Assessing students using multi-choice tests and exams: How to examine skills, processes and in-depth mathematical understanding

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Several years ago we decided to move to a MCQ format for tests and exams for our large first year mathematics courses. A major consideration has always been whether we are assessing in ways comparable with long answer pen and paper tests. We will discuss how our questions are created to test a wide range of learning outcomes. The possible use of expert concept maps to inform identification of key outcomes will also be discussed. Our exploration of ways in which a wider spectrum of learning outcomes might be assessed using MCQs forms part of the Learning in Undergraduate Mathematics, Outcomes Spectra Project (LUMOS) funded by Ako Aotearoa (National Centre For Tertiary Teaching Excellence) and TLRI (Teaching & Learning Research Initiative).