3rd Grade Math: Using Square Units (cm^2 and in^2) to Find and Compare the Area of Figures

What Are Square Units?

Square units help us measure **area**, or the amount of space inside a figure. We use square units to see how much space a figure takes up, and we can use them to compare the areas of different shapes.

- **Square centimeters (cm^2)**: Small squares, each 1 centimeter on each side.
- **Square inches (in^2)**: Small squares, each 1 inch on each side.

How to Find Area Using Square Units

To find the area of a figure (like a square or rectangle), we count how many square units fit inside it.

The basic formula to find the area is:

$$\text{Area} = \text{Length} \times \text{Width}$$

Example 1: Finding Area in Square Centimeters (cm^2)

Problem:

You have a rectangle with a length of 5 cm and a width of 3 cm. What is the area?

Solution:

Use the formula for area:

$$\text{Area} = \text{Length} \times \text{Width}$$

$$\text{Area} = 5\,\text{cm} \times 3\,\text{cm} = 15\,\text{cm}^2$$

So, the area is **15 square centimeters (cm^2)**.

Example 2: Finding Area in Square Inches (in^2)

Problem:

You have a square with each side measuring 4 inches. What is the area?

Solution:

For squares, the formula is:

$$\text{Area} = \text{Side} \times \text{Side}$$

$$\text{Area} = 4\,\text{in} \times 4\,\text{in} = 16\,\text{square inches}(in^2)$$

So, the area is **16 square inches (in^2)**.

Comparing the Area of Figures

Once we know how to find the area in square units, we can compare the areas of different shapes. For example, we can compare the area of one figure in **square centimeters** to another figure in **square inches**.

Example: Comparing Two Figures

1. **Figure 1**: A rectangle that is 6 cm long and 4 cm wide.
   Area = $6\,\text{cm} \times 4\,\text{cm} = 24\,\text{cm}^2$
2. **Figure 2**: A square that is 3 inches on each side.
   Area = $3\,\text{in} \times 3\,\text{in} = 9\,\text{in}^2$

Even though these shapes have different units (cm^2 and in^2), we know that **Figure 1** has a larger area than **Figure 2** because **24 square centimeters** is more space than **9 square inches**.

Practice Problems

1. A rectangle is 7 cm long and 2 cm wide. What is its area in square centimeters (cm^2)?
2. A square has sides of 5 inches. What is its area in square inches (in^2)?
3. Compare the area of a rectangle with dimensions 4 cm by 6 cm to a square with sides of 3 inches. Which has the larger area?
4. Find the area of a rectangle that is 8 inches long and 3 inches wide. Write the answer in square inches (in^2).

Conclusion:

- **Square units** like **cm²** and **in²** help us measure and compare the area of different figures.
- To find the area, use the formula **Length × Width** for rectangles, or **Side × Side** for squares.
- Understanding how to calculate and compare areas helps you compare the sizes of different shapes in everyday life, such as rooms, gardens, or pictures.