

Peer Review

Review of: "Patterns of Squares Around an Arbitrary Triangle"

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The manuscript, "Patterns of Squares Around an Arbitrary Triangle," is a commendable effort to extend geometric concepts related to squares and generalize the Pythagorean theorem. The use of vector-based methods instead of trigonometric calculations is a notable strength, as it provides both simplicity and efficiency. However, there are significant issues in the manuscript's structure, literature review, and overall coherence that need to be addressed. The introduction of new numerical sequences, exploration of relationships among square areas, and inclusion of illustrative diagrams are among the positive aspects of the paper. Nevertheless, substantial revisions are required before the manuscript can be accepted.

1. Missing Key Sections:

The manuscript lacks essential sections, such as a conclusion and suggestions for future work, which are standard components of a scientific paper. Additionally, the keywords section is missing. It is strongly recommended to include "Tiling" and "Tessellation" as part of the keywords to enhance the paper's discoverability.

2. Weak Literature Review:

The manuscript fails to reference crucial studies in related fields, particularly those focusing on tiling and tessellation. Several key works that are directly relevant have not been reviewed. Below is a list of important references in chronological order:

- Sadeghi Bigham, Bahram, et al. "Tiling Rectangles and the Plane Using Squares of Integral Sides." *Mathematics* 12.7 (2024): 1027.
- Freiling, Chris, et al. "Tiling with squares and anti-squares." *The American Mathematical Monthly* 107.3 (2000): 195–204.

- Kenyon, Richard. *Tiling with squares and square-tileable surfaces*. Ecole Normale Supérieure de Lyon. Laboratoire de Mathématiques, 1993.
- Grünbaum, Branko, and Geoffrey Colin Shephard. *Tilings and Patterns*. W.H. Freeman, 1987.

Including a comprehensive review of these and other relevant works will significantly strengthen the manuscript's foundation.

1. Lack of Coherence in Content:

The manuscript sections are not clearly delineated, and transitions between ideas are not smooth. Better organization and clearer headings are necessary to improve readability.

2. Repetition and Complex Sentences:

The manuscript contains repetitive phrasing and overly long sentences, which reduce its readability. Revising the text for conciseness and variety in vocabulary will enhance its clarity.

Once the above issues are thoroughly addressed, the manuscript will be in a much stronger position for acceptance.

Declarations

Potential competing interests: No potential competing interests to declare.