# Units of Area

#### **Units of Area**

Area is measured in square units because it represents the amount of space covered by a shape.

The unit used depends on the size of the shape and the measurement system.

## **Common Units of Area**

Measurement System	Units of Area	Examples
Metric System	Square millimeter (mm <sup>2</sup> )	Used for very small objects like a postage stamp.
	Square centimeter (cm <sup>2</sup> )	Used for small surfaces like a notebook cover.
	Square meter (m <sup>2</sup> )	Used for measuring rooms, playgrounds, etc.
	Square kilometer (km²)	Used for large areas like cities and forests.
Imperial System	Square inch (in <sup>2</sup> )	Used in countries like the USA for measuring small areas.
	Square foot (ft <sup>2</sup> )	Used for measuring houses, apartments, etc.
	Square yard (yd <sup>2</sup> )	Used for land measurement in some countries.
	Acre	Used for measuring farmland.

# **Conversion of Units of Area**

From → To	Multiply By
$1 \text{ cm}^2 \rightarrow \text{mm}^2$	100
$1 \text{ m}^2 \rightarrow \text{cm}^2$	10,000
$1 \text{ km}^2 \rightarrow \text{m}^2$	1,000,000
$1 \text{ ft}^2 \rightarrow \text{in}^2$	144
$1 \text{ yd}^2 \rightarrow \text{ft}^2$	9

## **Example Calculations**

**Example 1:** Convert 3 m<sup>2</sup> into cm<sup>2</sup>.

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Solution:
1 m<sup>2</sup> = 10,000 cm<sup>2</sup>
So, 3 m<sup>2</sup> = 3 × 10,000 = 30,000 cm<sup>2</sup>
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#### **Example 2:** Convert 2 km<sup>2</sup> into m<sup>2</sup>.

#### Solution:

1 km² = 1,000,000 m²

So, 2 km<sup>2</sup> = 2 × 1,000,000 = 2,000,000 m<sup>2</sup>

### Example 3: Convert 50 cm<sup>2</sup> into mm<sup>2</sup>.

#### Solution:

 $1 \text{ cm}^2 = 100 \text{ mm}^2$ 

So, 50 cm<sup>2</sup> = 50 × 100 = 5,000 mm<sup>2</sup>

## **Properties of Units of Area**

- i. Area is always measured in square units (e.g., cm<sup>2</sup>, m<sup>2</sup>, km<sup>2</sup>).
- ii. Larger areas require bigger units (e.g., km<sup>2</sup> for cities, acres for land).
- iii. Smaller areas use smaller units (e.g., mm<sup>2</sup> for tiny objects).
- iv. Conversions involve multiplication or division by powers of 10 in the metric system.
- v. Different countries use different units (e.g., USA uses square feet, while India uses square meters).