AVERAGES FROM FREQUENCY TABLES

Pearson Edexcel - Tuesday 19 May 2020 - Paper 1 (Non-Calculator) Foundation Tier

1.

16	(a)	Explanation	C1	for explanation **Acceptable examples** the number of points only goes up to 4 because the median is 2 no-one scored 5 points (implies number of points scored was less than 5) **Not acceptable examples** she was right since 5 is the middle number she has used the wrong column (insufficient) the median is 3	Explanations must relate to median number of points and not median of the frequency values
	(b)	Explanation	C1	for explanation identifying the error in the working **Acceptable examples** $0 \times 1 = 0$ or 0×1 is not 1 Anything times zero is zero **Not acceptable examples** the correct answer is 37	

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

2.

18	(a)	2	B1	cao	
	(b)	81	M1	for working with values from the table eg (0×4), (1×3), … with at least 3 products shown correct **or** (0 +), 3, 14, 15, 24, 25 with at least 3 correct	Check working space or next to the table. Zero points may not be seen so accept without 0×4, 0
			A1	cao SC B1 for 85	

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

3.

23	(a)	5	M1	"2" ÷ 40 × 100	"2" comes from their reading of the height of the 20 to 24 column
			A1	cao	
	(b)	9.5 shown	M1	for frequencies of 11, 8, 13, 6 and 2 (allow one error) **or** for midpoints 2, 7, 12, 17 and 22	May be seen on chart
			M1	for finding at least 4 products *fx* consistently within interval (including end points)	
			M1	for Σ"*fx*" ÷ ("11" + "8" + "13" + "6" + "2") **or** (11×2 + 8×7 + 13×12 + 6×17 + 2×22) ÷ 40 **OR** Σ"*fx*" (=380) **and** 9.5 × ("11" + "8" + "13" + "6" + "2") (=380)	Evidence of two different calculations that should lead to 380 are required for this mark
			C1	for correct figures showing the answer or accurate figures to compare from correct working eg 380 from two calculations	

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

4.

16		5	P1	for start to process eg 7 × 20 (= 140) **and** 3 × 21 (= 63) **or** (7 × 20) + (3 × 21) + 22 (= 225)	May be written near table 7 × 20 (= 140) **and** 3 × 21 (= 63) minimum requirement for P1
			P1	for a complete process to find the missing frequency eg (320 – "225") ÷ 19 **or** 320 – "225" = (95) **and** "95" ÷ 19	May be seen as two calculations
			A1	cao	Please check the table. Correct answer in the table without working award 3 marks

Pearson Edexcel - Thursday 2 November 2017 - Paper 1 (Non-Calculator) Foundation Tier

5.

27	(a)		365	M1	*fx* with *x* consistent within intervals eg 200 × 1 , 300 × 11 , 400 × 5 , 500 × 0 , 600 × 3, if 200, 3300, 2000, 0, 1800 are seen without working then condone 1 error
				M1	(dep) Σ*fx* ÷ Σ*f* eg "7300" ÷ 20
				A1	Cao
	(b)		Comment	C1	for comment about outliers affecting mean

Pearson Edexcel - Wednesday 8 November 2017 - Paper 3 (Non-Calculator) Foundation Tier

6.

19	(a)		$160 < h \leq 170$	B1	correct class interval
	(b)		Line segments joining the points (135, 4), (145, 11), (155, 24), (165, 22) and (175, 19)	C2 [C1	for fully correct frequency polygon for points plotted correctly at midpoints of intervals OR joining points with line segments at the correct heights and consistent within the intervals (including end values) OR correct frequency polygon with one point incorrect OR correct frequency polygon with first and last point joined] NB: ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted

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

7.

15	a		32	B1	32 cao
	b		Correct reason	C1	Comment about grouped data in context

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

8.

8	(a)		Banana	B1	cao
	(b)		20	B1	cao
	(c)		explanation	C2	for full explanation, eg table shows exactly ½ ; pie chart shows less than ½ as angle is less than 180^o (C1 for partial explanation or reference to just pie chart or just table)

Pearson Edexcel – Specimen 2 - Paper 3 (Calculator) Foundation Tier

9.

16	(a)		No and reason	C1	No and reason eg the mean must be less than 6
	(b)		explanation	C1	Should have divided by 30, not by 6

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

10.

23	(a)		$160 < h \leq 170$	B1	for identifying the correct class interval
	(b)		1. Points should be plotted at mid-interval values 2. The polygon should not be closed	C1 C1	for a correct error identified for a correct error identified

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

11.

24 (a)	(720+408+304+252) ÷ 50 1684 ÷ 50	33.68	M1 for finding 4 products *fw* consistently within interval (including end points) M1 (dep on 1st M) for 'Σfw'÷50 A1 (accept 33.7 from correct working)	
(b)		Manager with reasons	M1 for strategy to compare number of small size sold to number ordered C1 clear comparison that small size is not ¾ and so Jenny is not correct or the manager is correct	

OCR Tuesday 21 May 2019 – Morning (Calculator) Foundation Tier

12.

20	**(a)**		12.8[3....]	**4**	**B1** for at least 3 mid-points seen (from 2.5, 7.5, 15, 30) or implied by products 50,105,165,450 or 770 **M1** for Σmf where m is a value within each group. Allow use of boundaries; allow one error in calculation. If no midpoints seen may be implied by *their* mf **M1 dep** on previous **M1** for *their* 770 ÷ 60
	(b)		The highest number may not have been 40 or the lowest number may not have been 0.	**1**	See appendix

OCR Monday 24 May 2018 – Morning (Calculator) Foundation Tier

13.

18			15	**4**	**B1** for at least 3 mid-points seen (from 5, 12.5, 17.5, 22.5, 27.5) or implied by products 80, 125, 350, 180, 165 **M1** for Σmf where m is a value within each group; allow one error in calculation **M1dep** for *their* '900' ÷ 60	

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

14.

27		400	P1	Start to process eg. 1200 ÷ 60
			A1	400 oe (accept number of whole pizzas eg. 400÷4 = 100 with 4 people per pizza)
			C1	Eg. Assumption that sample is representative of population – it may not be all 1200 people are going to the party – need less pizza if they don't, assume 4 people per pizza – if different may need more/fewer pizzas

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

15.

27	(a)		$22 \leq f < 24$	B1	
	(b)		21.9	M1	$x \times f$ using midpoints
				M1	(dep on previous mark) "$x \times f$" ÷ 40
				A1	accept 22 if working seen

OCR Wednesday 8 November 2017– Morning (Calculator) Foundation Tier

16.

14	**(a)**		5.34	**4**	**B1** for 1.5, 4.5, 7.5, 10.5, 13.5 **M1FT** for 1.5×6 4.5×10 7.5×6 10.5×2 13.5×1 soi 9, 45, 45, 21, 13.5 or 133.5 **M1** for *their* 133.5 ÷ 25	At least 4 midpoints correct FT midpoints or either end of range values consistently used Allow one numerical error Four correct products or 133.5 imply **B1** and **M1**
	(b)		Exact times for each customer are not recorded oe	**1**		Do not accept, "Because the mid-point is used" or comments on the method used.

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

17.

14	**(a)**		$\frac{8}{50}$ **oe**	**2** **1 AO2.3a** **1 AO3.1c**	**B1** for $\frac{n}{50}$	
	(b)		Any comment with valid reason	**1** **1 AO3.4b**		

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

18.

Q	Answer	Mark	Comments
26	39	B1	

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

19.

	Valid statement about proportion	B1	eg there were more 41s or over than 40s or under
	Valid statement about average	B1	eg the average listening time of the 41s or over was higher
	Valid statement about spread	B1	eg the listening times of the 41s or over were more spread out
	Additional Guidance		
	Do not allow incorrect values supporting statements (eg a miscalculation) but repeating the values in context is acceptable		
	Condone irrelevant statements with correct statements		
	Student statements may not be in the same order as the measures in the table		
	Accept 'older people' for 41s or over and 'younger people' for 40s or under similarly accept over 40s to stand for 41s and over (oe)		
18	**Proportion of the audience statements**		
	There were more over 41s		B1
	They are mostly over 41		B1
	There were 58% more over 41s than 40s and under		B1
	The proportion / % / percentage of over 41s is higher		B1
	Over 41s are a higher proportion than 40s and under		B1
	Less 40 and under than over 41		B1
	The 40 and unders were 21%, the over 41 were 79%		B1
	The 40s and under were 21% which is less than half/quarter		B1
	The 40s and under were 21%		B0
	The difference is 58%		B0
	Additional Guidance continues on the next page		

18 cont	**Average listening time statements**	
	The over 41s had a higher mean	B1
	Over 41s listened for 5.1h more (on average)	B1
	Over 41s listened longer (on average) than the 40s and under	B1
	41+ longer listening (on average)	B1
	(More/most) 40s and under listened less than the over 41s (on average)	B1
	Average listening 5.1 hours difference	B0
	Spread of listening time statements	
	The over 41s had a higher range	B1
	More of a time gap in the over 41s than the 40s and under	B1
	Over 41s have a higher spread	B1
	40s and under times are closer together than over 41s	B1
	Over 41s have a wider listening time range	B1
	The 41 and over listening time gap was high, the under 40 listening time gap was low	B1
	40 and under is 4.5, 41 or over is 13.9	B1
	40 and under listen to the radio 4.5 hours, 41 or over listen to the radio 13.9 hours	B0
	The difference in range is 9.4	B0
	Listening times were quite close together	B0
	The 41 and over listening times gap was high	B0

AQA Thursday 6 June 2019 – Morning (Calculator) Foundation Tier

20.

23(a)	continuous grouped	B1	both circled
	Additional Guidance		

23(b)	**Alternative method 1**		
	380 ÷ 2 or (380 + 1) ÷ 2 or 381 ÷ 2 or 190 or 190.5 or 191	M1	oe eg $\frac{59+158+106+45+12}{2}$ may be seen by the table
	$2 < t \leqslant 4$ with 190 or 190.5 or 191 seen	A1	
	Alternative method 2		
	$2 < t \leqslant 4$ with 59 + 158 – 106 – 45 – 12 = 54 seen	B2	oe calculation eg 217 – 163 = 54 B1 59 + 158 – 106 – 45 – 12 = 54 oe
	Additional Guidance		
	$2 < t \leqslant 4$ with 190 or 190.5 or 191 not seen		M0A0
	Condone 2 – 4 in both or one of the spaces on answer line if 190 or 190.5 or 191 seen		M1A1
	Condone missing brackets if recovered		
	Alt 2 54 with calculation not seen		B0
	Alt 2 $2 < t \leqslant 4$ and 54 with calculation not seen		B0

23(c)	$\frac{45+12}{380}$ or $\frac{57}{380}$ or $\frac{3}{20}$ or 0.15 or $100 \div \frac{380}{57}$ or $57 \div 3.8$	M1	oe proportion or calculation must use 380
	15	A1	
	Additional Guidance		
	$1 - \frac{59+158+106}{380}$ or $1 - \frac{323}{380}$ or $1 - \frac{17}{20}$ or $1 - 0.85$		M1
	Correct proportion seen even if not subsequently used		M1A0
	Do not allow misreads of 380		
	Build-up eg 10% = 380 ÷ 10 or 38 5% = 38 ÷ 2 or 19 38 + 19 = 57 is M0A0 unless answer 15		

AQA Tuesday 6 November 2018 – Morning (Non-Calculator) Foundation Tier

21.

27(a)	8 and lowest (value) or 8 and outlier	B1	oe Accept 102 for day 8
	Additional Guidance		
	8 and '(Only 102 landed whereas) All the other days were over 140'		B1
	8 and 'Fewer (less) planes landed (than the other days)'		B1
	8 and 'It's an anomaly'		B1
	8 and 'There was a (big) drop / reduction / decrease in the number of planes'		B1
	8 and 'There were only 102 planes'		B1
	8 and 'It's low' or 8 and 'It's lower' or 8 and 'It's too low'		B1
	8 and 'It doesn't follow the trend (or pattern)'		B1
	8 and 'It reduces a lot that day'		B1
	Ignore a non-contradictory statement with a correct statement eg 8 and It's the lowest, it dropped by 53'		B1
	Do not award B1 with a numerical error in the statement eg 8 and 'It's the lowest by 40'		B0
	8 and 'There were 102 planes'		B0
	8 and 'There's a drop of 53 (implies a point to point comparison)'		B0
	8 and 'It's below average'		B0
	8 and 'It's the odd one out'		B0

27(b)	**Alternative method 1**		
	150 × 24 ÷ 4 or 150 × 6 or 900	M1	oe
	their 900 × 365 or their 900 × 7 × 4 × 12 or their 900 × 7 × 52 or 302 400 or 360 000	M1dep	for 365, allow 336, 360, 364, 366, 370 and 400
	324 000 or 327 600 or 328 500 or 329 400 or 333 000	A1	
	Alternative method 2		
	365 × 150 or 54 750 or 365 × any multiple of 150	M1	for 365, allow 336, 360, 364, 366, 370 and 400 for 54 750 allow 50 400, 54 000, 54 600, 54 900, 55 500 and 60 000
	their 54 750 × 24 ÷ 4 or 302 400 or 360 000	M1dep	
	324 000 or 327 600 or 328 500 or 329 400 or 333 000	A1	
	Alternative method 3		
	365 × (24 ÷ 4) or 365 × 6 or 2190	M1	for 365, allow 336, 360, 364, 366, 370 and 400 for 2190, allow 2016, 2160, 2184, 2196, 2220 and 2400
	their 2190 × 150 or 302 400 or 360 000	M1dep	
	324 000 or 327 600 or 328 500 or 329 400 or 333 000	A1	

27(c)	Ticks 'Her prediction could be too low or too high' and explains that fewer landings in winter would make it too low, but fewer landings at night would make it too high or states that the actual numbers are not given	B2	oe reason B1 ticks 'Her prediction could be too low or too high'
	Additional Guidance		
	Ticks 'Her prediction could be too low or too high' and states that there is not enough data		B1 only

AQA Thursday 8 November 2018 – Morning (Calculator) Foundation Tier

22.

22(a)	2.5 × 12 or 30 and 7.5 × 7 or 52.5 and 12.5 (× 1) or 95	M1	allow one incorrect midpoint or [2, 3] × 12 and [7, 8] × 7 and [12, 13] (× 1) ignore $t \geqslant 15$ row
	$\frac{\text{their } 30 + \text{their } 52.5 + \text{their } 12.5}{12 + 7 + 1}$ or 95 ÷ 20	M1dep	$t \geqslant 15$ product must be 0 if seen condone bracket error seen eg 30 + 52.5 + 12.5 ÷ 20
	4.75	A1	accept 4.8 or 5 if full working shown using **correct** midpoints
	Additional Guidance		
	Two correct from 30, 52.5 and 12.5 implies the first mark and could be used to score up to M2		M1
	Midpoints used in the ranges [2, 3], [7, 8] and [12, 13] must be seen eg 2.5 × 12 and 7 × 7 and 12 (× 1) or 3 × 12 and 7 × 7 and 13 (× 1) NB These could be used to score up to M2		M1
	Correct products seen in the table but a different method shown in the working lines eg 20 ÷ 4 = 5		M0

22(b)	Lower than part (a)	B1	
	Additional Guidance		

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

23.

6(a)	School	B1	
	Additional Guidance		
	School and 26		B1
	26		B0

6(b)	4 in key	B1	
	$6\frac{1}{2}$ symbols in 'School'	B1ft	ft their key ≠ 1
	$2\frac{3}{4}$ symbols in 'Guides'	B1ft	ft their key ≠ 1
	Additional Guidance		
	Key: ○ represents 4 friends Family ○○ Netball ○○ School ○○○○○○◖ Guides ○○◔		B3
	Half circle and three-quarter circle can be any orientation		
	Three-quarter circle must be an attempt at a **single** sector or arc (not a circle cut vertically or drawn smaller) but may be rotated		
	Mark intention for size and shape of symbols. Must be sectors or arcs		
	If the key is blank they can score B0B1B1 for 6.5 and 2.75 symbols		
	Ignore any symbols added to the first two rows		

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

24.

14a	**Alternative method 1**		
	Two of the three totals correct (2016 =) 136 (2015 =) 143 (2014 =) 132 or 17 + 64 + 50 + 5 and 9 + 72 + 61 + 1 and 19 + 58 + 53 + 2	M1	Totals may be seen by table Correct totals may be implied by means (2016 → 34, 2015 → 35.75, 2014 → 33) Addition signs must be shown for horizontal addition but may be implied by a column of numbers in their working
	136 and 143 and 132 and 2015 or 34 and 35.75 and 33 and 2015	A1	Totals may be seen by table
	Alternative method 2		
	8 and –8 and –11 and 4 or –7 and –10 and 14 and 8 and –1 or 11	M1	Difference between 2016 and 2015 Difference between 2015 and 2014 Differences may be seen in table
	–7 and 11 and 2015	A1	Differences may be seen in table
	Additional Guidance		
	Differences may have consistently opposite signs for either comparison		
	Ignore totals for quarters shown		
	Allow Year 2 for 2015		
	136 and 143 and 132, answer 143		M1A0
	136 and 143 and 132, answer 143 in 2015		M1A1

14b	Quarter 2	B1	

AQA Wednesday 8 November 2017 – Morning (Calculator) Foundation Tier

25.

19	Valid statement about proportion	B1	eg there were more females than males
	Valid statement about average	B1	eg the average age of the females was higher
	Valid statement about spread	B1	eg the ages of the females were more spread out
	Additional Guidance		
	Condone incorrect values supporting statements		
	Condone irrelevant statements with correct statements		
	Proportion of the audience statements		
	There were more women		B1
	Are mostly female		B1
	There were 66% more females than males		B1
	The proportion of women is high		B1
	Females are a higher proportion than males		B1
	Less men than women		B1
	The men were 17%, the women were 83%		B1
	The males were 17% which is less than half		B1
	The males were 17%		B0
	The difference is 66%		B0

Additional Guidance continues on the next page

19 cont	Average age statements	
	The women had a higher mean	B1
	Women were 5 years older	B1
	Females were older than the males	B1
	There were more females that were older than the males, this is why the mean age of the females is more	B1
	Most males were younger than the females	B1
	More older women than men	B1
	There are more younger males than females	B1
	There are younger males than females	B0
	Females have a high mean	B0
	Average age 5.4 years difference	B0
	The women's mean age range was higher	B0
	Spread of ages statements	
	The women had a higher range	B1
	More of an age gap in the females than the males	B1
	Females have a higher spread	B1
	Males ages are closer together than females	B1
	Females have a wider age range	B1
	The female age gap was high, the male age gap was low	B1
	Ages were quite close together	B0
	The female age gap was high	B0
	Age range of males is younger than females	B0

AQA Thursday 25 May 2017– Morning (Non-Calculator) Foundation Tier

26.

25	False True True True True False	B4	B3 for 5 correct B2 for 4 correct B1 for 3 correct
	Additional Guidance		
	Accept any clear indication as their answer		

AQA Sample Paper 3– Morning (Calculator) Foundation Tier

27.

17	$2 \times 14 + 10 \times 15 + 2 \times 16 + 3 \times 17 + 13 \times 18$ or $28 + 150 + 32 + 51 + 234$ or 495	M1	Allow one error or omission
	$(2 \times 14 + 10 \times 15 + 2 \times 16 + 3 \times 17 + 13 \times 18) \div 30$ or 16.5	M1dep	Condone bracket error
	14	A1	Full method required