

GCSE Subject Level Guidance for Statistics

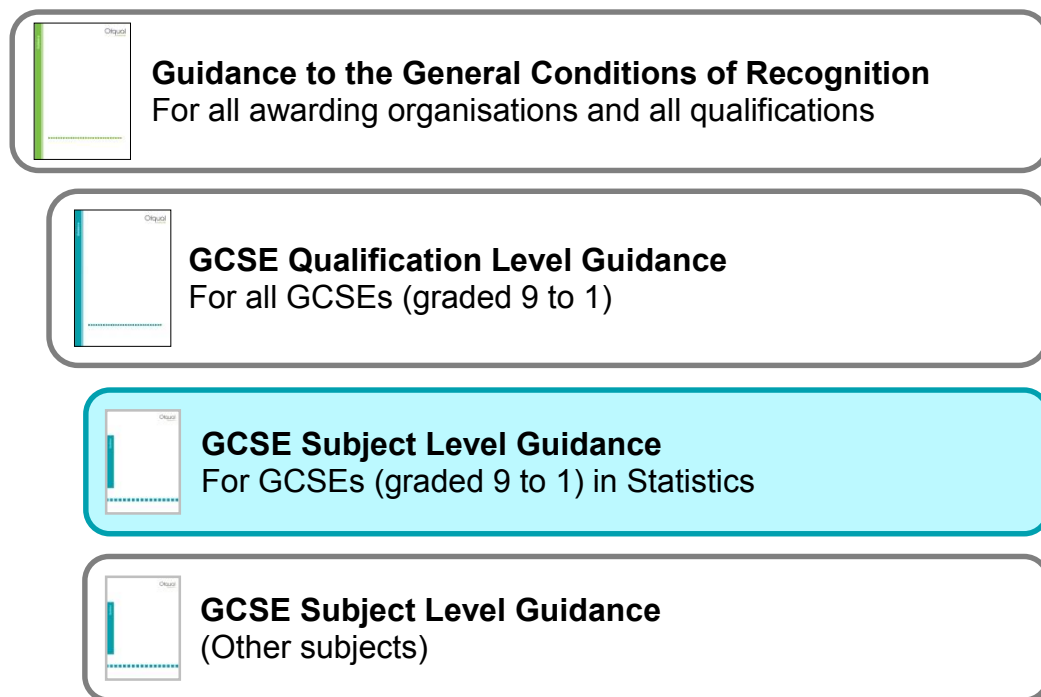
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Introduction

This document (highlighted in the figure below) is part of a suite of documents which outlines our guidance for awarding organisations offering GCSE qualifications (graded from 9 to 1).



This document sets out guidance which applies to all GCSE Qualifications (graded from 9 to 1) in Statistics. It supports the *GCSE Subject Level Conditions and Requirements for Statistics*.¹

This document constitutes guidance for the purposes of section 153 of the Apprenticeships, Skills, Children and Learning Act 2009 (the '2009 Act') and Condition GCSE(Statistics)1.

An awarding organisation has a legal obligation under the 2009 Act to have regard to this guidance, where relevant, in relation to each GCSE Qualification in Statistics that it makes available or proposes to make available. Condition GCSE(Statistics)1 imposes the same obligation in respect of the guidance below which is issued under that Condition.

¹ www.gov.uk/government/publications/gcse-9-to-1-subject-level-conditions-and-requirements-for-statistics

An awarding organisation should use the guidance in this document to help it understand how to comply with the *GCSE Subject Level Conditions and Requirements for Statistics*.

Guidance set out in this document

This document provides guidance on assessment objectives for GCSE Qualifications (graded 9 to 1) in Statistics.

Guidance on assessment objectives for GCSE Qualifications in Statistics

Condition GCSE(Statistics)1.2 allows us to specify requirements and guidance relating to assessment objectives for GCSE Qualifications in Statistics.

We published our requirements in relation to assessment objectives in *GCSE Subject Level Conditions and Requirements for Statistics*, and reproduce them in the table below.

	Objective	Weighting
AO1	<p>Demonstrate knowledge and understanding, using appropriate terminology and notation, of standard statistical techniques used to –</p> <ul style="list-style-type: none"> ■ collect and represent data ■ calculate summary statistics and probabilities 	55%
AO2	<p>Interpret statistical information and results in context and reason statistically to draw conclusions</p> <p><i>Where questions/tasks targeting this assessment objective will also credit Learners for their ability to ‘demonstrate knowledge and understanding of standard statistical techniques’ (AO1) and/or to ‘assess the appropriateness of statistical methodologies and the conclusions drawn through the application of the statistical enquiry cycle’ (AO3), an appropriate proportion of the marks for the question/task must be attributed to the corresponding assessment objective(s).</i></p>	25%
AO3	<p>Assess the appropriateness of statistical methodologies and the conclusions drawn through the application of the statistical enquiry cycle</p> <p><i>Where questions/tasks targeting this assessment objective will also credit Learners for their ability to ‘demonstrate knowledge and understanding of standard statistical techniques’ (AO1) and/or to ‘interpret statistical information and results in context and reason statistically to draw conclusions’ (AO2), an appropriate proportion of the marks for the question/task must be attributed to the corresponding assessment objective(s).</i></p>	20%

We set out below our guidance for the purposes of Condition GCSE(Statistics)1.2. This guidance explains how we expect awarding organisations to interpret these assessment objectives in terms of:

- the different 'strands' within each of the assessment objectives;
- the discrete 'elements' within each assessment objective and its strands that questions and tasks could target and/or seek to credit – our expectation is that each and every question/task should target or seek to credit at least one of these elements, and may target or seek to credit multiple elements across one or more assessment objectives;
- the coverage expectations, such as in relation to the different elements within each assessment objective and how those elements should be sampled over time; and
- the key areas of emphasis in each assessment objective and the particular meaning for the subject of any key terms and phrases used; defined terms are shown in bold text, followed by their definitions.

In line with the obligations set out in Condition GCSE(Statistics)1.2, we expect awarding organisations to be able to demonstrate how they have had regard to this guidance. For example, an awarding organisation could map how it has regard to the guidance as it:

- develops its sample assessment materials;
- delivers the qualification;
- develops and applies its approach to sampling the elements into which the assessment objectives are divided; and
- monitors the qualification to make sure it addresses all elements appropriately.

AO1: Demonstrate knowledge and understanding, using appropriate terminology and notation, of standard statistical techniques used to –			55%
<ul style="list-style-type: none"> ▪ collect and represent data ▪ calculate summary statistics and probabilities 			
Strands	Elements	Coverage	Interpretations and definitions
1 – Demonstrate knowledge and understanding, using appropriate terminology and notation, of standard statistical techniques used to collect and represent data	1a – Demonstrate knowledge and understanding, using appropriate terminology, of standard statistical techniques used to collect data	<ul style="list-style-type: none"> ▪ Full coverage in each set of assessments² (but not in every assessment). ▪ A reasonable balance between the strands within this assessment objective, and between the elements within each strand. 	<ul style="list-style-type: none"> ▪ Standard statistical techniques means the techniques set out in the document published by the Secretary of State entitled ‘Statistics GCSE subject content’, document reference DFE-00041-2016 (the ‘Content Document’), as appropriate to the tier of entry. ▪ These techniques should be understood, but need not always be assessed, in terms of their place in the statistical enquiry cycle outlined in appendix 3 to the Content Document. ▪ Tasks may be broken down into a number of steps or parts, provided this does not undermine the expectation that Learners should
	1b – Demonstrate knowledge and understanding, using appropriate terminology, of standard statistical techniques used to represent data		

² For the purposes of this guidance, a ‘set of assessments’ means the assessments to be taken by a particular Learner for a GCSE Qualification in Statistics. For clarity, the assessments taken by Learners may vary, depending on any possible routes through the qualification.

AO1: Demonstrate knowledge and understanding, using appropriate terminology and notation, of standard statistical techniques used to –		55%	
<ul style="list-style-type: none"> ▪ collect and represent data ▪ calculate summary statistics and probabilities 			
Strands	Elements	Coverage	Interpretations and definitions
2 – Demonstrate knowledge and understanding, using appropriate terminology and notation, of standard statistical techniques used to calculate summary statistics and probabilities	2a – Demonstrate knowledge and understanding, using appropriate terminology, of standard statistical techniques used to calculate summary statistics	<ul style="list-style-type: none"> ▪ Awarding organisations should justify the balance between the strands and elements in their assessment strategies. 	<p>demonstrate their ability to understand that the statistical enquiry cycle is a coherent whole.</p> <ul style="list-style-type: none"> ▪ Notation refers to standard statistical notation, rather than to any notation related to specific software tools. ▪ Learners should be expected to use appropriate terminology and notation throughout their responses. As such, individual questions/tasks do not need to allocate specific marks for correct use of terminology and notation. ▪ Learners should not be penalised for using statistical functions on their calculators during the assessment, unless it would be inappropriate to the question/task. This does not prevent awarding organisations setting questions/tasks which require Learners to apply one or more specific formulae manually.
	2b – Demonstrate knowledge and understanding, using appropriate terminology, of standard statistical techniques used to calculate probabilities		

AO2: Interpret statistical information and results in context and reason statistically to draw conclusions			25%
Strands	Elements	Coverage	Interpretations and definitions
n/a	<p>1a – Interpret statistical information and results in context</p> <p>1b – Reason statistically to draw conclusions</p>	<ul style="list-style-type: none"> ■ Full coverage in each set of assessments (but not in every assessment). ■ A reasonable balance between the elements within this assessment objective. ■ Awarding organisations should justify the balance between elements in their assessment strategies. ■ Each set of assessments – <ul style="list-style-type: none"> □ should include questions/tasks which target AO2 using results given in the question/task, and using results calculated by the Learner as part of the question/task □ need not target every combination of elements 1a and 1b with each of given results and calculated results. 	<ul style="list-style-type: none"> ■ Interpret statistical information and results in context means relating information and/or results to the context provided in the question/task – for example by showing what they mean in that specific context or situation. It does not extend to considering suitability/legitimacy, which is part of AO3. ■ Reason statistically to draw conclusions means forming a statistical judgement or judgements using appropriate statistical terminology. This may be linked to, or independent of, element 1a. So, for example, it might relate to the meaning of a result in context, or to determining a methodology to use. It does not extend to considering suitability/legitimacy, which is part of AO3. ■ The processes referred to in these elements should be understood, but need not always be assessed, in terms of their place in the statistical enquiry cycle outlined in appendix 3 to the Content Document.

AO3: Assess the appropriateness of statistical methodologies and the conclusions drawn through the application of the statistical enquiry cycle			20%
Strands	Elements	Coverage	Interpretations and definitions
n/a	1a – Assess the appropriateness of statistical methodologies.	<ul style="list-style-type: none"> ■ Full coverage in each set of assessments (but not in every assessment). ■ A reasonable balance between the elements within this assessment objective. ■ Awarding organisations should justify the balance elements in their assessment strategies. 	<ul style="list-style-type: none"> ■ Appropriateness refers to the suitability of methodologies, and to the legitimacy of conclusions, with respect to the type of statistical enquiry being undertaken. ■ Statistical methodologies refers to range of techniques applied as part of the statistical enquiry cycle. ■ Conclusions refers to a statistical judgement or judgements that a Learner would respond to and/or evaluate. ■ These statistical methodologies and conclusions might be provided in the question/task, or have been generated by the Learner as part of AO2.
	1b – Assess the appropriateness of conclusions drawn through the application of the statistical enquiry cycle		

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