Musimathics Volume 2: The Mathematical Foundations of Music

By: Allen Forte

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Musimathics, Volume 1: The Mathematical Foundations of Music by Gareth Loy

4.6 out of 5

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Screen Reader	: Supported
Enhanced typesetting	: Enabled
Word Wise	: Enabled
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About the Book:

Musimathics Volume 2: The Mathematical Foundations of Music is a groundbreaking work in the field of music theory. Allen Forte, one of the most influential music theorists of the 20th century, provides a

comprehensive and rigorous mathematical framework for understanding musical structure.

The book begins with an to the basic concepts of set theory and group theory. Forte then applies these concepts to the analysis of musical pitch, rhythm, and form. He develops a number of new theoretical tools, including the pitch-class set, the interval-class vector, and the rhythmic motive.

These tools allow Forte to provide a precise and objective account of musical structure. He shows how different musical elements can be combined to create a wide variety of musical effects. He also discusses the relationship between musical structure and musical meaning.

Musimathics Volume 2 is a must-read for anyone interested in the mathematical foundations of music. It is a seminal work that has had a major impact on the field of music theory.

Chapter 1: Set Theory

In this chapter, Forte introduces the basic concepts of set theory. He defines a set as a collection of distinct objects. He then discusses the different ways in which sets can be combined to form new sets.

Forte also introduces the concept of a partition. A partition of a set is a collection of subsets that are disjoint and exhaustive. In other words, the subsets do not overlap, and they cover the entire set.

Partitions are important in music theory because they can be used to represent musical structures. For example, a musical scale can be represented as a partition of the set of all pitches.

Chapter 2: Group Theory

In this chapter, Forte introduces the basic concepts of group theory. A group is a set of elements that is closed under a binary operation. In other words, the operation can be applied to any two elements of the group to produce a third element of the group.

Groups are important in music theory because they can be used to represent musical transformations. For example, the group of pitch transformations can be used to represent the different ways in which a melody can be transposed.

Chapter 3: The Pitch-Class Set

In this chapter, Forte introduces the concept of the pitch-class set. A pitch-class set is a set of pitch classes. A pitch class is a set of pitches that are enharmonic equivalents. In other words, they sound the same, even though they are written differently.

Pitch-class sets are important in music theory because they can be used to represent musical intervals and chords. For example, a major triad can be represented as a pitch-class set consisting of the notes C, E, and G.

Chapter 4: The Interval-Class Vector

In this chapter, Forte introduces the concept of the interval-class vector. An interval-class vector is a vector that represents the intervals between the notes in a pitch-class set.

Interval-class vectors are important in music theory because they can be used to identify and compare different pitch-class sets. For example, two

pitch-class sets that have the same interval-class vector are said to be intervallically equivalent.

Chapter 5: The Rhythmic Motive

In this chapter, Forte introduces the concept of the rhythmic motive. A rhythmic motive is a short sequence of rhythmic events.

Rhythmic motives are important in music theory because they can be used to identify and compare different rhythms. For example, two rhythms that have the same rhythmic motive are said to be rhythmically equivalent.

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Additional Information:

- Review in the Journal of Music Theory
- Review in the Journal of the American Musicological Society
- Review in the American Mathematical Monthly

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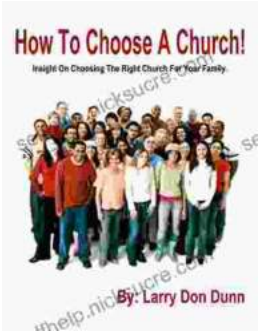

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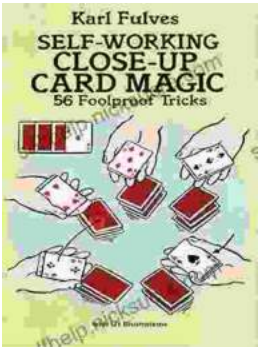

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