

Setting the Pass Mark – The Angoff Method Explained

All RCEM examinations follow a criterion referenced approach. This means that all candidates could pass or fail the exam because candidates are assessed against a predetermined criterion or standard and are assigned either a pass or fail result based on that standard. The standard to pass SBA examinations is set using the Angoff Method (plus 1 Standard Error of Measurement (SEM) for MRCEM SBA & FRCEM SBA exams).

What is the Angoff Method?

The Angoff method is a scientifically defensible method of standard setting that is approved by the GMC and Academy of Medical Royal Colleges.

Under the Angoff method, a panel of subject matter experts (SME) of practicing EM Consultants, who also are involved in training and exam question writing provide a rating for each exam question. The rating is based on the conceptualisation of a group of minimally competent candidates. These SMEs provide a score based on their opinion of the proportion of minimally competent candidates that would score correctly on that item. The judges discuss differences in ratings for the same item and have the opportunity to discuss and modify their ratings. Each independent score is averaged to create an Angoff score for a single item. All of the Angoff scores for each item are summed to create the total Angoff score for the examination. For the MRCEM Primary this total Angoff score, is the pass mark for the exam. For the MRCEM SBA and FRCEM SBA, one Standard error of measurement (1xSEM) is added to the total Angoff Score which formulates the exam pass mark. The exam pass mark is then rounded to the nearest single integer.

Why does the pass mark vary across diets?

The Angoff method requires judges to consider the difficulty of items, when estimating what the minimally competent candidates would score on an item, judges will take into consideration the level of difficulty, which leads to different estimations for each item. Different combinations of items are used across each diet, as a result the total Angoff score varies. The SEM, that is added to the pass mark for some of the SBAs is based on the measurement error of the specific cohort undertaking that exam diet and this varies across each diet. As a result, both the Angoff cut score and SEM differs between diets.

Why do items get removed post examination?

All exam papers undergo a rigorous quality assurance process both prior to and post examination delivery. During post exam adjudication, we are able to review how candidates have responded to items in the examination, which can highlight issues with items that could not have been anticipated before viewing responses. The Quality and Standards team aim to minimise the changes made to the examination after it has taken place, but in the interest of fairness to candidates, the college psychometrician, and examiner panels can identify issues with items which would not be fair to candidates to leave in the examination. Items are only removed in the interest of fairness to candidates. Examples include the wording of questions, issues with question images that could affect how candidates respond, or issues with response options available to candidates.

How is the pass mark affected when items are removed?

If an item/s is removed from the examination, that item/s will be removed from the overall exam Angoff score for the examination and will not be included in the final pass mark for the exam. The Angoff Score will be reduced when items are removed because the SMEs score will also be removed from the total Angoff score. As the example demonstrates in table 1, an original paper which has 180 marks achievable, and has 3 items removed, means that the paper is now out of 177 marks. As the number of marks achievable for the paper also reduces, the raw pass mark also reduces, however as a percentage score this could lead to increase or decrease, depending on the difficulty of the items that were removed.

Table 1

	All items	3 items removed
Total items/marks available	180	177
Angoff total	107.12	105.365
SEM	5.72	5.70
Pass mark	113 (62.8%)	111 (62.7%)
Pass rate	24%	27%

What does this mean for candidates?

As items which have been removed from the examination in the interests of fairness, this does not negatively impact candidates' results. This is monitored and no candidates have been negatively impacted by item removal, which gives us confidence that the items removed from the examination are necessary to remove. Removal of items almost always positively impacts candidates as the proportion of passing candidates increases.