



Mark Scheme (Results)

November 2021

Pearson Edexcel GCSE
In Statistics (1ST0) Foundation Tier
Paper 1F

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Question Paper Log Number P65513A

Publications Code 1ST0_1F_2111_MS

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question number	Answer	Additional guidance	Mark
1(a)	B1 12		(1)
(b)	B1 $\oplus \oplus$		(1)
(c)	B1 e.g. 'It is difficult to represent 2 tennis rackets with the key (as 22 has a remainder of 2 when divided by 5)'	B1 for demonstrating understanding that it is hard to use the key.	(1)

Question number	Answer	Additional guidance	Mark
2(a)	B1 2000 [1900 to 2000]	Allow 1900 to 2000	(1)
(b)	M1 $2000 - k$ A1ft 1400 to 1600	M1 for '2000' - k (where $400 < k < 600$) A1ft allow ft on their answer to (a) and allow answer in the range 1400 to 1600	(2)
(c)(i) (ii)	B1 Downwards B1 Upwards	B1 for each correct description Allow negative for downwards but negative correlation is B0. Allow decreasing. Allow positive for upwards but positive correlation is B0. Allow increasing.	(2)

Question number	Answer	Additional guidance	Mark
3(a)	B1 raw		(1)
(b)	B1 e.g. 'The tally for 0 (should be 2)' B1 e.g. 'The first set of tallies for 3 have only 4 tallies not 5'	B1 for each mistake identified	(2)
(c)	B1 e.g. 'If you list all of Julie's friends in order, the middle one did sport 3 days last week'	B1 for a correct interpretation in context	(1)
(d)	B1 Julie is not correct since e.g. 'nobody played a sport on 7 days last week (so 7 cannot be the mode)'	B1 for not correct and supporting reason	(1)
(e)	B1B1 Not appropriate since, e.g. <ul style="list-style-type: none"> • 'grouping data loses accuracy' • 'including all bars would be better' • 'no labels on axes' 	B1 for not appropriate and each supporting reason up to a maximum of 2	(2)

Question number	Answer	Additional guidance	Mark
4(a)	B1 $\frac{1}{5}$	B1 allow 0.2 or 20%	(1)
(b)	B1 $\frac{7}{30}$	B1 allow awrt 0.23 or awrt 23%	(1)
(c)	B2 Mary's method is more reliable since it is based on more trials	B2 for Mary and correct supporting reason (B1 for Mary and incomplete reasoning)	(2)
(d)	B1 Expected number is 10/Blue got the expected number B1 More yellows than expected B1 Fewer reds than expected (B2 SC They should all be 10)	B1 for each comment	(3)

Question number	Answer	Additional guidance	Mark
5(a)	B1 e.g. 'Every member of the population has the same probability of being selected'	B1 for a correct description	(1)
(b)	M1 $\frac{18000+3000+23000+31000+19000+24000+17000+25000}{8}$ A1 (£) 20 000	M1 attempt to add figures and divide by 8 A1 20 000	(2)
(c)	B1 (£) 31 000 – 3000	Subtraction must be in correct order	(1)
(d)(i)	B1 (£)3000		(1)
(d)(ii)	B1 e.g. 'It is far away from the other values'	B1 allow equivalent description	(1)
(e)	B1ft (The mean is) greater B1ft e.g. 'since a salary below the mean (of all 8) has been removed'	B1ft correct comparison (allow ft on their (d)(i)) B1ft for correct explanation	(2)
(f)	B1B1 <ul style="list-style-type: none"> • small sample size • sensitive topic/people may not want to give their salary • sample might not be representative • does not include all of the data 	B1 for each correct assessment of the method	(2)

Question number	Answer	Additional guidance	Mark
6(a)	M1 $100 - 10$ or $13 + 37 + 12 + 28$ A1 90 (%)	M1 for complete method A1 for 90(%)	(2)
(b)	B1 39% for Kenya and 13% for Japan B1 The percentage is greater in Kenya	B1 for correct values B1 for correct comparison (26% more for Kenya scores B1B1)	(2)
(c)(i)	B1 Japan B1 The percentage is 12% (Only 4% in Kenya)	B1 for Japan only B1 for correct supporting information	(2)
(c)(ii)	B1 both B1 15 – 24 for Japan and 65 and over for Kenya	B1 for both countries B1 for correct supporting information	(2)
(d)	B1 e.g. ‘Suitable since populations pyramids show age groups of a population’	B1 for suitable and correct supporting reason (Allow ‘easy to compare’)	(1)

Question number	Answer	Additional guidance	Mark
7	B1 Question(s) are not appropriate B1B1B1 for assessing the questions, e.g. <ul style="list-style-type: none"> • ‘Question 1 is leading/biased’ • ‘Question 2 is open’ • ‘Question 3 does not have a time frame’ • ‘Question 3 has non-exhaustive response boxes’ B1B1 for assessing the conclusions, e.g. <ul style="list-style-type: none"> • ‘Conclusion 1 is likely to favour August’ • ‘Conclusion 2 is not valid since the question had too many different responses’ • ‘Conclusion 3 cannot conclude the time is per week’ 	B1 for not appropriate with an attempt at supporting reason(s). B1 for each assessment of the questions (up to B3) B1 for each assessment of the conclusions (up to B2)	(6)

Question number	Answer	Additional guidance	Mark
8(a)	B1 for box with at least one whisker B1 at least 3 values correct B1 all correct (10.2, 12.1, 12.7, 13.3, 15.4)		(3)
(b)	M1 for identifying 13.3 and 12.1 A1 1.2	M1 for identifying correct figures (allow ft for figures on box plot) A1 cao	(2)
(c)	B1ft No skew/symmetric B1ft e.g. 'Median is exactly between the lower and upper quartiles'	B1 for no skew/symmetric B1 for supporting reason (Allow ft on box plot)	(2)

Question number	Answer	Additional guidance	Mark
9(a)(i)	M1 Reading off the graph at 0.75×48 (36) A1 answer in the range 3200 to 3600	M1 for reading off graph at 75% A1 for answer in range Condone use of $n + 1$	(2)
(ii)	B1 e.g. '75% of counties have an area of '3400' sq km or less'	B1 for correct interpretation in context	(1)
(b)	M1 Reading a cumulative frequency off graph at 2000 M1 '19' + 24 (= 43) A1 answer in the range $4400 < k < 4800$	M1 may be implied by 19 identified. M1 for adding 24 to their value A1 for answer in range Note: working may be seen on or next to the graph	(3)

Question number	Answer	Additional guidance	Mark
10(a)(i)	B1 <u>all</u> of the students in John's school		(1)
(a)(ii)	B1 <u>all</u> of the (types of) films (in UK cinemas last year)	'All' is required, but condone omission in (a)(ii) if omitted in (a)(i).	(1)
(b)	B1 e.g. 'use a trusted website', 'use up-to-date / recent data'	B1 for a suitable suggestion Accept 'use reliable website / reliable source'	(1)
(c)	B1 Method A: e.g. 'each student may not have the same chance of being selected' B1 Method B: e.g. 'selecting at a particular time/place so not all students have an equal chance of being selected'	B1 for any suitable reason as to why this quota sampling method is not random B1 for any suitable reason as to why this opportunity sampling method is not random	(2)
(d)	B2 Method A/quota sampling should be less biased since it is more likely to be representative (OR if B2 not scored B1 Method A/quota sampling should be less biased with an attempt at a reason)	B2 for Method A and identifying that quota sample aims to represent the characteristics of the population (OR if B2 not scored B1 for Method A and an attempt at a supporting reason)	(2)

Question number	Answer	Additional guidance	Mark
11(a)	B1 2009 Quarter 3		(1)
(b)	M1 $\frac{456663}{444292} \times 100$ A1 103	M1 correct equivalent calculation A1 awrt 103	(2)
(c)	M1 444292×0.973 A1 (£) 432 296 (million)	M1 correct equivalent calculation A1 awrt (£)432 000 (allow 432 296.116, awrt 432 300)	(2)
(d)	M1 The index numbers are increasing / the GDP is increasing (in 2010) A1 therefore Marc is incorrect.	M1 for understanding that the index numbers are increasing / GDP is increasing A1 correct assessment of Marc's conclusion	(2)

Question number	Answer	Additional guidance	Mark
12(a)	B1 6(%)		(1)
(b)	B1 0.9	Allow 90%	(1)
(c)	M1 $\frac{k}{16}$ or $\frac{12}{100}$ A1 $\frac{12}{16}$	M1 for realising 16 is the denominator or equivalent A1 allow equivalent fraction, 0.75 or 75%	(2)
(d)	M1 $P(B A) < P(B)$ ('0.75' < '0.9') A1ft e.g. 'So being in employment lowers the likelihood of being in education'.	M1 for comparing their part (b) and their part (c) A1ft for a correct conclusion (allow ft on their (b) and their (c))	(2)

