Topic: Historical Significance of Pascal's Triangle and its Modern Application Beyond Mathematics

This essay will discuss the importance of Pascal's Triangle from the background when it was found to the applications beyond mathematics like modern computing science. The paper will expand chronologically and give some deep analysis about the modern application, which mainly focuses on computer science, with some other applications.

Bibliography

1. The Book of Numbers (Conway and Guy): This book gives an introduction to Pascal's Triangle and the significance of its patterns in number theory. This source is used to explain the structure of the Triangle and its relation to binomial coefficients.

2. Concrete Mathematics: A Foundation for Computer Science. Addison-Wesley (Graham et al.): This book provides a introduction to Pascal's Triangle, with its combination properties and relation to binomial coefficient. This can show the significance of the triangle in algebra and combinatorics.

3. The Art of Computer Programming, Volume 1: Fundamental Algorithms (Knuth): This text discusses the Triangle in algorithm design and combinational mathematics, which can be a source for its essential role in algorithm.

4. Proofs from THE BOOK (Aigner and Ziegler): This contains several proofs usingn the concept of the Triangle, which can be used to discuss its role in advanced mathematical proof.

5. Probability and Statistics (DeGroot and Schervish): This explain how Pascal's Triangle is used in probability. This can be used to discuss its use in probability and statistics.

6. Mathematics for Computer Science (Lehman et al.): This book explores the application of the Triangle in computer science, such as algorithm design and programming.

7. The Mathematical Experience. Houghton Mifflin (Davis and Hersh): This discusses the cultural influence of the Triangle, which is a new perspective for analysis, which can illustrate some cultural influence of the Triangle.

8. Mathematics: Its Content, Methods, and Meaning (Aleksandrov et al.): This book provides an overview for the Triangle and its application in algebra and combinatorics. This can be used for discussing the Triangle's role in advanced mathematics and interdisciplinary application outside of mathematics and programming.)

Works Cited

Aigner, Martin, and Günter M. Ziegler. *Proofs from THE BOOK*. 6th, Springer, 2018.

Aleksandrov, A.D., et al. *Mathematics: Its Content, Methods, and Meaning*. 2nd, Dover Publications, 1999.

Conway, John H., and Richard K. Guy. *The Book of Numbers*. Springer, 1996.

Davis, Philip J., and Reuben Hersh. *The Mathematical Experience*. Houghton Mifflin, 1999.

DeGroot, Morris H., and Mark J. Schervish. *Probability and Statistics*. 4th, Pearson, 2011.

Graham, Ronald L., et al. *Concrete Mathematics: A Foundation for Computer Science*. 2nd, Addison-Wesley, 1994.

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Lehman, Eric, et al. *Mathematics for Computer Science*. MIT OpenCourseWare, 2017.