

## 4th Grade Math: Squares and Rectangles

### Lesson Objective:

By the end of this lesson, students will be able to:

- Understand and identify the properties of squares and rectangles.
- Draw squares and rectangles accurately.
- Recognize and differentiate between squares and rectangles in real-world contexts.

### 1. Introduction to Squares and Rectangles

#### Squares:

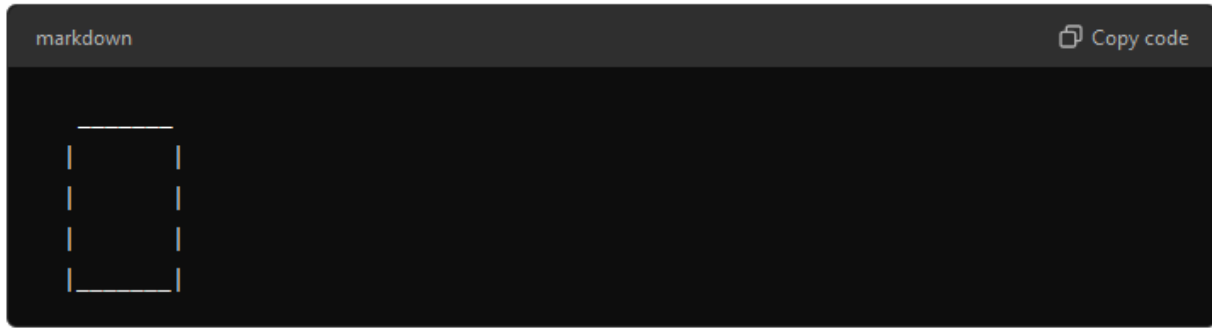
- **Definition:** A square is a special type of rectangle where all four sides are of equal length.
- **Properties:**
  - All four angles are right angles ( $90^\circ$ ).
  - All four sides are of equal length.
  - The diagonals are equal in length and bisect each other at right angles.

#### Rectangles:

- **Definition:** A rectangle is a quadrilateral with opposite sides that are equal in length and all four angles are right angles.
- **Properties:**
  - Opposite sides are of equal length.
  - All four angles are right angles ( $90^\circ$ ).
  - The diagonals are equal in length but do not necessarily bisect each other at right angles.

#### Visual Examples:

### Square:



### Rectangle:



## 2. Drawing Squares and Rectangles

### Steps to Draw a Square:

1. **Get Your Tools:**
  - Use a ruler, pencil, and a right-angle tool (optional).
2. **Draw the First Side:**
  - Draw a straight line segment of any length using the ruler. This will be one side of the square.
3. **Draw the Remaining Sides:**
  - From each end of the first line, draw two more line segments of the same length, forming right angles ( $90^\circ$ ) with the first side.
  - Connect the ends of these lines to form the fourth side of the square.
4. **Check Your Square:**
  - Ensure all sides are equal in length and all angles are right angles.

### Steps to Draw a Rectangle:

1. **Get Your Tools:**
  - Use a ruler, pencil, and a right-angle tool (optional).
2. **Draw the First Pair of Opposite Sides:**
  - Draw two parallel line segments of different lengths using the ruler. These will be the opposite sides of the rectangle.

3. **Draw the Other Pair of Opposite Sides:**
  - Connect the ends of the first pair of sides with two more parallel line segments of the same length. Ensure these lines are perpendicular to the first pair, forming right angles.
4. **Check Your Rectangle:**
  - Ensure opposite sides are equal in length, all angles are right angles, and the diagonals are equal.

### 3. Practice Problems

#### Practice 1: Drawing Squares and Rectangles

1. **Draw a Square:**
  - Draw a square with sides of 4 cm each. Use a ruler and right-angle tool to ensure accuracy.
2. **Draw a Rectangle:**
  - Draw a rectangle with one pair of sides measuring 5 cm and the other pair measuring 3 cm. Make sure all angles are right angles.

#### Practice 2: Identifying Shapes

1. **Label and Compare:**
  - On graph paper, draw several squares and rectangles. Label the sides and angles. Compare the properties of the squares and rectangles you draw.
2. **Real-World Examples:**
  - Find and draw or describe three examples of squares and three examples of rectangles from your environment.

### 4. Real-World Application

#### Problem:

- **Design Challenge:** Design a simple garden layout using squares and rectangles. Draw the garden beds as squares and rectangles, making sure to measure and label each side.

#### Solution:

- Create a layout for a garden with square and rectangular beds. Measure and label the sides of each bed, and ensure all angles are right angles.

### 5. Review and Wrap-Up

#### Key Points:

- **Square:** All four sides are equal, and all angles are right angles.
- **Rectangle:** Opposite sides are equal, and all angles are right angles.

- Use a ruler and right-angle tool to draw and verify the accuracy of squares and rectangles.

**Exit Question:** What is the main difference between a square and a rectangle? How can you use measurements to identify each shape?