could be implied by one angle drawn accurately.
				M1	for drawing at least one sector accurately (from 4 sectors) eg 162° or 72° or 36°
				A1	for an accurately drawn pie chart
				B1	(dep on 4 sectors with at least one accurately drawn) for showing labels Walk Car Bicycle

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

5.

8	(a)		Banana	B1	cao
	(b)		20	B1	cao
	(c)		explanation	C2	for full explanation, eg table shows exactly $\frac{1}{2}$; pie chart shows less than $\frac{1}{2}$ as angle is less than 180° (C1 for partial explanation or reference to just pie chart or just table)

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

6.

6	(a)		Cat	1	
	(b)		Correct graph	3	<p>B2 for two correct bars or three correct height bars but not all correct width</p> <p>or</p> <p>B1 for one correct height bar of any width or one of [mouse] 2 or [dog] 7 or [horse] 6 seen</p> <p>If 0 scored, allow B1 for [dog] 84.</p>
					<p>Three correct heights and correct widths with no daylight Condone freehand with lines on gridlines (no daylight). Use overlay</p> <p>Number associated with correct animal</p>

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

7.

10	a	Gaming	1		
	b	A correct calculation or $\frac{150}{360}$ oe or $\frac{360}{150}$ oe	M1	$150 \div 360$ or $360 \div 150$ or $360 \div 3$ or $\frac{1}{3}$ of 360 or 150×3	For M1 oe is equivalent fraction eg $\frac{5}{12}$
		Justify rejecting Jack's assertion	A1	Must be comparison between <ul style="list-style-type: none"> two fractions with common denominator or values or two angles or two values 	Match answer to calculation or statement $\frac{150}{360}$ oe and $\frac{1}{3}$ oe with common denominator or 0.4[...] and 0.3[...] or 2.4 and 3 or <i>their</i> 450 and 360
	c	1 [h] 15[min]	4	B3 for 1.25 [hours] or $1\frac{1}{4}$ [hours] or 75 [minutes] OR B1 for [Reading =] 90 M2 for $(5 \text{ or } 300) \times \frac{\text{their } 90}{360}$ oe or $(5 \text{ or } 300) \div \frac{360}{\text{their } 90}$ or B1 for $\frac{\text{their } 90}{360}$ soi $\frac{1}{4}$ or $\frac{360}{\text{their } 90}$ soi 4	Working may be in hours or minutes May be seen on diagram. Allow symbol oe M2 for $(5 \text{ or } 300) \div 4$
				ALTERNATIVE METHODS M1 for $[150 + 30 =] 180$ B1 for [reading =] 90 B1 for [reading =] 90 M1 for $(5 \text{ or } 300) \div 2$ M1 for $360 \div 5$ soi 72 M1 for $300 \div 360$ or $360 \div 300$ M1 for <i>their</i> $(5 \text{ or } 300) \div 2 \div 2$ M1 for $90 \div \text{their } (360 \div 5)$ M1 for <i>their</i> $(300 \div 360) \times 90$ or 90 = <i>their</i> $(360 \div 300)$	

OCR Monday 12 November 2018 – Morning (Calculator) Foundation Tier

8.

14		48	3	M2 for $360 \div 30 \times 4$ oe or M1 for one correct step $360 \div 30$ soi 12 or $4 \div 30$ soi 0.13... or $30 \div 4$ soi 7.5 or 360×4 soi 1440	
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OCR Tuesday 12 June 2018– Morning (Calculator) Foundation Tier

9.

8	(a)	[Diving] [5] [60] [Swimming] 10 [120] [Paddleboarding] 6 72 [Kayaking] [9] [108]	4	B3 for 2 correct B2 for 1 correct B1 for 12[° per person]	
	(b)	Correct pie chart with correct labels	2	B1 for all sector angles correct but: • wrongly labelled or • no labels or for one sector angle correct and correctly labelled	Allow $\pm 2^\circ$ Use protractor to check
	(c)	[Original] Swimming [New] Kayaking	1		
	(d)	[There may be] different numbers [of students] in the two groups oe or Pie charts show proportions [not numbers]	1		Allow any comment implying different numbers in groups, EG, fewer in B or number in B not known or proportions only See appendix

OCR Monday 6 November 2017– Morning (Calculator) Foundation Tier

10.

10	a	3 : 2 or 1.5:1 or $1:\frac{2}{3}$	2	M1 for 72 : 48 oe or SC1 for 2:3 or $1:1.5$ or $\frac{2}{3}:1$	For 2 marks or SC1 do not isw
	b	[cycle =] 24 [walk =] 16	3	M1 80 employees to 240° equivalent to 1 employee to 3° soi or for cycle + walk = 40 soi M1 for $\frac{48}{\text{their } 3}$ or $\frac{72}{\text{their } 3}$ soi or attempt to divide 40 employees in the ratio 72 : 48	eg 240 ÷ 80 One answer correct or correct answers reversed implies M1M1

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

11.

6	(a)		$\frac{15}{29}$	M1 for $\frac{15}{a}$ where $a > 15$ or $\frac{b}{29}$ where $b < 29$ or correct fraction for girls from a different class
	(b)	11A +1G, 11B –1G 11C –1G, 11D + 1G	No + reason	A1 M1 For complete method to find the sum of the signed differences in numbers of boys and girls or the totals of boys and girls in year 11 C1 'No' with correct argument eg. there are 38 boys and 38 girls
	(c)		Yes + reason	C1 'Yes' with eg as many calculations using the angles would be required oe

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

12.

9	(a)		30	1		
	(b)	(i)	15 24 13 39	1 1 1		
		(ii)	fully labelled pie chart with at least 3 sectors correctly drawn	2	B1 for 1 correct sector correctly labelled or pie chart with at least 3 sectors correctly drawn with incorrect or no labels	Wayne 144 Harry 15 Obi 72 Antony 39 Allow $\pm 2^\circ$

OCR Tuesday 13 June 2017 – Morning (Calculator) Foundation Tier

13.

16	(a)	(i)	Point (0.8, 120) indicated	1		
		(ii)	No oe and Correct supporting value(s) and justification	2	B1 for 200 to 260 visitors expected or about 0 to 1 mm and 320 or line of best fit within overlay or negative trend/correlation or markings in relevant region above 2mm or 2 or more values within overlay and surrounding 2mm	Justification includes Reference to line of best fit (drawn or not) or trend or negative correlation or markings in relevant region above 2mm or surrounding values See Appendix
		(iii)	Outside range of data [collected]	1		Accept "The data (or diagram) only goes to 5.5 (or 6)" oe Do not accept "by 6 to 7 it would give no visitors" oe or There is no data around 9 mm oe The line of best fit does not reach 9 mm oe Condone "[Because] there would be a negative number of people" See Appendix
	(b)		Total number or number of children is not known oe or The chart only shows proportions/percentages oe	1	Mark the best bit so long as no contradiction	See Appendix

OCR Sample Question Paper 3 – Morning/Afternoon (Calculator) Foundation Tier

14.

2		Pie chart drawn with angles of 78°, 180°, 60°, 42° Correct labelling	4 1 1 AO1.3a 1 AO2.3a 3 AO2.3b	B1 for at least three of 13, 30, 10, 7 seen And B2 for two sectors correct Or B1 for one sector correct
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AQA Monday 8 June 2020 – Morning (Calculator) Foundation Tier

15.

Q	Answer	Mark	Comments
12(a)	360 – 75 – 165 or 120	M1	oe
	their 120 ÷ 4 or 30 or their 120 ÷ 4 × 3 or 90	M1dep	oe implied by one correctly drawn angle in pie chart ± 2°
	30° sector labelled Green or G and 90° sector labelled Red or R	A1	± 2° line must be ruled
	Additional Guidance		
	Both sectors must be correctly labelled with letters or words for the accuracy mark		

Q	Answer	Mark	Comments
12(b)	$\frac{75}{360}$ or $\frac{360}{75}$ or $\frac{600}{360}$ or $\frac{360}{600}$	M1	oe eg 75 ÷ 360 eg 0.208... or 0.21 or 4.8 or 1.66... or 1.67 or 0.6
	125	A1	
	Additional Guidance		
	125 out of 600		M1A1
	$\frac{125}{600}$		M1A0

AQA Tuesday 12 June 2018 – Morning (Calculator) Foundation Tier

16.

19(a)	360 – 72 – 90 or 198	M1	oe 100(%) – 20(%) – 25(%) or 55(%)	
	their 198 ÷ 3 (× 2) or 66 or 132	M1	Correct line drawn implies M1M1 their 55 ÷ 3 (× 2) or 18(.3...) or 36(.6...) or 37	
	Correct line drawn within 2° and sections labelled correctly	A1	L in the section with [130°, 134°] M in the section with [64°, 68°]	
	Additional Guidance			
	Correct line drawn must be a ruled line for A mark			
	Angles may be on the diagram			
	Mark diagram first, if line out of tolerance, check working for method marks			

19(b)	16 200 ÷ 360 or 45 or 360 ÷ 16 200 or 0.022... or $16\,200 \times \frac{72}{360}$	M1	oe	
	3240	A1		
	Additional Guidance			
	Do not ignore further working			
	16 200 – 3240 = 12 960			M1A0
	$\frac{3240}{16200}$ on answer line			M1A0
	16 200 ÷ 4 ÷ 90			M1
	16 200 ÷ 5			M1
	20% of 16 200 without further correct working			M0

AQA Thursday 2 November 2017 – Morning (Non-Calculator) Foundation Tier

17.

30	Alternative method 1		
	$x + 2x + 2x + 10$ or $5x + 10$ or $x + 2x + 2x + 10 + 90$ or $5x + 100$	M1	oe
	$x + 2x + 2x + 10 = 360 - 90$ or $5x + 10 = 270$ or $x + 2x + 2x + 10 + 90 = 360$ or $5x + 100 = 360$ or $5x = 260$	M1dep	oe
	$(x =) 52$ or $2x = 104$ or $2x + 10 = 114$	A1	may be on diagram
	$\frac{114}{360}$ or $\frac{57}{180}$ or $\frac{38}{120}$ or $\frac{19}{60}$ or 0.31(6..) or 0.317 or 0.32 or 31(.6...) % or 31.7% or 32%	B1ft	ft $\frac{2 \times \text{their } 52 + 10}{360}$ or $\frac{\text{their angle for C}}{360}$

Alternative method 2 is on the next page

30 cont	Alternative method 2		
	$\frac{90}{360} + \frac{x}{360} + \frac{2x}{360} + P(C) = 1$ or $\frac{90}{360} + \frac{x}{360} + \frac{2x}{360} + \frac{2x+10}{360}$ or $\frac{2x+10}{5x+100}$	M1	oe
	$\frac{90}{360} + \frac{x}{360} + \frac{2x}{360} + \frac{2x+10}{360} = 1$	M1dep	oe
	(x =) 52 or 2x = 104 or 2x + 10 = 114	A1	may be on diagram
	$\frac{114}{360}$ or $\frac{57}{180}$ or $\frac{38}{120}$ or $\frac{19}{60}$ or 0.31(6..) or 0.317 or 0.32 or 31(.6...) % or 31.7% or 32%	B1ft	ft $\frac{2 \times \text{their } 52 + 10}{360}$ or $\frac{\text{their angle for C}}{360}$
	Additional Guidance		
	Ignore incorrect simplification or conversion after $\frac{114}{360}$ oe		M1M1A1B1
	$\frac{360 - 10 - 90}{5}$ oe		M1M1
	$x + 2x + 2x + 10$ followed by $6x + 10 = 270$		M1M0
	Do not accept decimal within fraction for final answer if correct fraction not seen		
The follow through is not available if A1 awarded			

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

18.

24	Alternative method 1		
	360 – 110 or 250 or 360 – 110 – 110 or 140	M1	May be seen on diagram oe
	3360 ÷ their 140 or 24 or 2640 (men) or 6000 (women)	M1dep	their 140 must be from 360 – 110 – 110 oe
	8640	A1	SC2 4838 or 4839
	Alternative method 2		
	$100 - \frac{110}{360} \times 100$ or 100 – 30.5(...) or 100 – 30.6 or 69.4(...%) or 69.5% or $100 - \frac{110}{360} \times 100 - \frac{110}{360} \times 100$ or 100 – 30.5(...) – 30.5(...) or 100 – 30.6 – 30.6 or 38.8(...%) or 38.9%	M1	May be seen on diagram oe
	3360 ÷ (their 69.4 – their 30.5) or 3360 ÷ their 38.8(...) or 86.4	M1dep	their 69.4 must be from $100 - \frac{110}{360} \times 100$ their 30.5 must be from $\frac{110}{360} \times 100$
	8640	A1	SC2 4838 or 4839

Alternative method 3 and Additional Guidance continue on the next page

24 cont	Alternative method 3		
	$\frac{250}{360}x - \frac{110}{360}x = 3360$ <p>or $m = \frac{110}{360} \times (m + 3360 + m)$</p> <p>or $w = \frac{250}{360} \times (w + w - 3360)$</p>	M1	Sets up a correct equation to work out total (x), men (m) or women (w) oe
	$x = 3360 \div \left(\frac{250 - 110}{360} \right)$ <p>or $m = 336\,000 \div 140$ or 2640</p> <p>or $w = 840\,000 \div 140$ or 6000</p>	M1dep	oe
	8640	A1	SC2 4838 or 4839
	Additional Guidance		
	Condone 8639.9... → answer 8640		M2 A1
	2640 or 6000		M2
	4838 and 4839 come from 3360 women		SC2

AQA Sample Paper 2– Morning (Calculator) Foundation Tier

12(a)	Alternative method 1		
	360 – 171 or 189	M1	
	their 189 ÷ 3 or 63	M1dep	
	$\frac{63}{360} \times 800 (= 140)$	A1	
	Alternative method 2		
	$\frac{171}{360} \times 800$ or 380	M1	
	(800 – their 380) or 420	M1dep	
	420 ÷ 3 (= 140)	A1	
	Alternative method 3		
	140 + 280 or 420°	M1	
	$\frac{\text{their } 420}{800} \times 360$ or 189	M1	oe
	360 – 189 = 171	A1	

12(b)	Bar heights 380, 280 and 140	B2	B1 for one correct bar height or 280 seen or 380 seen
	Three bars with equal widths, equal gaps and correctly labelled vertical axis and bars labelled	B1	
	Consistent scale, starting at zero with at least two numbers given	B1	Must be using a scale of at least 1 cm per 100 sales