



GCE A level Biology A (Salters-Nuffield) & Biology B

Use of mathematics

Appendix 6

The mathematical skills in the left-hand column of the table in Appendix 6 form part of the Ofqual subject criteria. These skills should be developed during teaching and will be assessed in examination papers.

The right-hand column shows some examples of topic areas where these skills may be encountered. These examples were written by the Awarding Bodies, and are common to all specifications from all Awarding Bodies. This means that some examples may not be applicable to all specifications. It is also worth noting that the right-hand column shows only one or two examples for each mathematical skill. As the introduction to the Appendix and the column heading state, the mathematical skills can be assessed within any topic area of the specification; and questions may use a range of activities to assess the skills in the left-hand column.

Use of formulae

What won't be provided:

- Where the specification asks for the use of a simple mathematical relationship, the expectation is that students would recall that relationship. For example, students should not expect to be given formulae to calculate a mean, or a magnification; or other simple equations such as for water potential, or NPP.
- Where the mathematical relationship is integral to the understanding of the Biology, the expectation is also that students would recall any formulae needed. For example, students should not expect to be given formulae to calculate probabilities in genetics, or for use of the Hardy-Weinberg relationship.
- Where questions involve the use of a standard mathematical formula - for example, the surface area or volume of a cube, or the circumference of a circle - students should not expect to be given these formulae.

What will be provided:

- The equation for the Diversity Index (Simpsons) can be expressed in different formats. The specification provides the version we expect to be used but, in order to ensure consistency, this equation will be provided when needed.
- Due to the complex nature of equations used in population statistics, equations will be provided for standard deviation, chi squared, Student t-test and Spearman's rank correlation coefficient, when needed.

Note that, although formulae will be provided for statistical tests, part of students' understanding of how to use these would extend to knowledge of critical values and degrees of freedom, without supporting equations necessarily being given. It is also worth noting that the Student t-test can be applied to both unpaired and paired data: students will be expected to be familiar with both.