

Area Postulate - corresponding to every bounded region is a unique positive number  $A$ , called its area.

Postulate - If 2 figures are congruent, then their areas are equal.

Area Addition Postulate - Let  $R$  and  $S$  be 2 enclosed regions that don't intersect. Then  $A_{R \cup S} = A_R + A_S$



### Area Theorems

Rectangle:  $A = b \cdot h$   
(Postulate)



Square:  $A = s^2$



Parallelogram:  $A = b \cdot h$



Triangle:  $A = \frac{1}{2} b h$



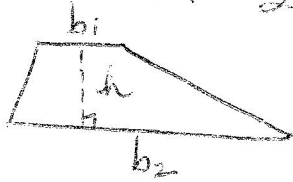
Triangle: Heron's Formula

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

$$s = \frac{a+b+c}{2}$$



Trapezoid:  $A = \frac{1}{2}h(b_1 + b_2)$



Rhombus or Kite:  $A = \frac{1}{2}d_1 \cdot d_2$



Regular Polygon:  $A = \frac{1}{2}aP$



apothem  $\rightarrow$  Perimeter

Circumference of a Circle:

$C = \pi d$  or  $C = 2\pi r$

Area of a Circle:  $A = \pi r^2$

Length of arc:  $l_{\widehat{AB}} = \frac{m\widehat{AB}}{360} \cdot 2\pi r$

Area of sector:  $= \frac{m\widehat{AB}}{360} \cdot \pi r^2$



Area of a Triangle:  $A = \frac{1}{2}rP$

radius of inscribed circle

Perimeter

