RECTANGLE

Definition

A rectangle is a closed two-dimensional figure with four sides. The opposite sides of a rectangle are equal and parallel to each other and all the angles of a rectangle are equal to 90°.

A rectangle is a quadrilateral in which all the angles are equal and the opposite sides are equal and parallel.

Properties of a Rectangle

A rectangle is a closed figure which has four sides and the angle formed by adjacent sides is 90°. A rectangle can have a wide range of properties. Some of the important properties of a rectangle are given below.

- A rectangle is a quadrilateral.
- The opposite sides of a rectangle are equal and parallel to each other.
- The interior angle of a rectangle at each vertex is 90°.
- The sum of all interior angles is 360°.
- The diagonals bisect each other.
- The length of the diagonals is equal.
- The length of the diagonals can be obtained using the Pythagoras theorem. The length of the diagonal with sides a and b is, diagonal = √(a2 + b2).
- Since the sides of a rectangle are parallel, it is also called a parallelogram.
- All rectangles are parallelograms but all parallelograms are not rectangles

Types of Rectangles

A quadrilateral whose opposite sides are equal and adjacent sides meets at 90° is called a rectangle. A rectangle has two equal diagonals. The length of the diagonals is calculated by using the length and width. There are two types of rectangles:

- Square
- Golden Rectangle

Square

A square is a closed two-dimensional shape with four equal sides and four equal angles. It is a type of rectangle in which all four sides are equal. The interior angle at each vertex is 90º which satisfies the definition of the rectangle. Observe the square given below which fulfills all the properties of being a rectangle.

Golden Rectangle

A golden rectangle is a rectangle whose 'length to the width' ratio is similar to the golden ratio, 1: $(1+\sqrt{5})/2$. Its sides are defined according to the golden ratio, that is, 1: 1.618. For instance, if the width is about 1 foot long then the length will be 1.168 feet long.

Rectangle Formulas

A rectangle has a few basic formulas which can be noted in order to find the missing or unknown values. A few rectangle formulas are given below:

- Area of rectangle formula: If we know the length and breadth of a rectangle, we can find the area using the formula, **Area of rectangle = Length × Breadth**
- Perimeter of rectangle formula: If we know the length and breadth of a rectangle, we can find the perimeter using the formula, **Perimeter of rectangle = 2 (Length + Breadth)**
- Length of rectangle formula: If we know the area and breadth of a rectangle, we can find the length using the area formula by substituting the values or we can reframe the area formula as, **Length = Area of rectangle ÷ Breadth.** Similarly, if we know the perimeter and breadth of a rectangle, we can find the length using the perimeter formula by substituting the values or we can reframe the perimeter formula as, **Length = (Perimeter ÷ 2) - Breadth**
- Breadth of rectangle formula: If we know the area and length of a rectangle, we can find the breadth using the area formula by substituting the values or we can reframe the area formula as, **Breadth = Area of rectangle ÷ Length.** Similarly, if we know the perimeter and length of a rectangle, we can find the breadth using the perimeter formula by substituting the values or we can reframe the perimeter formula as, **Breadth = (Perimeter ÷ 2) - Length**