Rewarding Learning

General Certificate of Secondary Education
2019

Statistics

Unit 2

Foundation Tier

[GST21]

THURSDAY 20 JUNE, MORNING

MARK SCHEME

General Marking Instructions

Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The marks awarded for each question are shown in the right hand column and they are prefixed by the letters **M**, **A** and **MA** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.

A indicates marks for accurate working, whether in calculation, readings from tables, graphs or answers.

MA indicates marks for combined method and accurate working.

The solution to a question gains marks for correct method and marks for an accurate working based on this method. Where the method is not correct no marks can be given.

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be **followed through** from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

It should be noted that where an error trivialises a question, or changes the nature of the skills being tested, then as a general rule, it would be the case that not more than half the marks for that question or part of that question would be awarded; in some cases the error may be such that no marks would be awarded.

Positive marking

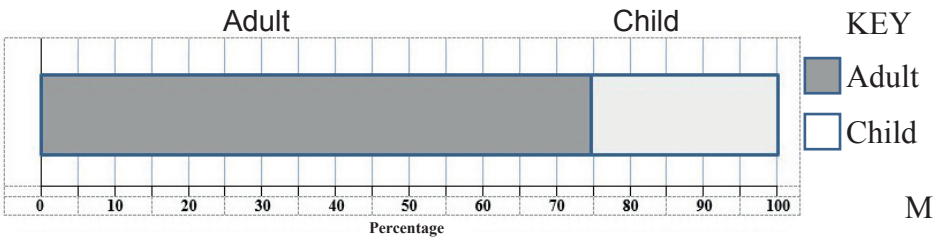
It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of **following through** their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

(a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;

(b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier only a proportion of the marks will be available (based on the professional judgement of the examiner).

			AVAILABLE MARKS
1	**(a)** 80%	A1	
	(b) The chart shows proportions not numbers so the most popular type of attraction cannot be identified.	A2	
	(c) 	M1 A2	6
2	**(a)** Three suitable, independent reasons, e.g. • possible ambiguity between Exercise and Sport; • some possible park uses not covered, e.g. fishing; • 'don't use the park' inappropriate as all subjects will be park users.	A3	
	(b) A small scale trial of a questionnaire which is used to verify the suitability of the questions and/or response section.	A2	
	(c) Reference to bias with a reason, e.g. May be biased as Saturday morning users may not be a faithful representation of all park users.	A2	7
3	**(a)** Primary	A1	
	(b) So she could keep track of responses as she carried out the survey.	A1	
	(c) **KEY** ☺ represents 2 pupils		

W5	☺	☺	☺	☺
SS Nomadic	☺	☺	☺	☾
Titanic Belfast	☺	☺		
Ulster Museum	☺			

M1A1

	(d) W5	A1	
	(e) The data is not numerical.	A1	
	(f) Some pupils have visited more than one attraction.	A1	
	(g) Suitable reason, e.g. some attractions in the chart are not in Belfast.	A1	8

				AVAILABLE MARKS
4	**(a)**	Quantitative	A1	
	(b)	**(i)** Yes	A1	
		(ii) The minimum price for adults is always greater than 0.	A1	
	(c)	The median would not have been affected by any unusually high or low prices of admission.	A1	
	(d)	Three appropriate reasons, e.g. • the line is very thick making it difficult to read off the exact value for each year; • the vertical axis does not start at zero so it looks like the mean price of admission was £0 in 2013. • the data for 2014 has been incorrectly plotted.	A3	7
5	**(a)**	9	A1	
	(b)	Spanish	A1	
	(c)	$\frac{17}{35}$	MA2	
	(d)	$\frac{84}{122}$	MA2	6

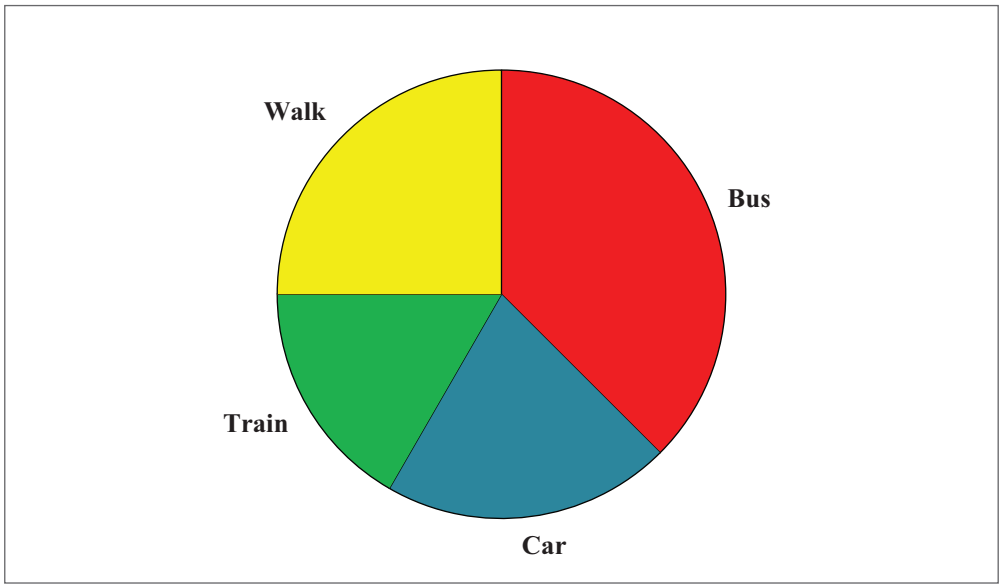
AVAILABLE MARKS

6 **(a)**

Method of travel	Tally	Frequency
Bus	𝍸 ||||	9
Car	𝍸	5
Train	||||	4
Walk	𝍸 |	6

A2

(b) Angles: Bus: 135°, Car: 75°, Train: 60°, Walk: 90° MA2

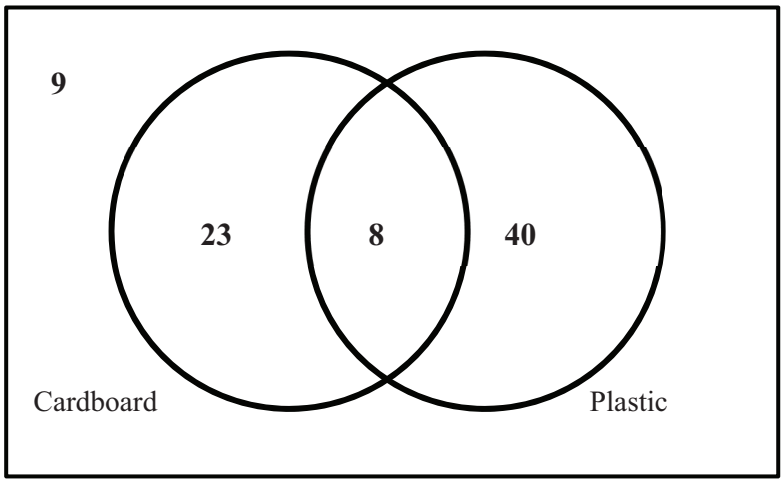


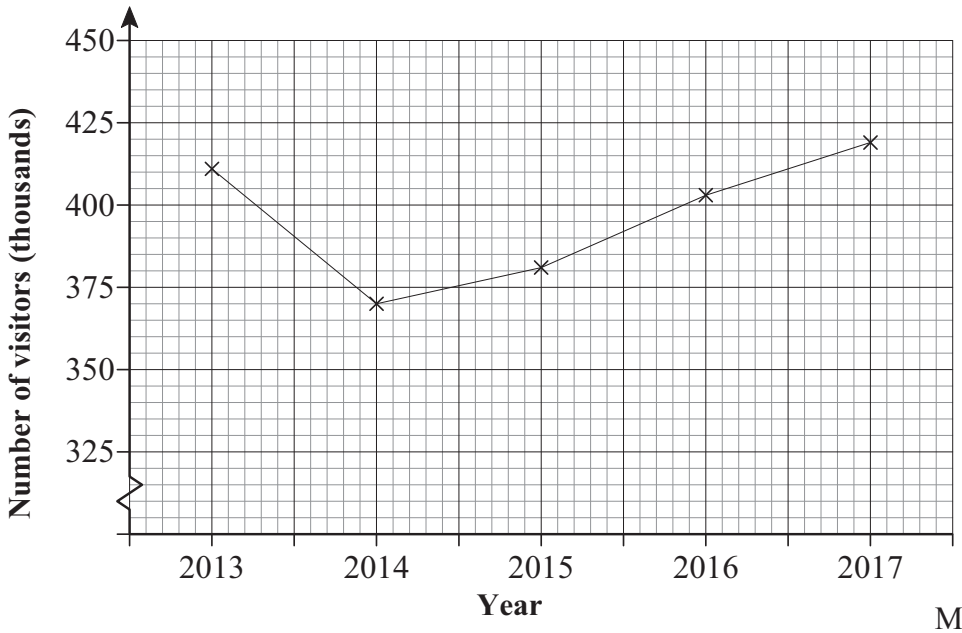
A2

(c) Estimated number of visitors who travelled by train

$= \frac{4}{24} \times 120$ MA1

$= 20$ A1 8

				AVAILABLE MARKS
7	**(a)**	Any appropriate strategy, e.g. Offer an incentive for returning the questionnaire.	A1	
	(b)		MA2	
	(c)	9	MA1	
	(d)	$\frac{31}{80}$	MA1	5
8	**(a)**	A method of data collection which involves the entire population.	A1	
	(b)	Advantage: results are accurate.	A1	
		Disadvantage: some items in the population may be difficult to access.	A1	
	(c)	The attraction may not be listed on the Discover Northern Ireland website.	A1	
	(d)	**(i)** People who are not visitors could be counted.	A1	
		(ii) All members of a large group may not be counted.	A1	6
9	**(a)**	Appropriate question with mutually exclusive, exhaustive response section.	A2	
	(b)	Two advantages, e.g. • Easy to analyse the responses. • Relatively quick for participants to answer.	A2	
	(c)	**(i)** A sampling method where participants are selected according to predetermined characteristics set by the researcher.	A2	
		(ii) No sampling frame is available.	A1	7

			AVAILABLE MARKS
10	**(a)**	 MA3	
	(b) **(i)**	2014 A1	
	(ii)	It is the lowest point on the line graph. A1	
	(c)	Decrease in visitor numbers between 2013 and 2014 followed by a steady increase between 2014 and 2017. A2	
	(d)	<table><tr><th>Year</th><th>2013</th><th>2014</th><th>2015</th><th>2016</th><th>2017</th></tr><tr><td>No. of visitors (thousands)</td><td>411</td><td>370</td><td>381</td><td>403</td><td>419</td></tr><tr><td>Index number</td><td>100</td><td>90.0</td><td>92.7</td><td>98.1</td><td>101.9</td></tr></table> A3	10
11	**(a)**	Hypothesis stated clearly A1	
		Appropriate data identified for both years A2	
		Reference to NISRA website A1	
		Potential problem identified, e.g. data may not be available for both years A1	
		How problem should be overcome, e.g. removal of attraction from sample A1	
	(b)	Appropriate diagram, e.g. multiple bar chart A1	
		Clear reason for diagram A1	
		Appropriate calculation e.g. percentage change A1	
		Clear reason for calculation A1	10
		Total	**80**