AREA UNITS

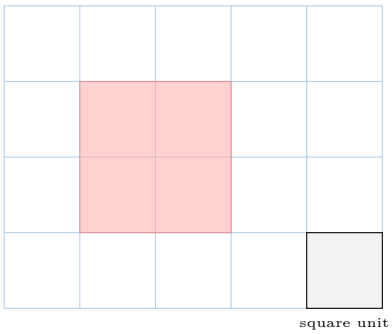
A AREA

Definition Area

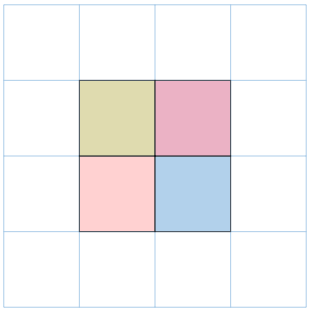
The **area** of a shape is how much space it covers on a flat surface.
We measure area by counting how many **square units** fit inside the shape.

To find the area of a shape, we can place it on a grid and count the total number of squares it covers. You can think of it like tiling a floor — the area is the total number of tiles you use.

Ex: Find the area of the green shape. Each small square in the grid is **1 square unit**.



Answer: To find the area, we count each square unit inside the shape.



There are **4** small squares inside the shape.
So, the area is **4 square units**.

B UNITS OF AREA

Definition Units of Area

Area is measured in **square units**. The standard units are based on the metric system.

- **Square Kilometer** (km^2)**:** The area of a square with sides 1 km long. Used for very large areas like cities or national parks.
- **Square Meter** (m^2)**:** The area of a square with sides 1 m long. Used for areas like rooms, gardens, or classrooms.
- **Square Centimeter** (cm^2)**:** The area of a square with sides 1 cm long. Used for small surfaces like book covers or photos.
- **Square Millimeter** (mm^2)**:** The area of a square with sides 1 mm long. Used for very tiny areas.

C CONVERSION OF AREA UNITS

Proposition Conversion of Area Units

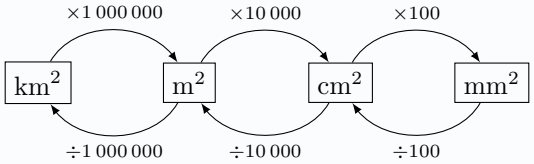
Because we multiply two lengths to get an area, the conversion factors are squared.

- $1\,\text{cm}^2 = (10 \times 10)\,\text{mm}^2 = \mathbf{100}\,\text{mm}^2$
- $1\,\text{m}^2 = (100 \times 100)\,\text{cm}^2 = \mathbf{10,000}\,\text{cm}^2$

- $1\,\text{km}^2 = (1000 \times 1000)\,\text{m}^2 = \mathbf{1,000,000}\,\text{m}^2$

Method **Converting Using Multiplication or Division**

- Use **multiplication** to go from a larger unit to a smaller one (like square meters to square centimeters).
- Use **division** to go from a smaller unit to a larger one (like square centimeters to square meters).



Method **Converting Using a Place Value Table**

For area, each unit in the place value table is split into **two columns**. Let's convert 10.5 m^2 to cm^2.

1. **Draw the area conversion table.** Each unit has two columns.

km^2		ha			m^2			cm^2		mm^2	

2. **Place the number in the table.** The rule is: the digit in the **ones place** goes into the **right-hand column** of the starting unit. For 10.5 m^2, the ones digit is **0**, so it goes in the right-hand column of $\mathbf{m^2}$. Then place the other digits in the neighbouring columns, keeping their order (tens to the left, decimal digits to the right).

km^2		ha			m^2			cm^2		mm^2	
					1	**0**	**5**				

3. **Move the decimal point** to the right side of your target unit's columns. Our target is $\mathbf{cm^2}$. Fill any empty columns with zeros.

km^2		ha			m^2			cm^2		mm^2	
					1	0	5	**0**	**0**	**0.**	

4. **Read the final number.** The decimal point is now at the far right.

So, 10.5 $\mathbf{m^2}$ = 105 000 $\mathbf{cm^2}$.