

<name>

Class: Honors Geometry

Date: <date>

Topic: Lesson 7-4 (Areas of Trapezoids, Rhombuses and Kites)

Theorem 7-10

Area of a Trapezoid

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

Theorem 7-11

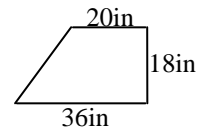
Area of a Rhombus or a Kite

$$A = \frac{1}{2}d_1d_2$$

Examples

1. A car window is shaped like this trapezoid. Find its area.

$$\frac{1}{2} \cdot 18 \cdot (20 + 36) = \frac{1}{2} \cdot 18 \cdot 56 = 504 \text{ in}^2$$

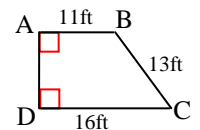


2. Find the area of trapezoid $ABCD$.

Side AD is the height. Constructing the height segment at vertex B forms a right triangle with base 5 ft ($16 - 11$). Using the Pythag Thm:

$$h^2 + 5^2 = 13^2; h = AD = \sqrt{13^2 - 5^2} = \sqrt{144} = 12.$$

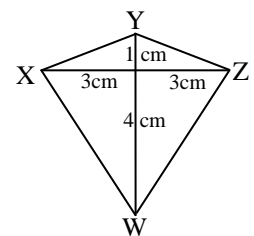
$$\text{area } ABCD = \frac{1}{2} \cdot 12 \cdot (11 + 16) = 6 \cdot 27 = 162 \text{ ft}^2$$



3. Find the area of kite $XYZW$.

$$d_1 = 1 + 4 = 5; d_2 = 3 + 3 = 6$$

$$\text{area } XYZW = \frac{1}{2} \cdot 5 \cdot 6 = 15 \text{ cm}^2$$



4. Find the area of rhombus $RSTU$.

Diagonal RT is the \perp bisector of diag SU . Together they form 4 rt Δ 's w/base 12, hypot 13 & height h ($\frac{1}{2}SU$):

$$h^2 + 12^2 = 13^2; h = \sqrt{13^2 - 12^2} = \sqrt{25} = 5; SU = 2h = 10 \text{ ft}.$$

$$\text{area } RSTU = \frac{1}{2} \cdot 24 \cdot 10 = 120 \text{ ft}^2$$

