

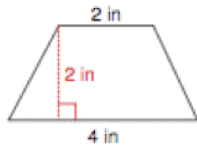
9.6 Area of other Polygons

Objective: To determine the area of a polygon

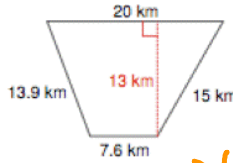
Theorem 9.4: The area of a trapezoid is half the product of the height (h) and the sum of the base lengths ($b_1 + b_2$).

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

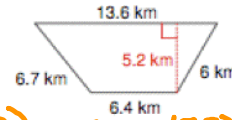
Examples:



$A = \frac{1}{2} (2)(2+4)$
 $A = 1(2+4) = A = 6 \text{ in}^2$



$A = \frac{1}{2} (13)(7.6+20)$
 $A = (6.5)(27.6)$
 $A = 179.4 \text{ km}^2$

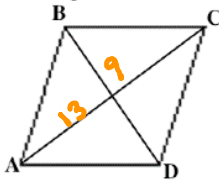


$A = \frac{1}{2} (5.2)(13.6+6.4)$
 $A = 2.6(20)$
 $A = 52 \text{ km}^2$

Theorem 9.5: The area of a rhombus is half the product of the lengths of the diagonals.

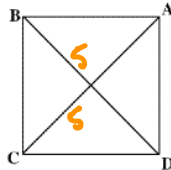
Formula: $A = \frac{1}{2} d_1 d_2$

Examples:



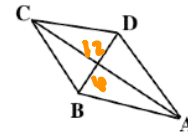
$\overline{BD} = 9 \text{ mm}$
 $\overline{AC} = 13 \text{ mm}$

$A = \frac{1}{2} 9 \cdot 13$
 $A = 58.5 \text{ mm}^2$



$\overline{BD} = 5 \text{ cm}$
 $\overline{AC} = 5 \text{ cm}$

$A = \frac{1}{2} (5)(5)$
 $A = 12.5 \text{ cm}^2$



$\overline{BD} = 12 \text{ mm}$
 $\overline{AC} = 6 \text{ mm}$

$A = \frac{1}{2} (6)(12)$
 $A = 36 \text{ mm}^2$

Regular Polygons: a polygon w/ all \cong sides

Parts of a regular polygon:

Center: a point equidistant to the vertices

Apothem: a segment from the center \perp to any side

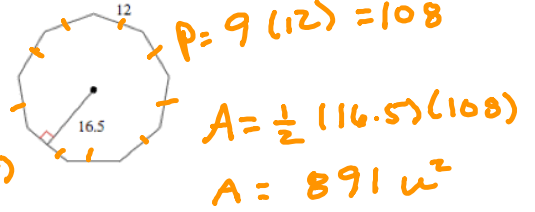
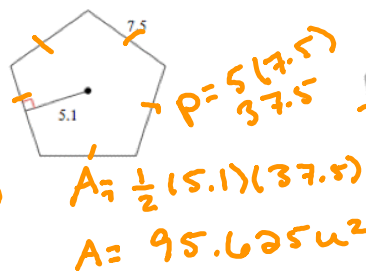
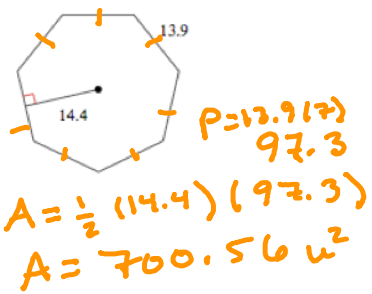
Radius: a segment from the center to a vertex

Theorem 9.6: The area of a regular polygon is half of the product of the apothem (a) and the perimeter (P).

Formula: $A = \frac{1}{2} aP$
 $P = n s$

Examples:

$\frac{1}{2}ap$



Find the area of the shaded region:

