

## **The scoring of multiple-choice questions**

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The introduction of the indeterminate type of multiple-choice question, in which any number of alternatives may be true, has resulted in the use of several scoring schemes. Although there has been previous discussion on this topic, there has been confusion over the role of guessing, and of countermarking.

The Middlesex scoring scheme is described, together with a decision index which may be derived from its scores. The variance of the score estimation is described, and several problems of implementation are discussed.

The Glasgow scoring scheme is considered. Although it is similar to the Middlesex scheme, it requires the collection of much more data.

Two other scoring schemes are discussed: the Newcastle scheme and the King's College Hospital scheme. Neither satisfy necessary criteria of weighting or consistency.

The paper includes definition of a terminology for use with MCQ - Question; Alternative; Response; True; False; Correct; Incorrect - required to discuss scoring consistently.

The paper includes a description of the hypergeometric distribution (related to the binomial distribution) and its use to identify random scores from candidates. Random scores arise either from candidate ignorance, or from the incorrect use of data collection methodology. The decision index is described, and the methods of deriving it from scores in the Middlesex and Glasgow scoring systems. The Glasgow system requires the collection of twice as much response data as the Middlesex system, although the score results were shown to be highly correlated.