Writing Fair and Effective Multiple-Choice Questions

The Item:			
Assesses a program/course learning outcome	Yes ☐	No ☐	
Uses clear language	Yes ☐	No ☐	
Represents current knowledge/best practice	Yes ☐	No ☐	
Does **not** measure opinion	Yes ☐	No ☐	
The Vignette:			
Is necessary to respond to the question stem	Yes ☐	No ☐	N/A ☐
Presents clinical information in a logical sequence	Yes ☐	No ☐	N/A ☐
Does **not** contain red herrings (i.e., information meant to deceive)	Yes ☐	No ☐	N/A ☐
The Question Stem:			
Is a complete statement (can stand alone)	Yes ☐	No ☐	
Ends with a question mark	Yes ☐	No ☐	
Can be answered without viewing the response options	Yes ☐	No ☐	
Is stated positively	Yes ☐	No ☐	
Contains only necessary information	Yes ☐	No ☐	
Is grammatically correct	Yes ☐	No ☐	
Contains **no** vague or ambiguous terms	Yes ☐	No ☐	
The Response Options (the Distractors):			
Are all plausible	Yes ☐	No ☐	
Are mutually exclusive (i.e., do not include overlapping content)	Yes ☐	No ☐	
Follow grammatically from the question stem	Yes ☐	No ☐	
Are similar in length	Yes ☐	No ☐	
Are similar in terminology	Yes ☐	No ☐	
Are presented in logical order (e.g., alphabetically, numerically)	Yes ☐	No ☐	
Contain **no** extraneous trivia	Yes ☐	No ☐	
Do not contain repeated elements that should appear in the stem	Yes ☐	No ☐	
Do not include all of the above	Yes ☐	No ☐	
Do not include none of the above	Yes ☐	No ☐	
After the Exam: Item Analysis			
Review *P*-values –items are of appropriate difficulty	Yes ☐	No ☐	N/A ☐
Review *D*-values – items discriminate between low- and high-scorers	Yes ☐	No ☐	N/A ☐
Review selection of distractors – were distractors selected too frequently or infrequently?	Yes ☐	No ☐	N/A ☐

Review your MCQs. If you answered "Yes" to the above items, the question is acceptable. If you answered "No, consider revising the question.

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Helpful Resources for Multiple-Choice Question Writing

Websites and Handouts

Designing Effective Multiple-Choice Questions handout (McGill)
https://www.mcgill.ca/skillsets/files/skillsets/mcq_handout3.pdf

Designing Multiple-Choice Questions (University of Waterloo Teaching Tips Sheet)
https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/developing-assignments/assignment-design/designing-multiple-choice-questions

Getting the Most Out of Multiple-Choice Questions (DiBattista, 2011)
https://www.unb.ca/saintjohn/teachlearn/_resources/script/mcqhandout.pdf

Online tutorial for writing MCQs in the Basic and Clinical Sciences
https://www.nbme.org/publications/index.html#iwtutorial

Journal Articles

Haladyna, T. M., Downing, S. M., & Rodriguez, M. C. (2002). A review of multiple-choice item-writing guidelines for classroom assessment. *Applied Measurement in Education, 15*(3), 309 – 333. This article contains a taxonomy of MC item writing guidelines, and reviews the relevant research supporting or refuting each guideline.
Morrison, S., & Free, K. W. (2001). Writing multiple-choice test items that promote and measure critical thinking. *Journal of Nursing Education, 40,* 17-24. This article includes several examples of questions stems from Nursing, many of which could be modified for use in other disciplines. The authors also describe how to review test results with students to facilitate student learning. They also discuss the importance of designing questions that test multi-logical thinking and that require a high level of discrimination.
Paniagua, M. A., & Swygert, K. A. (Eds.). (2016). *Constructing written test questions for the basic and clinical sciences.* Philadelphia: National Board of Medical Examiners. This guide, written by the National Board of Medical Examiners contains information and examples for writing effective MCQs in the basic and clinical sciences.
Scully, D. (2017). Constructing multiple-choice items to measure higher-order thinking. *Practical Assessment, Research & Evaluation, 22* (4), 2. This article focuses on using Bloom's and Anderson's taxonomies of cognitive domains to write effective MCQs. The article contains lots of examples from many disciplines and useful tips for designing higher-order questions.
Smith, P. E. M., & Mucklow, J. C. (2016). Writing clinical scenarios for clinical science questions. *Clinical Medicine, 16*(2), 142 – 145. This short article argues for the importance of testing basic science information using clinical scenarios. The authors include several examples of MCQs for several branches of clinical science (e.g., pharmacology, pathology, etc.).
Towns, M. H. (2014). Guide to developing high-quality, reliable, and valid multiple-choice assessment. *Journal of Chemical Education, 91,* 1426 – 1431. This short article summarizes best practice recommendations for writing MCQs and provides examples from Chemistry. The article includes a section on interpreting item response statistics.