Mark Scheme (Results)

Summer 2016

Pearson Edexcel GCSE
In Statistics (2ST01)
Higher Paper 1H

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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 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.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 **No working**

If no working is shown then correct answers normally score full marks

If no working is shown then incorrect (even though nearly correct) answers score no marks.

7 **With working**

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8   Follow through marks
Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9   Ignoring subsequent work
It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10   Probability
Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths), unless it states otherwise on the mark scheme.

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11   Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12   Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13   Range of answers
Unless otherwise stated, when an answer is given in a range
(e.g. 3.5 – 4.2) then this is inclusive of the end points, and includes all the numbers in between.

14   Quality of Written Communication
This is denoted by an asterisk near the question number/part (*). Mark schemes will indicate within the table how marks are to be allocated. In this subject we need to see that correct statistical terms are used.

Question	Scheme	Marks
1.(a)	e.g. Which do you prefer as a pet? Dog □ or Cat □ (or Neither □)	B1 (1)
(b)	e.g.	B2,1,0 (2)

	Dog	Cat	Fish	Mouse	other
Male					
Female					

Question	Scheme	Marks
(c)	Data is qualitative/non-numeric	B1 (1) **[4]**
	Notes	
(a)	Any non-biased closed question about pet preference or ownership which can be responded to with dog/cat as minimum. With response box o.e.	
(b)	B2 for a usable **table** with both features: • male/female • at least two pet options **listed** (may include 'other' or 'none') or B1 for at least one correct feature	
(c)	Allow any equivalent statement that data is non-numeric Ignore excess statements	

Question	Scheme	Marks
2. (a)	35-44	B1 (1)
(b)	30 (million)	B1 (1)
(c)	Upward/rising trend o.e	B1 (1)
(d)	Does not include all age groups / children OR is for UK only	B1 (1) **[4]**
	Notes	
(b)	Allow 30 or 30 000 000	
(c)	Allow equivalent description (e.g. goes up / increasing). Ignore any figures. Condone 'positive (trend)' but 'positive correlation' seen is B0 Ignore comments about dips/fluctuations **only if** they have a clear statement that the **overall** trend is rising.	
(d)	Recognition of EITHER the missing age group OR being UK only. Do not accept non-response or 'only a sample' arguments	

Question	Scheme	Marks
3. (a)(i)	$\dfrac{7}{10}$ o.e.	B1 (1)
(a)(ii)	$\dfrac{8}{10}$ o.e.	B1 (1)
(b)	Events that cannot happen **together**/**at the same time**	B1 (1)
(c)	$P(\text{both odd}) = \dfrac{3}{10} \times \dfrac{3}{10} = \dfrac{9}{100}$ o.e.	M1A1 (2) **[5]**
	Notes	
(a)(i)	Allow any equivalent fraction, decimal or percentage	
(a)(ii)	Allow any equivalent fraction, decimal or percentage	
(b)	Condone e.g. 'either one happens **or** the other happens' B0 for description of independence	
(c)	M1 for $\dfrac{3}{10} \times p$ OR $p \times p$, where $0 < p < 1$ A1 for any equivalent fraction, decimal or percentage	

Question	Scheme	Marks
4.(a)	$\dfrac{90}{240} \times 40$ $(=15)$	B1 (1)
(b)	Number the (first year) students	B1
	The (first year) students that correspond to the numbers in her list are selected for the sample, e.g use student number 47, 12, etc.	B1
	Ignore the repeated numbers	B1 (3)
(c)	$\dfrac{7}{15} \times 90 = 42$	M1 A1 (2) **[6]**
	Notes	
(a)	For any equivalent expression $\left(\dfrac{40}{240} \times 90,\ 40 \div \dfrac{240}{90}, etc.\right)$ which may be seen in stages Must see 90, 40, 240 used in a correct calculation, e.g. $90 \times 40 = 15 \times 240$	
(b)	1st B1 for the idea of numbering <u>or</u> ordering <u>or</u> listing Allow a list/database/register/sampling frame (of students) 2nd B1 for matching (the) random numbers to the students 3rd B1 for ignoring the repeated random numbers (53)	
(c)	M1 for any equivalent correct expression (implied by 7×6) A1 for 42 Special Case: $\dfrac{42}{90}$ M1A0	

Question	Scheme	Marks
5.(a)(i)	e.g. weight, height/length, (shoulder) width	B1
(ii)	Continuous	B1 ft (2)
(b)(i)	<u>Secondary</u> as <u>collected by someone else</u>	B1
(ii)	Advantage: Any one of cheaper/quicker/easier	B1ft

	Disadvantage: Any one of - may be out of date
	                                   - *unknown* reliability (condone *not* reliable)
	                                   - may not include the required information
		B1ft
		
		(3)
		[5]

	Notes	
(a)(i)	Any sensible **numeric variable** which relates to size, (But 'size' alone is B0) B0 for 'age'	

(a)(ii)	B1 is follow through. e.g.
	        For 'size' or 'age' in (i) accept 'continuous' here
	        For 'size: Large/Medium/Small' in (i) accept 'qualitative' here
	Note: if no answer to (i) then B0 here.	

(b)(i)	Allow equivalent wording but must indicate 'secondary' (they might indicate by circle/underline in the question)	

(b)(ii)	Answers here must be consistent with (i). If no answer to (i) then B0 here
	Allow equivalent wording for each. (Condone 'accuracy' for 'reliability')
	
	NB: If answer to (b)(i) is '**primary**' then apply:
	
	Advantage: Any one of - up to date
	  B1ft - *known* reliability (condone *more/is* reliable)
	                            - can ensure you get the information needed
	
	Disadvantage: Any one of - more expensive
	  B1ft - time consuming
	                            - more work	

Question	Scheme	Marks
6.(a)	500 (accept '500 out of 1000' BUT '500/1000' is B0)	B1 (1)
(b)	560 – '500' (= 60) $\dfrac{60}{500}$ or $\dfrac{120}{1000}$ o.e. (e.g. $\dfrac{3}{25}$, 0.12 , 12%)	M1 A1 (2) **[3]**

	Notes	
(b)	M1 for identifying 60 or 120 (implied by correct answer or 0.06) A1 allow any correct equivalent answer, including words. (e.g. twelve in every hundred). Condone 120 as final answer.	

Question	Scheme	Marks
7.(a)	Increased (by 78.6 million)	B1 (1)
(b)	Microsoft	B1 (1)
(c)	Android	B1 (1)
(d)	Rounding error	B1 (1)
(e)	One of - **Total sales** are different for the two years, or - To see each OS **in proportion** to total sales	B1 (1)
(f)	$\dfrac{24.6}{171.6} \times 360 \ (= 51.60\ldots)$ OR $\dfrac{14.3}{100} \times 360 \ (= 51.48)$ Answer in range 51~52	M1 A1 (2)
(g)	$(r^2 =) \ \dfrac{250.2}{171.6} \times 5^2 \ (= 36.45\ldots)$ $\therefore \ r \ (= 6.037\ldots \ ) \ = 6 \ (\text{cm})$	M1 A1 (2)
		[9]
Notes		
(a)	Any indication that they went up. Ignore figures. Ignore excess comments if not contradictory. BUT B0 for e.g. '**most** increased' or 'some went up / some went done'	
(d)	Accept any comment referring to rounding.	
(e)	Allow equivalent wording for either statement e.g. 'it will show percentages/market share better'	
(f)	Range 51~52 is inclusive	
(g)	M1 Equivalent attempt to use correct scale factor **for area**. e.g. May see $\dfrac{250.2}{171.6} \times 78.5\ldots$ May be implied by answer given to **more than 1sf** (ie 6.0 or better) A1 6 or better (e.g. 6.0 or 6.04 etc.) SC: If no working and answer of '6' only score B1.	

Question	Scheme	Marks
8.(a)	Advantage: - quicker / easier / cheaper (to get data)	B1
	Disadvantage: - not random / may be biased (Any one of) - may not be representative (of all opinions)	B1 (2)
(b)	Cluster	B1 (1)
(c)	Correct comments from two of these five aspects: **UNDERSTANDING:** Questions/responses can be explained in an interview OR may not be understood in a questionnaire **CANDOUR:** Employee may be less open/honest in an interview OR questionnaire can be done without pressure **RESOURCES:** Interviewing can be time consuming/expensive OR questionnaire can be done by all at the same time (or in their own time, or more cheaply) **INCLUSIVITY:** Interviews more likely to include all employees OR questionnaires might not be returned OR office manager views are not included by interview. **INTERVIEWER BIAS:** Possible bias from manager (in interview) / no interviewer bias with questionnaire.	B2,1,0 (2) **[5]**
	Notes	

(a)	**Advantage**:
	B1 for answer implying that the method will be quicker/easier/cheaper
	
	B0 lots of data / random / offices have a fair chance of inclusion
	
	Disadvantage:
	B1 for any equivalent comment implying one of the two options.
	   Condone 'not accurate' for not representative.
	   Condone 'small sample' / '10 offices too few'
	e.g. employees in one office may have similar opinions / employees in some areas may not be included
	
	B0 for time consuming / expensive / may be non-responses / not everyone included	

(c)	B2 for two different aspects from these five, or B1 for one aspect. Accept equivalent comments but **each aspect counts once only**. Ignore excess comments if not contradictory.	

Question	Scheme	Marks
9.(a)	$\dfrac{618.59}{501.75} \times 100$	M1
	$= 123.286\ldots$ (Accept 123 or better, truncated or rounded)	A1
		(2)
(b)(i)	$\dfrac{595.66}{651.32}$ $(\times 100)$	M1
	$= 91.454\ldots$ (Accept 91 or better, truncated or rounded)	A1
***(ii)**	Cost of motor insurance decreased over the year by 8.5% (or 9%) o.e	B2,1,0ft
		(4)
		[6]
	Notes	
(a)	M1 Full method (including ×100) using correct months. (Implied by awrt 123)	
	A1 for 123 or better, truncated or rounded (e.g. 123, 123.2, 123.3 etc) BUT 123**%** or **£**123 scores M1A0	
(b)(i)	M1 Fraction using correct figures.	
	A1 for 91 or better, truncated or rounded (e.g. 91, 91.4, 91.5 etc) BUT 91**%** or **£**91 scores M1A0 unless the **same error** is seen in (a)	
(b)(ii)	QWC **NB** ft their answer to (i) **only if** it is an attempt at an **index number** (If no answer to part (i) then score B0) B2ft for correct interpretation including all three features: <u>decrease/fall</u>, <u>reference to period of 'one' year</u>, and <u>figures %</u> OR B1ft for their 9% or decrease seen (must follow through from their (i))	

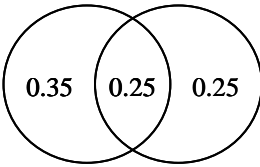| Question	Scheme	Marks
10.(a)	Median = 84 IQR = 94 – 80 $\qquad$ = 14	B1 M1 A1 (3)
*(b)	Data (for salad potatoes) is <u>skewed</u> or <u>not symmetrical</u> or has <u>outliers</u>, so use median and IQR (or 'option 1')	B2,1,0 (2)
*(c)	New potatoes have a smaller <u>median</u> than salad potatoes New potatoes have a smaller <u>IQR</u> than salad potatoes ALTERNATIVE New potatoes have a smaller <u>mean</u> than salad potatoes New potatoes have a smaller <u>standard deviation</u> than salad potatoes	B1ft B1ft (2) B1 B1 **[7]**
Notes		
(a)	M1 Subtraction using attempts at Q_1 and Q_3 (at least one of 80, 94 correct)	
(b)	QWC B2 Correct choice **and** reason, using the correct vocabulary (underlined) $\quad$ (Condone 'anomaly' for outlier) OR B1 for a partially correct answer which includes a sensible reason (e.g. "box plot is skewed" but no conclusion, or "there are *extreme* values so use median & IQR" – i.e. lacking correct vocab.) **NB** Correct choice with **no reason** scores **B0**	
(c)	QWC **Comparison** (not just listing) using the correct vocabulary (underlined - allow s.d. for standard deviation). Follow through their answers in (a). Allow correct converse statements, and allow clear equivalents to 'smaller' etc Condone mention of both types of measure. SC: if compare mean and IQR only, or median and s.d. only, score max B1B0	

Question	Scheme	Marks
11.(a)	e.g. Rich countries win more <u>medals</u> than poor countries. or, The richer the country the more <u>medals</u> they win.	B1 (1)
(b)	All 3 points plotted correctly	B2,1,0 (2)
(c)(i)	Ranks: 4, 2, 9, 8, 3, 5, 10, 7, 6, 1 (or reversed: 7, 9, 2, 3, 8, 6, 1, 4, 5, 10)	B1
(ii)	$\sum d^2 = 48$ (or 282 from reversed ranks) $1 - \dfrac{6 \times '48'}{10 \times (10^2 - 1)}$, $(= 1 - 0.2909...) = $ awrt 0.71 (or awrt -0.71 from reversed ranks)	M1 M1, A1 (4)
***(d)**	There is <u>positive correlation</u> (between GDP/wealth and medals won) Wealthier countries do win more medals/perform better OR the hypothesis is supported OR Seb appears to be correct	B1ft B1ft (2) **[9]**
	Notes	
(a)	Any sensible hypothesis (not a question) which implies wealth as a cause and <u>medals</u> as response. (Must mention 'medals' here.) Accept converse. (e.g. Poorer countries win more <u>medals</u>) Condone "number of <u>medals</u> is affected by wealth" B0 for a question	
(b)	B2 for all 3 points correct (± 1 square) within circle on overlay, or B1 for at least 1 point correct.	
(c)	B1 All ranks correct (allow reversed ranks). 1st M1 attempts sum of squares of differences of their **ranks** (at least 3 correct for their ranks) 2nd M1 complete expression (including '1 - ...') ft their Σd^2 A1 awrt ± 0.71 (Answer only is 4/4)	
(d)	QWC 1st B1 for '<u>positive correlation</u>' 2nd B1 correct conclusion for their statement in (a) OR for correct interpretation of positive correlation **NB**: B0 for conclusions based on specific countries ALTERNATIVE: Negative correlation 1st B1 Allow ft for <u>negative correlation</u> only if $-1 \le r < 0$ 2nd B1 correct conclusion for their statement in (a) OR for correct interpretation of negative correlation **NB**: B0 for conclusions based on specific countries	

Question	Scheme	Marks
12.(a)	Quarterly figures were plotted OR four quarters/seasons in the year	B1 (1)
(b)	Spending is higher/highest/goes up in quarter 3 (each year)	B1
	and lower/lowest/goes down in quarter 1 (each year)	B1 (2)
(c)(i)	$\dfrac{\Delta y}{\Delta x}$ (e.g. 2100÷15)	M1
	= 140 (per quarter), or 560 (per year)	A1
	(Answer in range 120~160 or 480~640)	
*(ii)	Spending/£ , increases , by '140' million per quarter	B1ft
	(or by '560' million per year)	(3)
(d)	Trend line value = 6800 (million)	B1cao
	$6800 - \dfrac{1400+1700+1500}{3}$	M1
	= 5267 (£ million) (accept 5100~5500)	A1 (3)
		[9]
Notes		
(a)	Any reference to 4 values per year or to quarterly figures.	
(b)	For each comment, reference to 'each year' is not required but reference to one year (eg 2013 Q3) scores B0. (Condone 'summer' for quarter 3, 'winter' for quarter 1, o.e)	
	IN PARTS (c) AND (d) ALLOW ±200 FOR GRAPH VALUES USED	

(c)(i)	M1 Gradient attempted, correct way up. May be from triangle on graph.
	     For x may use quarters or years.
	 A1 Allow answer in either range, inclusive, for M1A1.
	     Allow equivalent ranges in millions but units not needed for this mark.
	
	 Note: If correct gradient is in an equation as final answer, then M1A0	

(c)(ii)	QWC B1ft for Increase and **figures** in **millions, £/spending,** and **time**. Follow though their figures. Ignore statements about correlation.	
(d)	B1**cao** 6800 must be stated or seen used. (May be seen labelled on graph) M1 for subtracting an attempt at mean seasonal variation (using three Q1 values within tolerance) from their '6800' A1 Allow answer in range 5100~5500 inclusive. NB: Answer without working scores M0A0	

Question	Scheme	Marks
13.(a)	Positive skew	B1 (1)
(b)	Frequency $\div$ class width, OR $4 \div (95\text{-}90)$ $(=0.8)$	B1 (1)
(c)	$2.6 \times 5 \ + \ 0.7 \times 10 \ (= 13 + 7)$ $\qquad\qquad\qquad =20$	M1 A1 (2)
(d)	Identifies 100 to 110 class $\left(\dfrac{4}{7} \times 10 + 100\right) = 106\,(\text{minutes})$ \qquad awrt 106	M1 A1 (2)
(e)	He should not use the results, WITH a reason	B1
	May expect different course / different conditions / different racers etc	B1 (2)
		[8]
	Notes	
(b)	Answer 0.8 is given in the paper. B1 for calculation/explanation. Allow $\dfrac{4}{5}$ OR e.g. $0.8 \times 5 = 4$	
(c)	M1 At least one correct product seen. (Implied by 13 or 7) Working may be on graph.	
(d)	M1 Either identifies the class 100 to 110, $\qquad$ OR states an answer in range $100 < \text{answer} < 110$	
(e)	1st B1 for rejecting use of results (or 'no') with any reason	
	2nd B1 for a contextual reason that data apply to a different situation $\qquad$ OR too few results / small sample Note: e.g. 'too few results **on which to base a prediction**' scores B1B1	
	SC: Allow B1 for a complete argument for using the results. $\qquad$ e.g. ok to use the results if the 'conditions' are **similar**.	

	Notes	
14.(a)	$\dfrac{63-53}{8}$ (=1.25)	B1 (1)

(b)	$\dfrac{78-69}{10}$ OR $1.25 \times 10 + 69$
	      = 0.9 = 81.5
	
	 Kirstin did better in Maths (o.e.), with a correct reason
	                 e.g. $1.25 > 0.9$ OR 'her (standardised) score was higher'
		M1
		
		 A1
		
		 A1ft
		
		 (3)

(c)	$\dfrac{x-48}{6} = -0.5$ o.e. (e.g. $x = 48 - 3$) = 45	M1 A1 (2) [6]
	Notes	
(a)	Answer given on paper. Mark is for complete working with 63, 53 and 8 Allow e.g. $1.25 \times 8 + 53 = 63$ Working may be done in stages.	
(b)	M1 for correct method for standardised score (may be in stages) 1$^{\text{st}}$ A1 for 0.9 OR 81.5 2$^{\text{nd}}$ A1 for 'better in Maths' (accept 'worse in Physics') WITH correct **comparison** (in words or figures). OR (if standardised score >1.25 through arithmetic slip) 2$^{\text{nd}}$ A1ft for 'better in Physics' (accept 'worse in Maths') WITH correct **comparison** (in words or figures). **NB**: 2$^{\text{nd}}$ A1 is NOT dependent upon 1$^{\text{st}}$ A1	
(c)	Allow correct equivalent equation OR embedded answer for M1	

Question	Scheme	Marks
15.(a) **(i)**	$(2.3 + 3.71 + 2.61 + ...) \div 12$ $\qquad\qquad$ $(= 33.49 \div 12)$	M1
	$\qquad\qquad = 2.7(9...)$ (m) $\qquad\qquad$ Accept awrt 2.8	A1
(ii)	$\dfrac{\sum x^2}{12} - ('2.8')^2$ $\quad$ (with/without square root, and Σx^2 in range 70~120 incl.)	M1
	$\qquad = 0.42356...$ $\qquad\qquad$ awrt 0.4 (but '0.4' only is A0)	A1
		(4)
(b)	'2.8' $\pm$ 2 $\times$ '0.4'	M1
	$\left(\text{Only '3.71' is outside this range so } \dfrac{11}{12} \times 100 = \right)$ 92% awrt	A1ft
		(2)
(c)	Close to 95% $\qquad\qquad\qquad$ OR $\qquad$ not 95%	M1
	$\qquad$ so normal model <u>is</u> supported $\qquad\qquad$ so normal <u>not</u> supported	A1ft
		(2)
		[8]
	Notes	
(a)(i)	M1 Attempt to add figures (at least three correct seen) and divide by 12 $\qquad$ Allow for $\Sigma x \div 12$ if Σx in range 20~40 inclusive. Implied by awrt 2.8	
(a)(ii)	M1 Allow Σx^2 in given range and ft their mean. (Note correct $\Sigma x^2 = 95.6179$) Answer is given in the question. A1 for **complete calculation seen** including square root, leading to **awrt** 0.4	
(b)	M1 attempts limit(s) using their mean and their 0.4 or better $\qquad\qquad\qquad\qquad\qquad$ (correct limits using 1dp values are 2.0 and 3.6) A1ft allow ft percentages, awrt nearest integer Note: <table><tr><td>Number of outliers</td><td>1</td><td>2</td><td>3</td><td>4</td><td>… etc</td></tr><tr><td>Percentage within 2 s.d.</td><td>92</td><td>83</td><td>75</td><td>67</td><td>… etc</td></tr></table> (ordered values are: $\quad$ 2.09 2.3 2.45 2.61 2.61 2.65 2.86 2.87 2.96 3.1 3.28 3.71)	
(c)	M1 for comparison with 95% A1ft for conclusion consistent with comparison. Follow through their (b)	
ALT. **(a)(ii)**	Using deviations from mean: $\dfrac{\sum (x-'2.8')^2}{12}$ $\qquad$ (with/without square root, and $\Sigma(x - '2.8')^2$ in range) Allow $\Sigma(x - '2.8')^2$ in range 1.5~2.5 inclusive and ft their mean. $\qquad\qquad\qquad$ (Note correct $\Sigma(x - '2.8')^2 = 2.1539$)	M1

Question	Scheme	Marks
16.(a)	<u>Exhaustive</u> /<u>yes</u> as probabilities <u>add to 1</u> (or <u>0.3+0.2+0.5=1</u>)	B1 (1)
(b)(i)	0.5 and 0.7 $= 0.35$ o.e.	M1 A1
(ii)	'0.35' $\neq$ 0.2 o.e. (so not independent)	B1ft (3)
(c)	$0.6 + 0.5 - 0.25$ OR OR $0.35 + 0.25 + 0.25$ $= 0.85$ o.e.	M1 A1 (2) **[6]**
Notes		
(a)	B1 <u>State Exhaustive</u> or <u>yes</u> AND state/show probabilities <u>add to 1</u> NB: Exhaustive/yes alone is B0.	
(b)(i)	M1 identifying (0.3+0.2) **and** (0.2+0.5) (Implied by correct answer)	
(b)(ii)	May state with words or symbols. (e.g. overlap is not '0.35' OR $P(X) \times P(Y) \neq 0.2$ OR $P(X \cap Y) \neq$'0.35') Accept their (b)(i) for 0.35 but only if $0 <$ their (b)(i) < 1 (and $\neq 0.2$)	
(c)	M1 for correct method e.g. use of $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ OR Venn diagram with 0.35, 0.25, 0.25 OR $0.35 + 0.25 + 0.25$	

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 5ST1H_01			
Question		**Modification**	**Notes**
2		Diagram enlarged and changed to two graphs. First graph has the ages '15-24' and '45 and over'. Second graph has the ages '25-34' and '35-44'.	Standard mark scheme
10		Diagram enlarged. Wording added 'Look at the diagram and at the information for Question 10 in the Diagram Book. The diagram is a box plot about salad potatoes. The information is about new potatoes.' Bars on the box plot changed from 84 to 85 and 94 to 95. For clarity a row has been added above and below the diagram.	Standard mark scheme Except: (a) Median = 85 (B1) IQR = 95 − 80 (M1) (at least one of 80, 95 correct) = 15 (A1)
	b & c	Wording added 'Use the diagram and the information below the diagram to answer parts (b) and (c).'	

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Question		Modification	Notes
11	b	Grid enlarged. Crosses changed to filled in circles.	Standard mark scheme Except: Allow tolerance of ±½ a square for plotting
12		Diagram enlarged.	Standard mark scheme Except: (d) B1 accept answers in range [6750~6950] A1 accept answers in range [5100~5600]

13		Diagram enlarged. Wording changed, 41 changed to 34 wheelchair competitors. On the histogram 95 to 100 bar moved to 2.0.100 to 110 moved to 0.5. 110 to 120 moved to 0.4.	Standard mark scheme Except:
			(c)
			$2 \times 5 + 0.5 \times 10 \ (= 10 + 5)$ (M1)
			            (At least one correct product seen. Implied by 10 or 5)
			                    $=15$ (A1)

13	(a)	Wording added 'The frequency density for this class interval is 0.8.'	(d) Method mark as for main scheme
	(d)	21' changed to '18'.	$\left(\dfrac{4}{5} \times 10 + 100 \right) = 108$ (minutes) (A1) (accept awrt 108)
16		Diagram enlarged.	Standard mark scheme