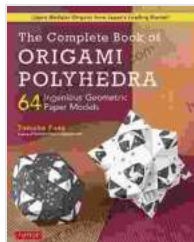


# The Complete Guide to Origami Polyhedra: Unleash Your Creativity with Three-Dimensional Origami Art



**The Complete Book of Origami Polyhedra: 64 Ingenious Geometric Paper Models (Learn Modular Origami from Japan's Leading Master!)** by Tomoko Fuse

★★★★☆ 4.9 out of 5

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## to Origami Polyhedra

Origami, the ancient art of paper folding, has captivated people for centuries. With its endless possibilities for creating beautiful and intricate objects, origami has evolved into a true art form. One of the most fascinating and challenging branches of origami is origami polyhedra. These three-dimensional structures, inspired by geometric shapes, bring the art of origami to a whole new level.

In this comprehensive guide, we will delve into the world of origami polyhedra. We will explore the different types of polyhedra, learn the techniques for folding them, and discover the endless possibilities this art form offers. Whether you are a seasoned origami enthusiast or just starting

your journey, this guide will provide you with everything you need to create stunning origami polyhedra.

## Types of Origami Polyhedra

Origami polyhedra come in a wide variety of shapes and sizes. Some of the most popular types include:

- **Platonic solids:** These are the five regular polyhedra that have congruent faces and equal edge lengths. They include the tetrahedron, cube, octahedron, dodecahedron, and icosahedron.
- **Archimedean solids:** These are the 13 semi-regular polyhedra that have two or more types of regular faces. They include the truncated tetrahedron, truncated cube, truncated octahedron, truncated dodecahedron, and truncated icosahedron.
- **Prisms:** These are polyhedra that have two parallel faces called bases and rectangular lateral faces. They include the triangular prism, square prism, and hexagonal prism.
- **Pyramids:** These are polyhedra that have a polygonal base and triangular faces that meet at a common vertex. They include the square pyramid, triangular pyramid, and hexagonal pyramid.

## Techniques for Folding Origami Polyhedra

Folding origami polyhedra requires precision and patience. Here are some of the basic techniques:

1. **Valley fold:** This is the most basic origami fold. It involves folding the paper in half along a straight line, bringing the two halves together to form a "valley" crease.

2. **Mountain fold:** This is the opposite of a valley fold. It involves folding the paper in half along a straight line, but this time bringing the two halves apart to form a "mountain" crease.
3. **Squash fold:** This fold is used to flatten a section of paper. It involves bringing two opposite edges of the paper together and pressing them down to create a crease.
4. **Reverse fold:** This fold is used to change the direction of a crease. It involves folding the paper along an existing crease and then unfolding it in the opposite direction.

### **Folding Instructions for a Simple Origami Polyhedron**

Now that you have learned the basic techniques, let's try folding a simple origami polyhedron:

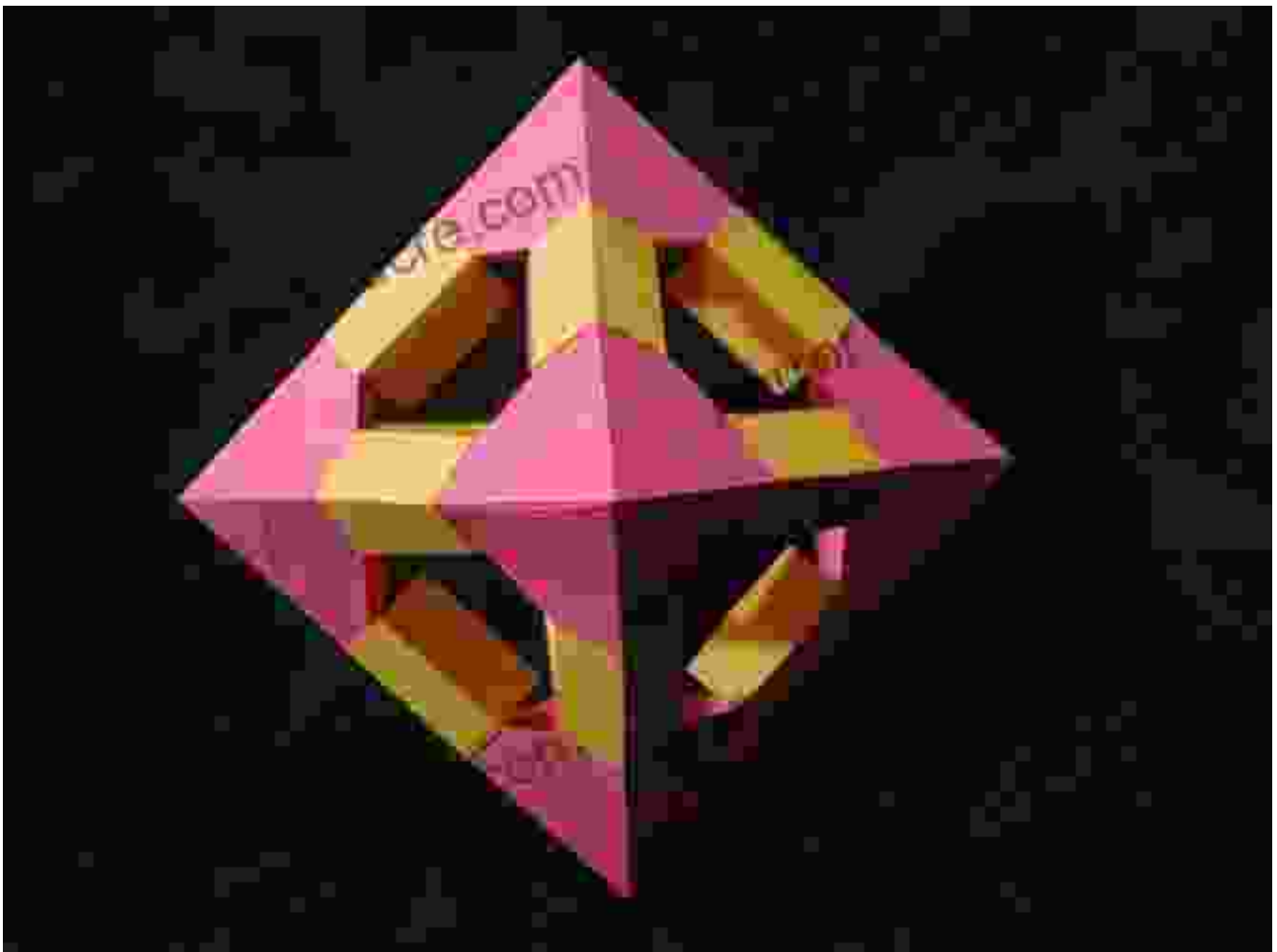
#### **Materials:**

- 1 square sheet of origami paper
- Patience and precision

#### **Step-by-step instructions:**

1. Start with the square sheet of origami paper lying flat in front of you.
2. Make a valley fold along one diagonal of the square.
3. Unfold the square and make a valley fold along the other diagonal.
4. Fold the square in half along one of the sides.
5. Unfold the square and fold it in half along the other side.
6. Make a squash fold along each of the two diagonals.

7. Unfold the square and fold it in half along one of the diagonals.
8. Unfold the square and fold it in half along the other diagonal.
9. Bring the four corners of the square together and press them down to create a crease.
10. Fold the square in half along one of the sides.
11. Unfold the square and fold it in half along the other side.
12. Repeat steps 10-12 two more times.
13. Your origami polyhedron is now complete!



**Discoveries and Advancements in Origami Polyhedra**

Origami polyhedra have been around for centuries, but the field has seen significant advancements in recent years. One of the most notable developments is the use of computational methods to design and fold origami structures.

Computational origami is a field that uses computer algorithms to create origami patterns and simulate the folding process. This technology has enabled origami artists to create complex and innovative structures that were previously impossible to fold by hand.

### **Applications of Origami Polyhedra**

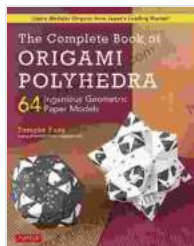
Origami polyhedra have a wide range of applications in various fields, including:

**Art and design:** Origami polyhedra are often used as decorative objects in homes and galleries. They can also be used to create jewelry, lighting fixtures, and other functional items. **Mathematics and science:** Origami polyhedra can be used to teach mathematical concepts such as geometry and topology. They are also used in scientific research to model complex structures, such as proteins and viruses. **Engineering and architecture:** Origami polyhedra can be used to design deployable structures, such as bridges and solar panels. They can also be used to create lightweight and efficient building materials.

Origami polyhedra are a fascinating and challenging art form that can be enjoyed by people of all ages. With patience and practice, anyone can learn to fold these beautiful three-dimensional structures. The possibilities are endless, and the only limit is your imagination.

Whether you are an experienced origami enthusiast or just starting out, I encourage you to explore the world of origami polyhedra. With this guide in hand, you have everything you need to create your own stunning origami sculptures.

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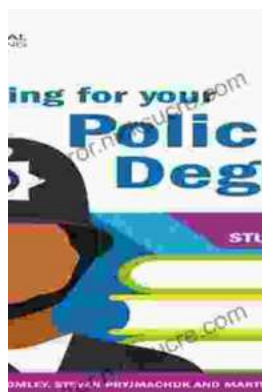
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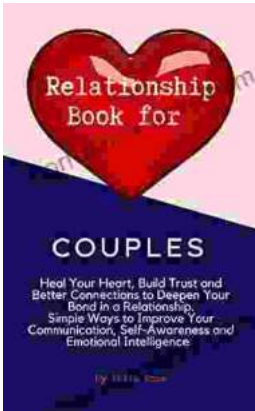
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