

Good Mathematical Communication in Level 1 Service Mathematics

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What is Good Mathematical Communication (GMC)?

In a number of mathematics modules, a portion of the overall marks for each TMA is designated for “Good Mathematical Communication” (GMC). Students are encouraged to structure their solutions logically and clearly, demonstrating mathematical conventions surrounding notation and symbology. In MU123 Discovering mathematics, some marks from each TMA are awarded for the demonstration of Good Mathematical Communication, and ALs are encouraged to offer feedback and encouragement for the development of good mathematical writing styles.

What is the problem?

ALs find the process of assessing and teaching good mathematical communication skills challenging, particularly for a diverse student cohort with varying degrees of mathematical fluency and background. Perceptions of how marks should be awarded varies considerably amongst tutors and feedback can prove to be frustrating for students.

$$\text{Multiply out and simplify } (x - 3)(x^2 + 5x)$$
$$(x - 3)(x^2 + 5x) = x^3 + 5x^2 - 3x^2 - 15x = x^3 + 2x^2 - 15x$$

Figure 1: How many GMC marks is this worth? How best do we support improvement?

Research Questions

- What do ALs consider to be important aspects of Good Mathematical Communication?
- How can ALs be better supported in assessing GMC in marking TMAs?
- How can students be better supported in developing GMC skills?

Actions

- MU123 ALs will be asked in focus groups to **identify** the aspects of GMC that they consider important.
- A **marking grid** will be developed to better support ALs in awarding GMC marks.
- **Screencasts** and **tutorial interventions** will be designed to support students' development in GMC.

MARKS	EVIDENCE REQUIREMENTS	EXAMPLES
5	???	???
4	???	???
3	???	???
2	???	???
1	???	???
0	???	???

Intended Outcomes

It is hoped that by learning how to structure a logical argument, students will develop a transferable skill which will apply to the rest of their studies, regardless of their pathway or study intention. This links to greater employability, increased student satisfaction and retention.