AREA NOTES

Key Words: cover   inside   flooring   rug   wallpaper
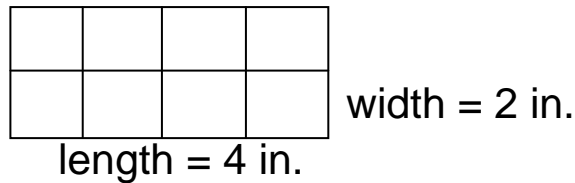
Definition: the number of square units a figure covers

Unit of Measurement/Label: square units (in², ft², yd², mm², cm², m²)

How to find?

- If the figure is drawn on a grid, count the squares on the inside.

- Rectangle: length x width—since the length tells how many squares are in a row and the width tells how many rows there are, which would be repeated addition.
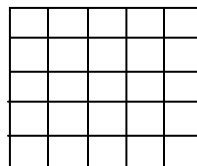
  Example:

  width = 2 in.
  length = 4 in.

2 rows with 4 squares in each = 4 + 4, which is the same as 4 x 2 so…
length (4) x width (2) = Area (8 sq. in. or in²)

- Square: side x side = s² —since the length and width are the same it becomes repeated multiplication, which can be written as an exponent (see exponent notes for further explanation)
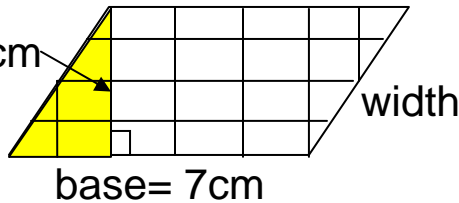
  Example:

  side = 5mm

  5 rows with 5 squares in each =
  5 + 5 + 5 + 5 + 5 = 25
  5²= 5 x 5 = 25 sq. mm. (mm²)

- Parallelogram: base x height—since the base of a parallelogram is the same as the length of a rectangle, but the width no longer tells how tall the shape is so we have to use the height instead.

Example:
height= 4 cm

width

base= 7cm

*If you cut the shaded triangle off and slide it over to the opposite side it will form a rectangle, which is why the formulas are so similar.
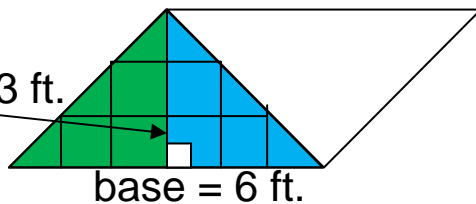
If you take the partial squares in the shaded section and join them with the partial squares opposite themselves, you end up with full squares creating…

4 rows with 7 squares in each = 7 + 7 + 7 +7, which is the same as 7 x 4 so…
base (7) x width (4) = Area (28 sq. cm. or cm²)

- Triangle: ½ x base x height OR (base x height) ÷ 2—since a triangle is ½ of a parallelogram we use the parallelogram formula (base x height) then take ½ of it (x ½), which is the same as ÷ 2.

Example:
height = 3 ft.

base = 6 ft.

*The large shaded triangle is ½ of the parallelogram.

base (6) x height (3) = 18 ÷ 2
= 9 ft² (sq. ft.)

If you take the partial green squares and join them with the partial blue squares opposite themselves, you end up with full squares creating…

a pyramid with 5 full squares in the bottom row, 3 full squares in the next row, and 1 full square in the top row…5 + 3 + 1 = 9 full squares (ft²)