1035-O1-1730   **James H Fife*** (`jfife@ets.org`), Educational Testing Service, Mail Stop 11-R, Rosedale Road, Princeton, NJ 08541. *Using mathematics to improve the automated scoring of short constructed-response answers.* Preliminary report.

$c - \text{rater}^{\text{TM}}$ is ETS's automated scoring engine for scoring short constructed-response answers for content, based on a scoring rubric provided by a content expert. A c-rater scoring model specifies concepts that should be present (or, sometimes, absent) and model sentences for each concept. To score a particular response, c-rater uses natural language processing techniques to assign a probability to each model sentence that the model sentence is paraphrased in the response. Based on these probabilities and the scoring rubric, the scoring model assigns a score to the response. This talk will discuss various mathematical formulas that are used or can be used in calculating the score, their shortcomings, and some areas of further research. (Received September 20, 2007)