

# Areas of Polygons

## Objectives

1. Understand what is meant by the area of a polygon.
2. Understand the area postulates.
3. Know and use the formulas for the areas of rectangles, parallelograms, triangles, rhombuses, trapezoids, and regular polygons.

## 11-1 Areas of Rectangles

In everyday conversation people often refer to the *area* of a rectangle when what they really mean is the area of a rectangular region.



Rectangle



Rectangular region

We will continue this common practice to simplify our discussion. Thus, when we speak of the area of a triangle, we will mean the area of the triangular region that includes the triangle *and* its interior.

In Chapter 1 we accepted postulates that enable us to express the lengths of segments and the measures of angles as positive numbers. Similarly, the areas of figures are positive numbers with properties given by area postulates.

### Postulate 17

**The area of a square is the square of the length of a side. ( $A = s^2$ )**



Length: 1 unit



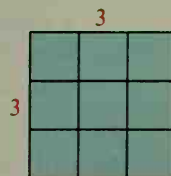
Area: 1 square unit

By counting,

Area = 9 square units

By using the formula,

Area =  $3^2 = 9$  (square units)



### Postulate 18 Area Congruence Postulate

**If two figures are congruent, then they have the same area.**