

# Mathematics in Sikkim

Exploring Culture, Population, and Patterns

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Mathematics Integration Project

## Project Overview

# Mathematical Journey Through Society



# Sikkim's Rich Cultural Tapestry



## Sacred Geometry

Buddhist mandalas use perfect circles and symmetrical patterns, reflecting mathematical harmony in spiritual art



## Architectural Ratios

Traditional Sikkimese architecture follows golden ratio principles in monastery construction



## Pattern Mathematics

Prayer flags are hung in specific numerical sequences believed to amplify positive energy



## Population Study

# Sikkim's Population Growth Analysis

## Census Data & Calculations

**2001 Population:** 5,40,851

**2011 Population:** 6,07,688

### Growth Formula:

$$\% \text{ Increase} = [(New - Old) / Old] \times 100$$

$$= [(6,07,688 - 5,40,851) / 5,40,851] \times 100$$

$$= [66,837 / 5,40,851] \times 100$$

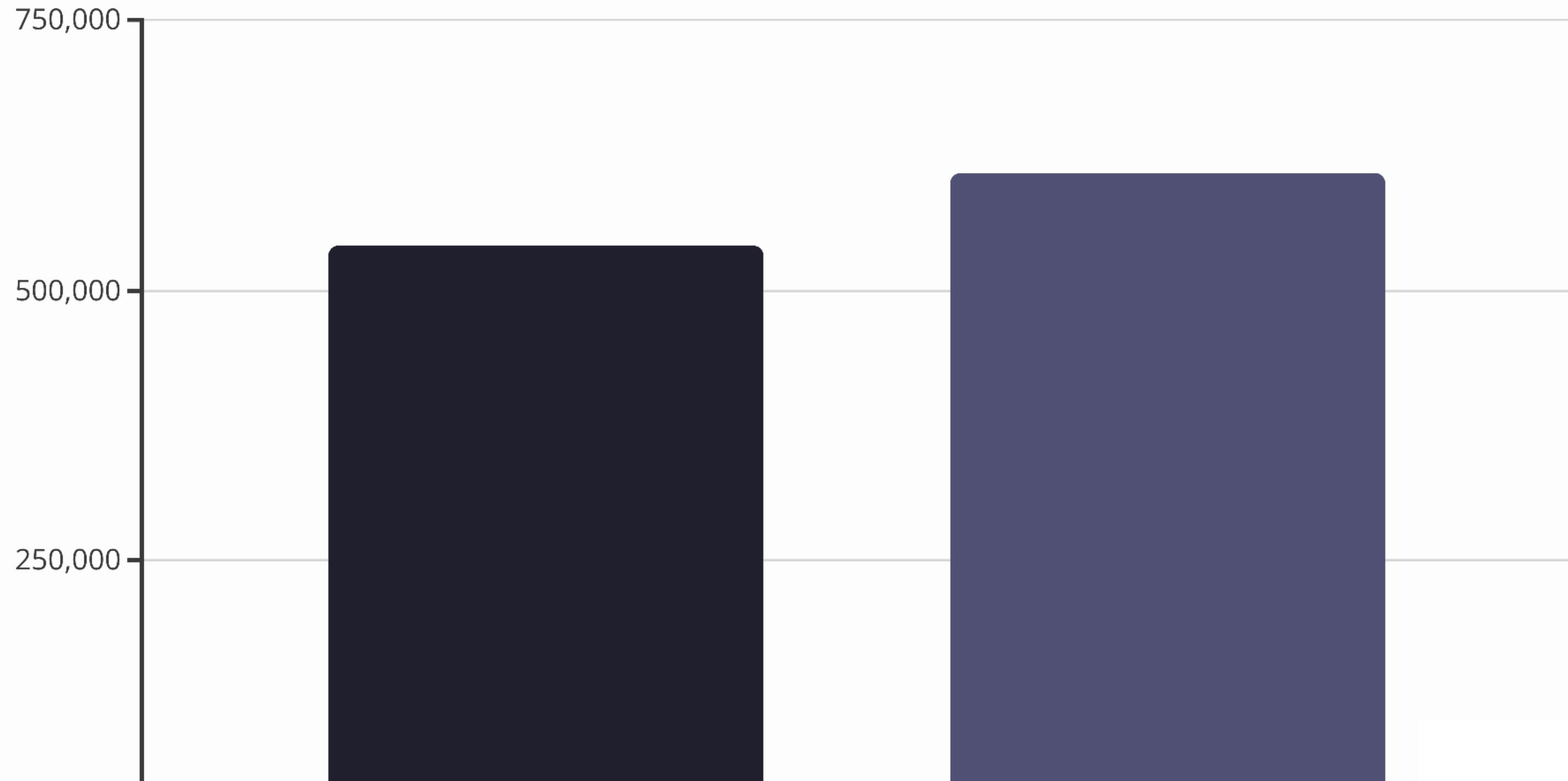
$$= 12.36\%$$



### Key Findings

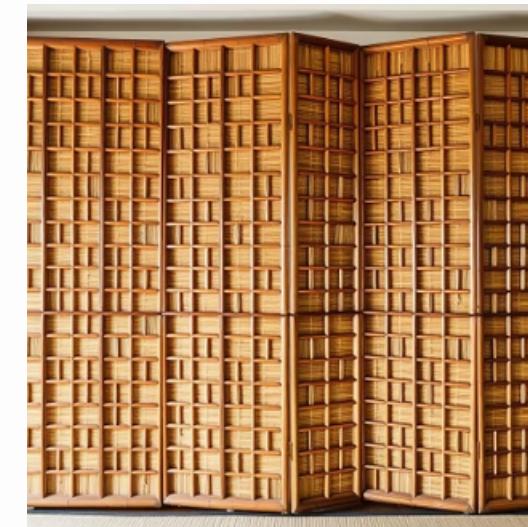
- Sikkim had a 12.36% population increase
- National average was 17.64%
- Sikkim's growth was slower than national average
- Annual growth rate: approximately 1.18%

# Sikkim Population Growth Trends



Traditional Craftsmanship

# Sikkim's Bamboo Furniture Gallery



## Mathematical Properties

# Geometry in Bamboo Furniture



### Triangular Stability

Bamboo joints use triangular bracing for maximum strength - triangles are the strongest geometric shape



### Circular Weaving

Basket weaves follow circular patterns with radius calculations ensuring even distribution



### Square Grids

Storage units use square grid patterns, optimising space through area calculations



### Hexagonal Efficiency

Hexagonal storage compartments maximise space usage - nature's most efficient shape

## Urban Demographics

# Sikkim's Cities & Demographics

1,03,000

Gangtok (Capital)

Urban density: 2,500 people/km<sup>2</sup>

30,000

Namchi

Growth rate: 15% (2001-2011)

25,000

Gyalshing

Rural-urban ratio: 3:1

20,000

Mangan

Literacy rate: 95%

Sikkim has a **high GDP Per Capita** and most sustainable urbanisation patterns!

Interactive Mathematics

# Fun Sikkim Math

## Activities



Population Prediction

Using growth rate, predict Sikkim's 2021 population



Monastery Geometry

Calculate prayer flag arrangements in geometric progressions



Bamboo Measurements

Design furniture using golden ratio principles

# Mathematics Lives in Culture

From sacred geometry to population patterns, maths shapes Sikkim's story

Through this exploration, we've discovered that mathematics isn't just about numbers - it's woven into the very fabric of Sikkim's culture, architecture, and daily life.

Every mandala, every bamboo joint, every population statistic tells a mathematical story worth exploring.

**Thank You for your time and  
attention!**

