Essential Geometry: Triangles, Quadrilaterals & More

Triangles are polygons with three sides and three angles. They are classified based on their sides and angles.

by Tony BM

Types of Triangles

Equilateral Triangle

All three sides are equal, and all angles are 60 degrees.

1

2

Isosceles Triangle

Two sides are equal, and the angles opposite these sides are equal.

Scalene Triangle

All sides and angles are different.

3

4

Right Triangle

One angle is 90 degrees.

Properties of Triangles

The sum of the angles in a triangle is always 180°.

1

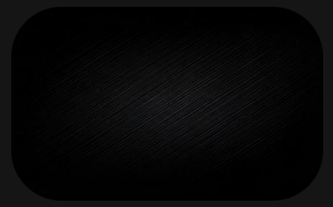
2

The area of a triangle can be calculated using the formula Area = Length × Width / 2

Quadrilaterals

Quadrilaterals are polygons with four sides and four angles. They are classified into various types based on their properties.

Types of Quadrilaterals



Parallelogram

Opposite sides are parallel and equal.

Rhombus

All sides are equal, and opposite angles are equal.

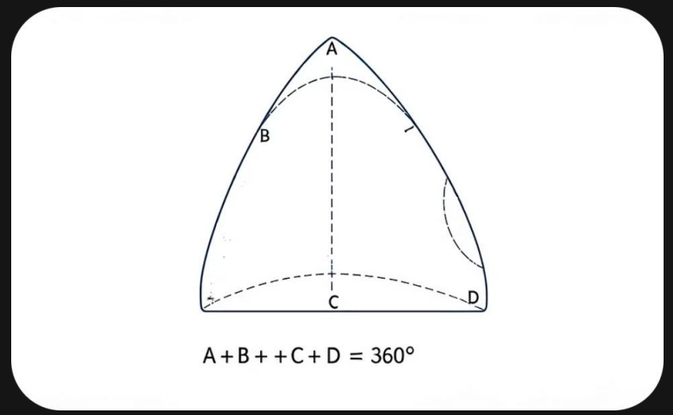
Trapezium (or Trapezoid)

Only one pair of opposite sides is parallel.

Kite

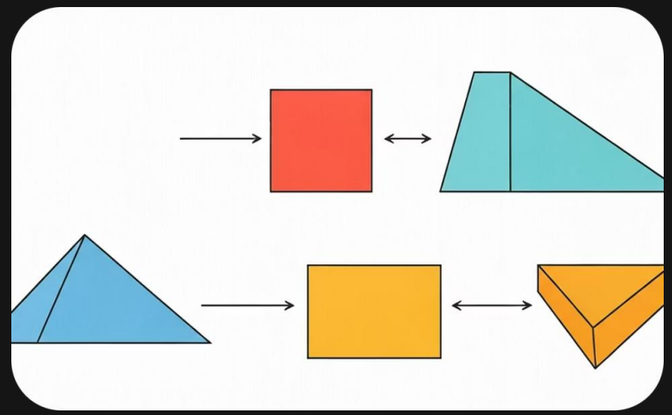
Two pairs of adjacent sides are equal.

Properties of Quadrilaterals



Angle Sum Property

The sum of the angles in a quadrilateral is always 360°.



Area Calculations

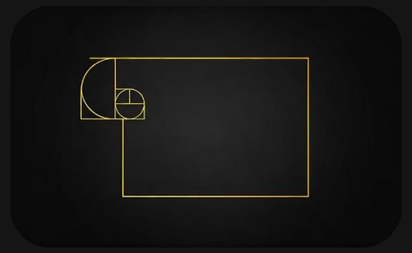
The area of a quadrilateral depends on its type and can be calculated using specific formulas.

Rectangles

Rectangles are a type of quadrilateral with specific properties:

Standard Rectangle

Opposite sides equal and parallel, all angles 90°

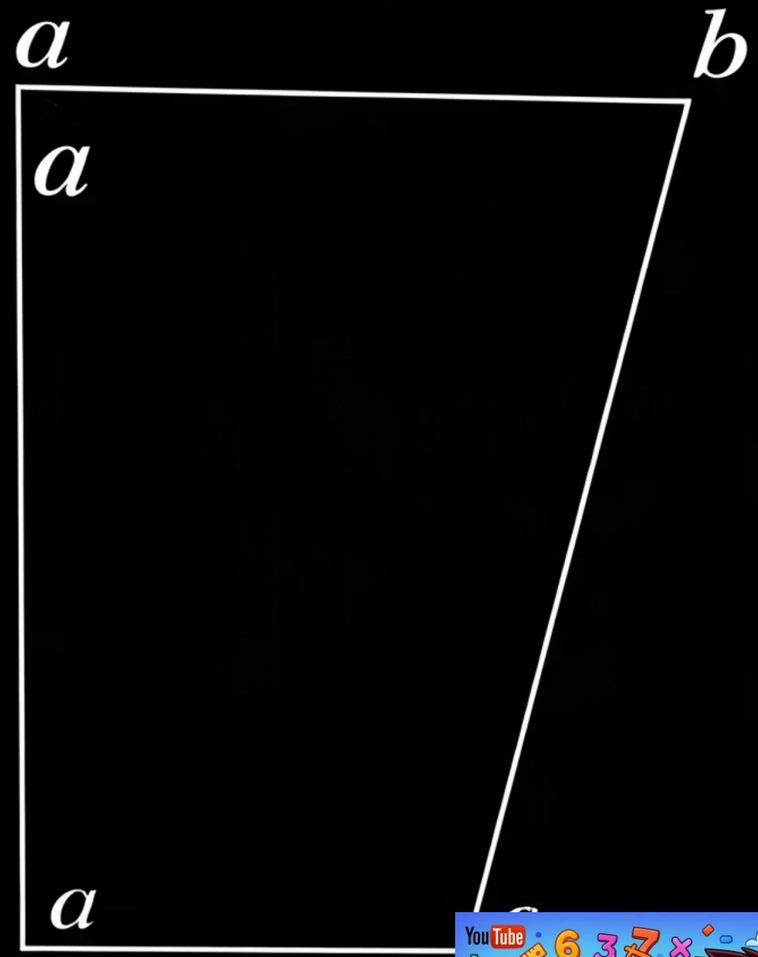


Golden Rectangle

A rectangle where the ratio of the longer side to the shorter side is the golden ratio

Properties of Rectangles

- Opposite sides are equal and parallel.
- All angles are 90°.
- The area of a rectangle can be calculated using the formula Area = length x width.



The images here are only illustrations!

Squares

Squares are a special type of rectangle with additional properties:

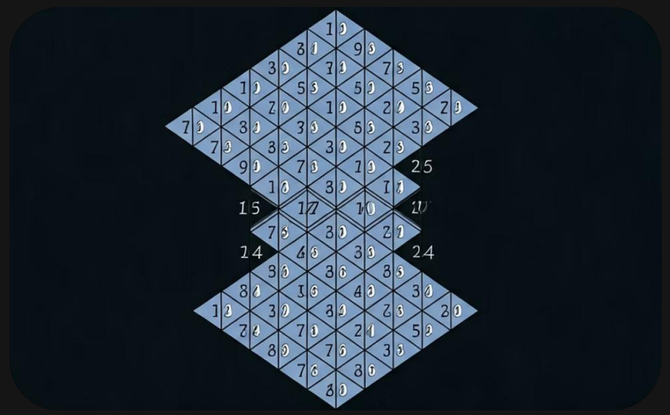
Properties of Squares

- All sides are equal.
- All angles are 90°.
- The area of a square can be calculated using the formula $\text{Area} = \text{side}^2$.

Types of Squares

Standard Square

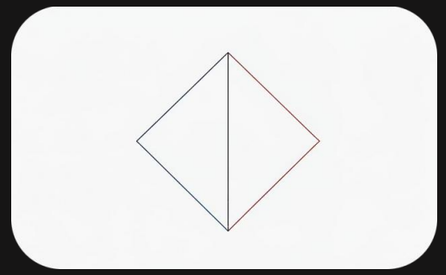
All sides equal, all angles 90°



Magic Square

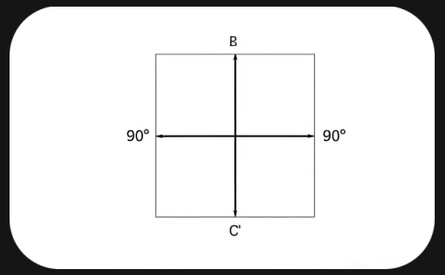
A square grid filled with numbers such that the sums of the numbers in each row, column, and diagonal are the same

Properties of Squares



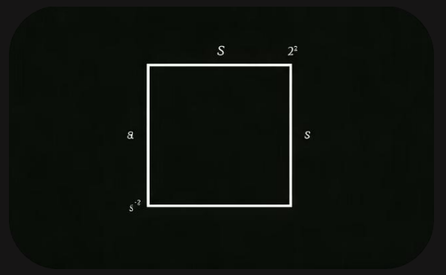
All sides are equal

Every side of a square has the same length, making it a regular quadrilateral.



All angles are 90°

Each corner of a square forms a perfect right angle.



Area = side²

The area of a square can be calculated using the formula: Area = side²

Conclusion

We've explored fundamental geometric shapes and their unique characteristics. Understanding these concepts is essential for various real-world applications.

Key Shapes

Mastered triangles, quadrilaterals, and their specific types and properties.

Core Principles

Understood fundamental concepts like angle sums and area calculation methods.

Real-World Impact

Identified geometry's crucial role in fields like architecture, engineering, and art.