

Area of a Rectangle Notes

The **area** of a plane figure is the measure of the region enclosed by the figure. You measure the area of a figure by counting the number of square units (units^2) that you can arrange to fill the figure completely.

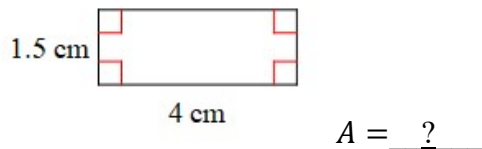


***Remember that units on area should always have a power of 2 because area is 2-dimensional (i.e. cm^2 , in^2 , ft^2 , mi^2 , unit^2 , etc.)

Rectangle Area Conjecture - The area of a rectangle is given by the formula $A = bh$, where A is the area, b is the length of the base, and h is the height of the rectangle.



Example 1: Finding area of a rectangle given base and height



It doesn't actually matter which side we call the base and which side we call the height since we will just be multiplying the two values and the order in which we multiply them does not change the output value.

$$A = bh$$

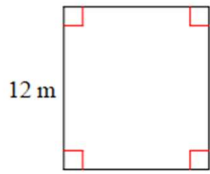
$$b = 4, h = 1.5 \quad \text{or} \quad b = 1.5, h = 4$$

$$A = (4)(1.5) \quad \text{or} \quad A = (1.5)(4)$$

$$A = 6 \quad \quad \quad A = 6$$

Notice that we get the same answer regardless of which side we call the base and which side we call the height. So, the area is **6 cm^2** .

Example 2: Finding base of a rectangle given area and height



$$\text{Area} = 128.4 \text{ m}^2 \quad b = \underline{\quad? \quad}$$

$$A = bh$$

$$A = 128.4, h = 12$$

$$128.4 = (b)(12)$$

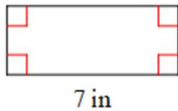
$$\frac{128.4}{12} = \frac{(b)(12)}{12}$$

$$10.7 = b$$

The base is **10.7 m**.

**Notice that the units are not squared. When we find a base or height, we are finding a length, which is 1-dimensional, so our units have a power of 1.

Example 3: Finding height of a rectangle given area and base



$$\text{Area} = 19.6 \text{ in}^2 \quad h = \underline{\quad? \quad}$$

$$A = bh$$

$$A = 19.6, b = 7$$

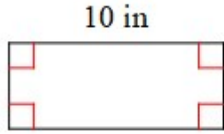
$$19.6 = (7)(h)$$

$$\frac{19.6}{7} = \frac{(7)(h)}{7}$$

$$2.8 = h$$

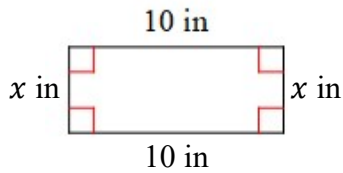
The height is **2.8 in**. (Again, units are not squared because we are finding a length which is 1-dimensional)

Example 4: Finding rectangle area given a perimeter and a side



$$P = 28 \text{ in} \quad A = \underline{\quad? \quad}$$

We know that perimeter is the length of all the sides added together. We also know that opposite sides of a rectangle are congruent. We know the longer two sides are both 10, but we do not know the shorter sides.

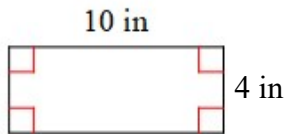


$$10 + 10 + x + x = 28$$

$$20 + 2x = 28$$

$$2x = 8$$

$$x = 4$$



$$A = bh$$

$$b = 10, h = 4$$

$$A = (10)(4)$$

$$A = 40$$

The area is **40 in²**. (Remember that units are squared because area is 2-dimensional)